Tuscan Ridge Project

SCH# 2022020536

Draft Environmental Impact Report

Prepared for
Butte County
Development Services Department

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1. Introduction

1. INTRODUCTION

1.1 TYPE AND PURPOSE OF THE EIR

The Tuscan Ridge Project Environmental Impact Report (EIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) of 1970, Public Resources Code (PRC) Sections 21000-21178, as amended, and the Guidelines for Implementation of the California Environmental Quality Act, California Code of Regulations (CCR) Title 14, Sections 15000-15387 (CEQA Guidelines). Butte County is the lead agency for the environmental review of the Tuscan Ridge Project (proposed project) evaluated herein and has the principal responsibility for approving the project. As required by Section 15121 of the CEQA Guidelines, this EIR will (a) inform public agency decision-makers, and the public generally, of the significant environmental effects of the project, (b) identify possible ways to minimize the significant adverse environmental effects, and (c) describe reasonable and feasible project alternatives which reduce environmental effects. The public agency shall consider the information in the EIR along with other information that may be presented to the agency.

As provided in the CEQA Guidelines Section 15021, public agencies are charged with the duty to avoid or minimize environmental damage where feasible. The public agency has an obligation to balance a variety of public objectives, including economic, environmental, and social issues. CEQA requires the preparation of an EIR prior to approving any project that may have a significant effect on the environment. For the purposes of CEQA, the term project refers to the whole of an action, which has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378[a]). With respect to the proposed project, the County has determined that the proposed development is a *project* within the definition of CEQA, which has the potential for resulting in significant environmental effects.

The lead agency, which in the case of the proposed project is Butte County, is required to consider the information in the EIR along with any other available information in deciding whether to approve the application. The basic requirements for an EIR include discussions of the environmental setting, environmental impacts, mitigation measures, alternatives, growth inducing impacts, and cumulative impacts.

The CEQA Guidelines identify several types of EIRs, each applicable to different project circumstances. This EIR has been prepared as a *project-level EIR* pursuant to CEQA Guidelines Section 15161, which is an analysis that examines the environmental impacts of a specific development project. A *project-level EIR* focuses primarily on the changes in the environment that would result from the development of the project, and examines all phases of the project including planning, construction, and operation.

1.2 KNOWN RESPONSIBLE AND TRUSTEE AGENCIES

"Responsible agency" means a public agency that proposes to carry out or approve a project for which a lead agency is preparing or has prepared an EIR or Negative Declaration. For the purpose of CEQA, the term responsible agency includes all California public agencies other than the lead agency that have discretionary approval power over the project or an aspect of the project. The

Butte Local Agency Formation Commission (LAFCo), Butte County Air Quality Management District (BCAQMD), Butte County Environmental Health Division, State Water Resources Control Board (SWRCB), and Central Valley Regional Water Quality Control Board (CVRWQCB) are identified as potential responsible agencies for the proposed project.

"Trustee agency" means a State agency having jurisdiction by law over natural resources affected by a project, which are held in trust for the people of the State of California. The only known possible trustee agency for the project is the California Department of Fish and Wildlife (CDFW).

Although not subject to California law, and, thus, outside the definitions of responsible agency or trustee agency, the U.S. Army Corps of Engineers (USACE) and U.S. Fish and Wildlife Service (USFWS) could also be called upon to grant approvals — under federal law — necessary for the development of the project site. The above agencies do not have duties under CEQA, but, rather, are governed by a variety of federal statutes, such as the Clean Water Act, which governs the dredging and filling of waters of the U.S. (e.g., wetlands), and the Endangered Species Act, which requires USACE to consult with the USFWS as part of the review process for any wetland or fill permits that may be required.

1.3 PROJECT SUMMARY

The irregularly shaped project site consists of approximately 163.12 acres of what was formerly the Tuscan Ridge Golf Course, located on the southeast side of Skyway in an unincorporated area of Butte County, between Chico and Paradise, California, and is identified by Assessor's Parcel Numbers 040-520-104 through -111. The site is currently highly disturbed, with large graveled and/or paved areas void of vegetation, due to damage sustained immediately before, during, and after the 2018 Camp Fire. In mid-2018, prior to the Camp Fire, the site was used as a Pacific Gas and Electric Co. (PG&E) vegetation management camp. The site was subsequently burnt during the wildfire, then leveled and graveled for use as a base camp and staging area by PG&E and ECC Constructors during the wildfire response. PG&E continued to use portions of the site as a base camp for debris removal until March 2020. Three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Course currently exist on-site: a 2,440-square-foot (sf) grill building, an 1,830-sf clubhouse, and a Quonset hut. In addition, an existing potable water well and associated system, including two 10,000-gallon aboveground storage tanks, as well as an existing wastewater treatment system, including septic tanks, leach field, and disposal ponds, are located in the southwestern portion of the site. The project site is predominantly bound by Skyway to the north and large undeveloped parcels to the east, south, and west, with the exception of Paradise Rod & Gun Club, which is located adjacent to the northeast border of the site. The Paradise Rod & Gun Club consists of two buildings with associated parking spaces, and two outdoor shooting ranges. Butte Creek is located to the north of, and runs roughly parallel to, Skyway. The Butte Creek Ecological Preserve is also located north of the site, across Skyway, with Butte Creek Canyon located further to the northeast. Butte Creek and the Butte Creek Ecological Preserve are separated from the project site by Skyway and an approximately 380-foot decline in elevation. Surrounding land to the east, south, and west is primarily undeveloped. The Butte County General Plan designates the site as Planned Unit Development (PUD) and the site is zoned Planned Development. In addition, the area extending 350 linear feet from the centerline of Skyway is considered to be a Scenic Highway (SH) Overlay Zone and is subject to the requirements of Section 24-42 of the Butte County Code.

The proposed project would include development of 165 single-family residences across approximately 36.9 acres, and would consist of lots ranging from 3,000 sf to 20,000 sf. The

proposed project would also include six commercial lots totaling approximately 15.9 acres, 4.1 acres of landscaped open space, 36.7 acres of recreational open space, 20.5 acres of roadway, and 49 acres of special utility district associated with the on-site water and sewer systems. Various associated improvements would be included in the development of the proposed project, including, but not limited to, trails, landscaping, and utility installation. Vehicle site access would be provided by a main entry and a secondary entry off Skyway.

The proposed project would require County approval of a Planned Development Rezone; Vesting Tentative Subdivision Map; and a Minor Use Permit for development within the SH Overlay zone. Other approvals necessary to implement the proposed project would include an extraterritorial service agreement or annexation of the project site into the service area of the Paradise Irrigation District (PID), subject to approval by the Butte LAFCo. In the event that annexation is required, a Sphere of Influence (SOI) Amendment would be required to amend PID's SOI to include the project site. In the absence of an approved agreement or annexation to the PID, the County would require the formation of a County Service Area (CSA) to fund operations and maintenance of the water and wastewater systems.
The proposed project would require the following discretionary actions by Butte County:

- Certification of the EIR;
- Adoption of the Mitigation Monitoring and Reporting Program;
- Planned Development Rezone;
- Vesting Tentative Subdivision Map; and
- Minor Use Permit for development within the SH Overlay Zone.

It should be noted that additional Minor Use Permits and/or Conditional Use Permits may subsequently be required for specific commercial uses in the future.

In addition to the above County approvals, the project would also require the following approval by the Butte LAFCo, as a Responsible Agency:

- Extraterritorial service agreement or annexation of the project site into the PID service area for water and sewer service. If annexation is required, an SOI amendment would also be required to amend PID's SOI to include the project site.

Please refer to Chapter 3, Project Description, of this EIR for a detailed description of the proposed project and entitlements, as well as a full list of the project objectives.

1.4 EIR PROCESS

The EIR process begins with the decision by the lead agency to prepare an EIR, either during a preliminary review of a project or at the conclusion of an Initial Study. Once the decision is made to prepare an EIR, the lead agency sends a Notice of Preparation (NOP) to appropriate government agencies and, when required, to the State Clearinghouse (SCH) in the Office of Planning and Research (OPR), which will ensure that responsible and trustee State agencies reply within the required time. The SCH assigns an identification number to the project, which then becomes the identification number for all subsequent environmental documents on the project. Commenting agencies have 30 days to respond to the NOP and provide information regarding the scope and content of the Draft EIR and to provide notification regarding whether the agency will be a responsible agency or a trustee agency for the project.

Upon completion of the Draft EIR and prior to circulation to State and local agencies and interested members of the public, a notice of completion is filed with the SCH and a public notice of availability is published to inform interested parties that a Draft EIR is available for agency and public review. In addition, the notice provides information regarding the location where copies of the Draft EIR are available for public review and any public meetings or hearings that are scheduled. The Draft EIR is circulated for a minimum period of 45 days, during which time reviewers may submit comments on the document to the lead agency. The lead agency must respond to comments in writing. If significant new information, as defined in CEQA Guidelines Section 15088.5, is added to an EIR after public notice of availability is given, but before certification of the EIR, the revised EIR or affected chapters must be recirculated for an additional public review period with related comments and responses.

A Final EIR will be prepared, containing public comments on the Draft EIR and written responses to those comments, as well as a list of changes to the Draft EIR text necessitated by public comments, as warranted. The Final EIR will also include the Mitigation Monitoring and Reporting Program (MMRP) prepared in accordance with PRC Section 21081.6. Before approving a project, the lead agency shall certify that the EIR (consisting of the Draft EIR and Final EIR) has been completed in compliance with CEQA, and that the EIR has been presented to the decision-making body of the lead agency, which has reviewed and considered the EIR. The lead agency shall also certify that the EIR reflects the lead agency's independent judgment and analysis.

The findings prepared by the lead agency must be based on substantial evidence in the administrative record and must include an explanation that bridges the gap between evidence in the record and the conclusions required by CEQA. If the decision-making body elects to proceed with a project that would have unavoidable significant impacts, then a Statement of Overriding Considerations explaining the decision to balance the benefits of the project against unavoidable environmental impacts must be prepared.

1.5 SCOPE OF THE EIR

An Initial Study has not been prepared for the proposed project, as the EIR addresses all CEQA-required environmental topics identified in the CEQA Guidelines. In accordance with the CEQA Guidelines Appendix G Checklist, the following issue areas are addressed in the EIR:

- Aesthetics;
- Air Quality, Greenhouse Gas Emissions, and Energy;
- Biological Resources;
- Cultural and Tribal Cultural Resources;
- Geology and Soils;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;
- Land Use and Planning/Population and Housing;
- Noise;
- Public Services and Recreation;
- Transportation;
- Utilities and Service Systems; and
- Wildfire.

In addition to the foregoing resource areas, Chapter 5, Effects Not Found to be Significant, has been prepared to present information regarding resource areas that do not have the potential to be affected by the proposed project.

The evaluation of effects is presented on a resource-by-resource basis in Chapters 4.1 through 4.13 of the EIR. Each chapter is divided into the following four sections: Introduction, Existing Environmental Setting, Regulatory Context, and Impacts and Mitigation Measures. Impacts that are determined to be significant in Chapters 4.1 through 4.13, and for which feasible mitigation measures are not available to reduce those impacts to a less-than-significant level, are identified as *significant and unavoidable*. Chapter 6 presents a discussion of growth-inducing impacts, summary of cumulative impacts, and significant irreversible environmental changes associated with the project. Alternatives to the proposed project are discussed in Chapter 7 of the EIR.

1.6 DEFINITION OF BASELINE

According to CEQA Guidelines Section 15125, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project to provide the "baseline physical conditions" against which project-related changes could be compared. In addition, CEQA Guidelines Section 15126.2(a) states that an EIR shall identify and focus on the significant environmental effects of the proposed project. The CEQA Guidelines, Section 15126.2(a), states in pertinent part:

> An EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published, or where no notice of preparation is published, at the time environmental analysis is commenced.

Normally, the baseline condition is the physical condition that exists when the NOP is published. The NOP for the proposed project was published on February 23, 2022. Therefore, conditions existing at that time are considered to be the baseline against which changes that would result from the proposed project are evaluated. Impacts could include both direct and indirect physical changes to the baseline condition. The baseline condition for the proposed project site is described in Chapter 3, Project Description, of this EIR. The baseline conditions pertaining to each resource area are described in the "Existing Environmental Setting" section of the respective chapters of this EIR.

According to CEQA Guidelines Section 15125(d), the EIR shall discuss any inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans. An "applicable" plan is a plan that has already been adopted and, thus, legally applies to a project; draft plans need not be evaluated.[1] Since the NOP was circulated for public review, Butte County has updated its General Plan, first by adoption of the 2022-2030 Housing Element of the General Plan on February 22, 2023, and secondly by the adoption of the 2040 Butte County General Plan on March 28, 2023. However, at the time of the NOP, the adopted General Plan for Butte County was the 2030 Butte County General Plan. Thus, this EIR relies on the 2030 Butte County General Plan when determining whether any inconsistencies would occur between the proposed project and the applicable General Plan. It should be noted that, as part of the 2040 General Plan, the requirement of a golf course being part of the Tuscan Ridge development was removed. The

[1] Stephen L. Kostka and Michael H. Zischke. *Practice Under the California Environmental Quality Act, Volume 1*. Continuing Education of the Bar: March 2022, Section 12.27.

update also included a mix of residential uses, community commercial uses, and water and/or sanitary sewer facilities, along with approximately 49 acres of landscaped areas, as well as recreational and open space areas to include bicycle and pedestrian trails associated with the site.

1.7 NOTICE OF PREPARATION AND SCOPING

In accordance with CEQA Guidelines Section 15082, an NOP (see Appendix A) was circulated to the public, local, State and federal agencies, and other known interested parties for a 30-day public and agency review period from February 23, 2022 to March 24, 2022. The purpose of the NOP was to provide notification that an EIR for the proposed project was being prepared and to solicit public input on the scope and content of the document.

Pursuant to CEQA Guidelines Section 15082, Butte County held an NOP scoping meeting during the 30-day review period, on March 14, 2022, for the purpose of receiving comments on the scope of the environmental analysis to be prepared for the proposed project. Agencies and members of the public were invited to attend and provide input on the scope of the EIR. A total of 13 comment letters were received during the NOP public review period and verbal comments were received at the NOP scoping meeting. Two letters were received after the comment period ended. The comment letters are provided as Appendix B to this EIR. All comments were taken into consideration during the preparation of this EIR. A summary of the NOP comments received is provided in Section 1.8 below.

1.8 COMMENTS RECEIVED ON THE NOTICE OF PREPARATION

As noted above, Butte County received 13 comment letters during the NOP public review period, two of which were submitted by the same individual. In addition, two letters were received after the comment period ended. Verbal comments were also received at the public scoping meeting held on March 14, 2022. A copy of each letter is provided in Appendix B of this EIR. The comment letters received during the NOP public review period were authored by the following representatives of public agencies, groups, and individual members of the general public:

Public Agencies

- Native American Heritage Commission – Cameron Vela;
- Department of Toxic Substances Control – Gavin McCreary;
- Department of California Highway Patrol – E.L. Walker;
- California Department of Fish and Wildlife – Kelley Barker;
- Butte County LAFCo – Stephen Lucas.

Groups

- Paradise Rod and Gun Club – Chris Main.

Individuals

- Karen Laslo;
- Retta Wilmarth;
- Chris Main;
- Jared Geiser;
- Suellen Rowlison;
- Susan Tchudi;

- Addison Winslow; and
- Richard Harriman.

The following list, categorized by issue, summarizes the concerns brought forth in the comment letters and verbal comments received on the scope of the EIR:

Aesthetics	Concerns related to: • Light pollution from new light sources. • Impacts on scenic quality, specifically from the Scenic Highway Overlay Zone. • Impacts upon scenic corridors/vistas.
Air Quality, Greenhouse Gas Emissions, and Energy	Concerns related to: • Emissions resulting from construction activities. • Increased emissions resulting from project operation. • Increase in pollutants resulting from increased traffic. • Ensuring the effects of pollution do not target any particular communities.
Biological Resources	Concerns related to: • Impacts on rare, threatened, endangered or sensitive species. • Impacts on species protect by the Migratory Bird Treaty Act. • Habitats present on the project site.
Cultural and Tribal Cultural Resources	Concerns related to: • Potential for encountering previously unknown cultural, historical, or tribal resources at the project site.
Geology and Soils	Concerns related to: • Impacts related to soil erosion.
Hazards and Hazardous Materials	Concerns related to: • Impacts related to past and future use of hazardous materials on-site.
Hydrology and Water Quality	Concerns related to: • Effects of new water and wastewater infrastructure on downslope properties. • New drainage patterns. • Lead contamination in groundwater.
Land Use and Planning/Population and Housing	Concerns related to: • Consistency with local and State policies. • Conflicts resulting from a new County General Plan being approved. • Lack of affordable housing options. • Project consistency with the surrounding area, such as the adjacent Paradise Rod & Gun Club, as well as the nearby agricultural uses. • Growth-inducing impacts as a result of the project. • The creation of isolated communities. • Effect on nearby city's ability to achieve regional housing needs. • Compatibility with existing land use designations. • Effects of encouraging growth along an isolated scenic corridor.
Noise	Concerns related to: • Impacts of the Paradise Rod & Gun Club on the proposed project. • Impacts of operational noise on the surrounding habitats.

Public Services and Recreation	Concerns related to: • Residents of the project being dependent on Chico and Paradise provision of emergency services. • Impacts related to the need to transport students from the project site to schools.
Transportation	Concerns related to: • Traffic increases in the project vicinity. • Increase in vehicle miles traveled (VMT). • Increased demand on public transportation. • Consistency with local transportation goals. • Access from Skyway would impact traffic circulation and increase vehicle safety hazards. • Emergency ingress/egress.
Utilities and Service Systems	Concerns related to: • Sufficient water supply to support the project. • Waste disposal station operations. • The Paradise Irrigation District's ability to manage the project's utilities systems. • Consistency with Paradise Irrigation District Municipal Service Review and Sphere of Influence Amendment.
Wildfire	Concerns related to: • Increased wildfire risk. • Adverse impact on evacuation patterns.

All of these issues are addressed in this EIR, in the relevant sections identified in the first column.

1.9 DRAFT EIR AND PUBLIC REVIEW

This Draft EIR is being circulated for public review and comment for a period of 45 days. During this period, the general public, organizations, and agencies can submit comments to the lead agency, addressed to the person listed below, on the Draft EIR's accuracy and completeness. Release of the Draft EIR marks the beginning of a 45-day public review period pursuant to CEQA Guidelines Section 15105. The public can review the Draft EIR at the County's website at:

https://www.buttecounty.net/389/Notable-Projects

or at the following address during normal business hours:

Butte County Planning Division
7 County Center Drive
Oroville, CA 95965

Comments may be submitted both in written form and/or orally at the public hearing on the Draft EIR. Notice of the time and location of the hearing will be published in local newspapers, mailed to property owners and residents surrounding the project site, emailed to residents that have requested to be placed on the project's email notification list, posted on the County's website, and posted at and adjacent to the site prior to the hearing.

All comments or questions regarding the Draft EIR should be addressed to:

Kevin Valente, Contract Planner
Raney Planning and Management Inc.
Sacramento, CA 95834
(916) 372-6100
kvalente@raneymanagement.com

1.10 ORGANIZATION OF THE DRAFT EIR

The EIR is organized into the following sections:

Chapter 1 – Introduction

Provides an introduction and overview describing the intended use of the EIR and the review and certification process, as well as summaries of the chapters included in the EIR and summaries of the issues and concerns received from the public and public agencies during the NOP review period.

Chapter 2 – Executive Summary

Summarizes the elements of the project and the environmental impacts that would result from implementation of the proposed project, describes proposed mitigation measures, and indicates the level of significance of impacts after mitigation.

Chapter 3 – Project Description

Provides a detailed description of the proposed project, including the project's location, background information, objectives, technical characteristics, and the required entitlements and approvals.

Chapter 4 – Environmental Setting, Impacts, and Mitigation

Contains a project-level and cumulative analysis of environmental issue areas associated with the proposed project. The section for each environmental issue contains an introduction and description of the setting of the project site, identifies impacts, and recommends appropriate mitigation measures.

Chapter 5 – Effects Not Found to be Significant

Addresses the project's effects that were determined not to be significant. CEQA Guidelines Section 15128 requires a brief discussion explaining why these effects were not found to be significant.

Chapter 6 – Statutorily Required Sections

Provides discussions required by CEQA regarding impacts that would result from the proposed project, including a summary of the cumulative setting and associated impacts, potential growth-inducing impacts, significant irreversible changes to the environment, and significant and unavoidable impacts.

Chapter 7 – Alternatives Analysis

Provides a comparative analysis of the alternatives to the proposed project, their respective comparative environmental effects, and a determination of the environmentally superior alternative.

Chapter 8 – EIR Authors and Persons Consulted

Lists EIR and technical report authors who provided technical assistance in the preparation and review of the EIR.

Chapter 9 – References

Provides bibliographic information for all references and resources cited.

Appendices

The appendices to the EIR include the NOP, comments received during the NOP comment period, and technical reports prepared for the proposed project.

2. Executive Summary

2. EXECUTIVE SUMMARY

2.1 INTRODUCTION

The Executive Summary chapter of the EIR provides an overview of the proposed project (see Chapter 3, Project Description, for further details) and provides a table summary of the conclusions of the environmental analysis provided in Chapters 4.1 through 4.13. This chapter also summarizes the alternatives to the proposed project that are described in Chapter 7, Alternatives Analysis, and identifies the Environmentally Superior Alternative. Table 2-1 contains the environmental impacts associated with the proposed project, the significance of the impacts, the proposed mitigation measures for the impacts, and the significance of the impacts after implementation of the mitigation measures.

2.2 SUMMARY DESCRIPTION OF THE PROPOSED PROJECT

The project site consists of 163.12 acres of what was formerly the Tuscan Ridge Golf Course, located on the southeast side of Skyway, in unincorporated Butte County, between Chico and Paradise, California, and is identified by eight Assessor's Parcel Numbers (APNs) 040-520-104 through -11. The site is located approximately three miles southwest of the Town of Paradise, 0.5-mile northeast of the Rocky Bluffs residential subdivision, across Skyway, and four miles east of the City of Chico. Skyway, which is identified by the Butte County General Plan as a County Scenic Highway, is the sole roadway in the immediate project vicinity, and runs the entire length of the northwest site boundary.

The site is currently highly disturbed, with large graveled and/or paved areas void of vegetation, due to damage sustained immediately before, during, and after the 2018 Camp Fire. In mid-2018, prior to the Camp Fire, the site was used as a Pacific Gas and Electric Co. (PG&E) vegetation management camp. The site was subsequently burned during the wildfire, then leveled and graveled for use as a base camp and staging area by PG&E and ECC Constructors during the wildfire response. PG&E continued to use portions of the site as a base camp for debris removal until March 2020. Primary site access is provided through an existing driveway from Skyway, which is located near the center of the site, has boulder accent walls on either side, and two metal gates prohibiting public entry. A secondary access point from Skyway was created in the northeastern portion of the site during the site's use as a base camp, but has since been blocked off by boulders and is currently inaccessible. Three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Course currently exist on-site: a 2,440-square-foot (sf) grill building, an 1,830-sf clubhouse, and a Quonset hut. In addition, an existing potable water well and associated system, as well as an existing wastewater treatment system, including septic tanks, leach field, and disposal ponds, are located in the southwestern portion of the site.

The proposed project would include a Vesting Tentative Subdivision Map to subdivide the project into 165 single-family residential lots, six commercial use lots, 36.7 acres of open space, 4.1 acres of landscaped areas, 20.5 acres of roadway, and 49 acres of special utility district associated with the on-site water and sewer systems. The proposed 165 residential lots would range from 3,000 sf to 20,000 sf. The residences would generally be located in the center of the site, with the larger residential lots located nearest to the southern border of the project site, where expansive views are available to the south. The proposed project would also include 15.9 acres divided into six

lots for commercial uses. As currently designed, the proposed project would include an approximately 3,600-sf gas station/convenience store with up to 16 fuel dispensers and up to approximately 76,000 sf of commercial space, across one- and two-story buildings, along the primary site entrance. Additionally, the eastern portion of the project site would be developed with a mini-storage use with outdoor RV and boat storage. The mini-storage would offer up to approximately 53,000 sf of space for storage units. Furthermore, the existing clubhouse located in the southwestern portion of the project site would be demolished and replaced with a commercial use intended to serve the future residents of the proposed project, such as a community center.

The proposed project would also include utility improvements related to water, sanitary sewer, and storm drainage services.

The proposed project would include Paradise Irrigation District (PID) maintenance of the proposed project's water and sewer lines. PID maintenance of such facilities would be covered by an extraterritorial service agreement or annexation of the project site into the PID service area, which would be subject to approval by the Butte Local Agency Formation Commission (LAFCo). It should be noted that in the event that annexation is required, a Sphere of Influence (SOI) Amendment would be required to amend PID's SOI to include the project site. Upon approval of all pertinent permits, the PID would own, operate, and maintain the water and wastewater systems as an independent utility. The existing permits to own and operate the water distribution and wastewater system would be transferred to PID. In the absence of an approved agreement or annexation to the PID, the County would require the formation of a County Service Area (CSA) to fund operations and maintenance of the water and wastewater systems.

The proposed project would require Butte County approval of the following entitlements:

- Certification of the EIR;
- Adoption of the Mitigation Monitoring and Reporting Program;
- Planned Development Rezone;
- Vesting Tentative Subdivision Map; and
- Minor Use Permit for development within the Scenic Highway (SH) Overlay Zone.

It should be noted that additional Minor Use Permits and/or Conditional Use Permits may subsequently be required for specific commercial uses in the future.

In addition to the above County approvals, the project would also require the following approval by the Butte LAFCo, as a Responsible Agency:

- Extraterritorial service agreement or annexation of the project site into the PID service area for water and sewer service. If annexation is required, an SOI amendment would also be required to amend PID's SOI to include the project site.

Please refer to Chapter 3, Project Description, of this EIR for a detailed description of the proposed project and entitlements, as well as a full list of the project objectives.

2.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Under CEQA, a significant effect on the environment is defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the

project, including land, air, water, mineral, flora, fauna, ambient noise, and objects of historic or aesthetic significance. Mitigation measures must be implemented as part of the proposed project to reduce potential adverse impacts to a less-than-significant level. Such mitigation measures are noted in this EIR and are found in the following technical chapters: Aesthetics; Air Quality, Greenhouse Gas Emissions, and Energy; Biological Resources; Cultural and Tribal Cultural Resources; Geology and Soils; Hazards and Hazardous Materials; Hydrology and Water Quality; Transportation; Utilities and Service Systems; and Wildfire. The mitigation measures required for the proposed project, as presented in this EIR, will form the basis of the Mitigation Monitoring and Reporting Program. Any impact that remains significant after implementation of mitigation measures is considered a significant and unavoidable impact.

A summary of the proposed project impacts are identified for each technical chapter (Chapters 4.1 through 4.13) of the EIR is presented in Table 2-1 at the end of this chapter. In addition, Table 2-1 includes the level of significance of each impact, any mitigation measures required for each impact, and the resulting level of significance after implementation of mitigation measures for each impact.

2.4 SUMMARY OF PROJECT ALTERNATIVES

The following section presents a summary of the alternatives evaluated in this EIR for the proposed project, which include the following:

- No Project (No Build) Alternative;
- Minimum High Density Residential Alternative;
- Affordable Housing Alternative; and
- Reduced Footprint Alternative.

For a more thorough discussion of project alternatives that were evaluated in this EIR, including alternatives considered but dismissed, please refer to Chapter 7, Alternatives Analysis.

No Project (No Build) Alternative

Under the No Project Alternative, development of commercial and residential uses on the site would not occur. The project site would remain highly disturbed, with large graveled and/or paved areas void of vegetation, due to damage sustained immediately before, during, and after the 2018 Camp Fire. Vegetation on the site consists primarily of sparse ruderal vegetation, along with scattered oak and pine trees. An existing drainage ravine is located within the northwestern portion of the site, generally parallel with Skyway, and includes a culvert under the main access driveway, as well as under an existing access easement in the western portion of the site. In addition, three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Course currently exist on-site, and an existing potable water well and associated system, as well as an existing wastewater treatment system, including septic tanks, leach field, and disposal ponds, are located in the southwestern portion of the site. The No Project (No Build) Alternative would not meet any of the project objectives and would not meet the overall intent of the County's land use designation for this site. Because changes would not occur to the project site in the No Project (No Build) Alternative, environmental impacts would not occur.

Minimum High Density Residential Alternative

Under the Minimum High Density Residential Alternative, the portions of the project site identified in Figure 7-1 of this EIR by the colors red and blue would be developed with high-density multi-family residences, as compared to the currently proposed low-density residences. The portions

of the project site identified by the colors red and blue were selected for high-density residential development under the Minimum High Density Residential Alternative because, as shown in Figure 3-3 of this EIR, although the indicated areas are currently proposed for single-family residential units, those portions of the project site are already planned for smaller lot single-family residential (i.e., higher density) development than the rest of the project site. As such, the identified areas would be the most feasible areas for development at an even higher density. In addition, the portion of the site identified with red is located in proximity to the proposed commercial uses, and, thus, would be most suitable for high-density and affordable housing.

The Minimum High Density Residential Alternative would require the approval of a General Plan Amendment to change the General Plan land use designation of the indicated portions of the project site to High Density Residential (HDR). The HDR land use designation allows higher-density urban residential uses at densities of 14 to 20 dwelling units per acre (du/ac). The Minimum High Density Residential Alternative would include the development of the identified portions of the project site at a density of 14 du/ac, the minimum allowable density within the HDR land use designation. The 19 low-density residences proposed along the southern portion of the project site would not be modified as part of the Alternative. As such, a total of 424 HDR units and 19 low-density residential units would be developed, for a total of 443 overall residential units, which would result in an overall project residential density of 10.05 du/ac. In addition, the 190 HDR units located within the portion of the project site identified in Figure 7-1 of this EIR by the color red would be affordable housing units, which would constitute 42.89 percent of all proposed residences.

The proposed development area of the project site would not change under the Minimum High Density Residential Alternative, and all other site improvements required under the proposed project would still be developed under the Minimum High Density Residential Alternative, including an internal roadway network and utilities improvements. The Minimum High Density Residential Alternative would involve the same type and amount of commercial uses and open space areas as the proposed project.

The Alternative would still require the approval of a Planned Development Rezone, Vesting Tentative Subdivision Map, and Minor Use Permit for development within the SH Overlay Zone, as well as additional Minor Use Permits and/or Conditional Use Permits for specific commercial uses in the future. In addition, similar to the proposed project, the Alternative may require approval from the Butte LAFCo of an extraterritorial service agreement or annexation of the project site into the PID service area for water and sewer service. If annexation is required, a SOI amendment would also be required to amend PID's SOI to include the project site. Furthermore, although the Minimum High Density Residential Alternative would result in residential and commercial development, which would be generally similar to the proposed project, the Alternative would include the development of some high-density residential uses, some of which would be affordable housing rather than market rate, as well as more housing units than the proposed project. Therefore, Objectives 1, 2, 5, and 8 would only be partially met. The remaining project objectives would be met by the Minimum High Density Residential Alternative.

The Minimum High Density Residential Alternative would result in fewer impacts than the proposed project related to Transportation, greater impacts related to Aesthetics and Utilities and Service Systems, and similar impacts as the proposed project for the remaining issue areas for which project impacts were identified.

Affordable Housing Alternative

Similar to the Minimum High Density Residential Alternative, under the Affordable Housing Alternative, the portions of the project site identified in Figure 7-2 by the colors red and blue would be developed with high density multi-family residences, as compared to the currently proposed low-density residences. As noted above, the portions of the project site identified by the colors red and blue were selected for high-density residential development because those portions of the project site are already planned for smaller lot single-family residential (i.e., higher density) development than the rest of the project site. In addition, the portion of the site identified with red is located in proximity to the proposed commercial uses, and, thus, would be most suitable for high-density and affordable housing.

The Affordable Housing Alternative would require the approval of a General Plan Amendment to change the General Plan land use designation of the indicated portions of the project site to HDR. The HDR land use designation allows higher-density urban residential uses at densities of 14 to 20 du/ac. Similar to the Minimum High Density Residential Alternative, the Affordable Housing Alternative would include the development of the identified portions of the project site at a density of 14 du/ac, the minimum allowable density within the HDR land use designation. The 19 low-density residences proposed along the southern portion of the project site would not be modified as part of the Alternative. As such, a total of 424 HDR units and 19 low-density residential units would be developed, for a total of 443 overall residential units, which would result in an overall project residential density of 10.05 du/ac.

Under the Affordable Housing Alternative, the 358 HDR units located within the portion of the project site identified in Figure 7-2 by the color red would be affordable housing units, which would constitute 80.8 percent of all proposed residences. However, the HDR area identified by the color blue, as well as the 19 low-density residential units, would be market-rate housing.

The proposed development area of the project site would not change under the Affordable Housing Alternative, and all other site improvements required under the proposed project would still be developed under the Affordable Housing Alternative, including an internal roadway network and utilities improvements. The Affordable Housing Alternative would also include the same type and amount of the commercial uses and open space areas as the proposed project.

In addition, the Alternative would still require the approval of a Planned Development Rezone, Vesting Tentative Subdivision Map, and Minor Use Permit for development within the SH Overlay Zone, as well as additional Minor Use Permits and/or Conditional Use Permits for specific commercial uses in the future. In addition, similar to the proposed project, the Alternative may require approval from the Butte LAFCo of an extraterritorial service agreements or annexation of the project site into PID service area for water and sewer service. Furthermore, although the Affordable Housing Alternative would result in residential and commercial development, which would be generally similar to the proposed project, the Alternative would include the development of some high-density residences, some of which would be affordable housing rather than market rate, as well as more housing units than the proposed project. Thus, Objectives 1, 2, 5, and 8 would only be partially met. The remaining project objectives would be met by the Affordable Housing Alternative.

The Affordable Housing Alternative would result in fewer impacts related to Transportation, greater impacts related to Aesthetics and Utilities and Service Systems, and similar impacts as the proposed project for the remaining issue areas for which project impacts were identified.

Reduced Footprint Alternative

Similar to the proposed project, under the Reduced Footprint Alternative, the project site would be developed with a total of 165 single-family residential units. However, whereas the proposed project would include 165 single-family residential lots, under the Reduced Footprint Alternative, the proposed residential development would consist of a mix of single-family residential types such as duplexes, triplexes, and/or townhomes. While the Reduced Footprint Alternative would still involve 165 single-family residential units, the units would be clustered, allowing for a reduced development area. Under the Reduced Footprint Alternative, development would be set back further from Skyway, outside of the SH Overlay Zone. Therefore, a Minor Use Permit for development within the SH Overlay Zone would not be required for the Alternative.

All other site improvements required under the proposed project would still be developed under the Reduced Footprint Alternative, including an internal roadway network and utilities improvements. The Reduced Footprint Alternative would also include the same type and amount of commercial development as the proposed project. In addition, because the residential portion of the project would result in a reduced footprint as compared to the proposed project, more of the site would be preserved as open space.

In addition, the Alternative would still require the approval of a Planned Development Rezone, Vesting Tentative Subdivision Map, and additional Minor Use Permits and/or Conditional Use Permits for specific commercial uses in the future. In addition, similar to the proposed project, the Alternative may require approval from the Butte LAFCo of an extraterritorial service agreement or annexation of the project site into PID service area for water and sewer service. If annexation is required, an SOI Amendment would also be required to amend PID's SOI to include the project site. Furthermore, because the Reduced Footprint Alternative would generally result in similar development as the proposed project, all project objectives would be met.

The Reduced Footprint Alternative would result in fewer impacts than the proposed project related to Aesthetics, Biological Resources, Cultural and Tribal Cultural Resources, Geology and Soils, and Hydrology and Water Quality, and similar impacts related to Air Quality, GHG Emissions, and Energy, Hazards and Hazardous Materials, Transportation, and Utilities and Service Systems. The significant and unavoidable impacts related to Air Quality, GHG Emissions, and Energy and Transportation that were identified for the proposed project would still occur under the Alternative and would not be reduced. In addition, impacts related to Wildfire would be greater under the Alternative. However, the Reduced Footprint Alternative would avoid the significant and unavoidable impact related to Aesthetics.

Environmentally Superior Alternative

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. Section 15126(e)(2) of the CEQA Guidelines requires that an environmentally superior alternative be designated and states, "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." The No Project (No Build) Alternative would be considered the environmentally superior alternative, because the project site is assumed to remain in its current condition under the alternative. Consequently, none of the impacts resulting from the proposed project would occur under the Alternative.

The No Project (No Build) Alternative would not meet any of the project objectives and would not provide housing on a disturbed site that has been designated for housing in the County's General

Plan. Although the Minimum High Density Residential Alternative and the Affordable Housing Alternative would both include residential and commercial development similar to the proposed project, the Alternatives would include the development of high-density residential uses, some of which would be affordable housing rather than market rate, as well as more housing units than the proposed project. Thus, Objectives 1, 2, 5, and 8, which specify market rate units and/or single-family residences, would only be partially met. Both the Minimum High Density Residential Alternative and the Affordable Housing Alternative would meet the remaining project objectives. Because the Reduced Footprint Alternative would generally result in similar development as the proposed project, all project objectives would be met.

As discussed in detail in the Alternatives Analysis chapter of this EIR and presented in Table 7-1 therein, both the Minimum High Density Residential Alternative and the Affordable Housing Alternative would result in fewer impacts related to Transportation, greater impacts related to Aesthetics and Utilities and Service Systems, and similar impacts as the proposed project for the remaining issue areas for which project impacts were identified. Neither of these two Alternatives would avoid the significant and unavoidable impacts related to Aesthetics, Air Quality, GHG Emissions, and Energy, and Transportation. The Reduced Footprint Alternative would result in fewer impacts than the proposed project related to five of the 10 issue areas for which project impacts were identified; similar impacts related to four of the issue areas; and greater impacts related to one of the issue areas. Although the significant and unavoidable impacts related to Air Quality, GHG Emissions, and Energy and Transportation would still occur under the Reduced Footprint Alternative, this Alternative would avoid the significant and unavoidable impact related to Aesthetics.

Although the Reduced Footprint Alternative would result in fewer impacts than the proposed project related to five of the 10 issue areas and would avoid the significant and unavoidable impact related to Aesthetics, impacts related to Wildfire would be greater, and the significant and unavoidable impacts related to Air Quality, GHG Emissions, and Energy and Transportation that were identified for the proposed project would still occur under the Alternative and would not be reduced. As discussed in further detail in the Alternatives Analysis chapter, the alternatives considered in this EIR are primarily designed to reduce VMT impacts, and, thus, GHG emissions and climate change, as compared to the proposed project, due to the potential consequences of climate change for Butte County and the County's high priority of reducing such impacts. Both the Minimum High Density Residential Alternative and the Affordable Housing Alternative would result in a reduction in VMT, and an associated reduction in GHG emissions, as compared to the proposed project. The Affordable Housing Alternative would result in a greater reduction in VMT than the Minimum High Density Residential Alternative, and would, thus, result in a greater reduction in VMT and GHG emissions as compared to the proposed project. Therefore, the Affordable Housing Alternative would be considered the Environmentally Superior Alternative.

2.5 AREAS OF CONTROVERSY

The CEQA Guidelines, Section 15123(b), require that this EIR consider areas of controversy known to the lead agency, including issues raised by agencies and the public. Areas of controversy that were identified in NOP comment letters on the proposed project should be considered, as well. The areas of known controversy for the proposed project relate to the following:

- Increases in light pollution;
- Impacts to scenic quality;

- Increases in air quality and greenhouse gas emissions;
- Impacts to wildlife and plant habitats;
- Impacts to tribal cultural resources;
- Impacts associated with soil erosion;
- Past or future use of hazardous materials on the project site;
- Impacts to water quality and drainage;
- Consistency with local and State policies;
- Impacts to adjacent land uses;
- Growth-inducing impacts;
- Creation of isolated communities;
- Traffic increases along surrounding roadways;
- Provision of emergency services;
- Increased utility service demand;
- Increased wildfire risk;
- Effects on evacuation patterns;
- Transport of students to schools;
- Increase in vehicle miles traveled (VMT);
- Vehicle safety hazards due to access along Skyway; and
- Sufficient water supply.

Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
4.1. Aesthetics			
4.1-1 Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway.	LS	*None required.*	N/A
4.1-2 Have a substantial adverse effect on a scenic vista or, in a non-urbanized area, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point) or, in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality.	SU	*4.1-2 In conjunction with submittal of improvement plans, the project applicant shall submit a Landscape Plan, prepared by a licensed landscape contractor, landscape architect, landscape designer, or horticulturist, for review and approval by the Butte County Department of Development Services. The Landscape Plan shall include the information identified in Section 24-114 of the Butte County Code of Ordinances, as well as the following additional requirements:* • *Installation of vegetation screening along the proposed development areas closest to Skyway, which could be combined with earthen berms, walls with earth tones, or a combination of both.* ○ *The vegetation screening shall be in the form of native tree plantings and may be satisfied with the replacement plantings required as part of Mitigation Measure 4.3-9(c) set forth within this EIR. Any plantings used for screening purposes shall be a*	SU

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		minimum of one gallon and include larger stock to the extent available. ○ *The applicant shall consider the co-benefit of noise barriers required pursuant to conditions of approval to support this requirement.* • *All development on lots closest to Skyway shall maintain a consistent material and color theme.* • *All screening trees within the 350-foot setback from Skyway shall be native and drought-tolerant.*	
4.1-3 Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	S	*4.1-3 Prior to Improvement Plan approval, the project applicant shall submit a lighting plan for the project to Butte County Community Development Department for review and approval, demonstrating that proposed lighting is Dark-Sky compliant as specified by the International Dark-Sky Association. The lighting plan shall include, but not necessarily be limited to, the following provisions:* • *Shield or screen lighting fixtures to direct the light downward and prevent light spill on adjacent properties;* • *Place and shield or screen area lighting needed for construction activities and/or security so as not to disturb residential areas;* • *For public lighting, prohibit the use of light fixtures that are of unusually high intensity or brightness (e.g., harsh mercury vapor, low-*	LS

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Summary of Impacts and Mitigation Measures

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				pressure sodium, or fluorescent bulbs) or that blink or flash; and • *Use appropriate building materials (such as low-glare glass, low-glare building glaze or finish, neutral, earth-toned colored paint and roofing materials), and appropriate signage to prevent light and glare from adversely affecting adjacent properties.*	
4.1-4	**Long-term changes in visual character associated with development of the proposed project in combination with future development viewable from Skyway.**	SU	*4-4*	*Implement Mitigation Measure 4.1-2.*	SU
4.1-5	**Creation of new sources of light or glare associated with development of the proposed project in combination with future development viewable from Skyway.**	CC	*4-5*	*Implement Mitigation Measure 4.1-3.*	LCC
4.2. Air Quality, Greenhouse Gas Emissions, and Energy					
4.2-1	**Conflict with or obstruct implementation of the applicable air quality plan during project construction.**	LS	*None required.*		N/A
4.2-2	**Conflict with or obstruct implementation of the applicable air quality plan during project operation.**	S	*4.2-2*	*The project applicant shall participate in an Off-site Mitigation Program coordinated through BCAQMD to offset the project's contribution of ROG and NOX pollutants that exceed the BCAQMD thresholds of significance. The total payment for the proposed*	LS

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		project is estimated to be up to $495,057.24, which would be sufficient to reduce the total ROG and NOX emissions of the proposed project to below the BCAQMD applicable thresholds of significance. Prior to issuance of the first certificate of occupancy for each phase of development, the project applicant shall pay the fee amount proportionate to said phase to BCAQMD, or, if the project is not phased, the total payment for the project shall be made prior to issuance of the first certificate of occupancy. Proof of payment(s) shall be submitted to the Butte County Development Services Department. The final details of the Off-site Mitigation Program shall be determined in coordination with, and reviewed and approved by, the BCAQMD and Butte County Development Services Department.	
4.2-3 Expose sensitive receptors to substantial pollutant concentrations.	LS	*None required.*	N/A
4.2-4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	LS	*None required.*	N/A
4.2-5 Result in the inefficient or wasteful use of energy, or conflict with a State or local plan for renewable energy or energy efficiency.	LS	*None required.*	N/A
4.2-6 Result in a cumulatively considerable net increase of	CC and S	*4.2-6 Implement Mitigation Measure 4.2-2.*	LCC

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Table 2-1
Summary of Impacts and Mitigation Measures

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	any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).				
4.2-7	**Generation of GHG emissions that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.**	CC	*4.2-7*	*Implement Mitigation Measure 4.11-3.*	CC and SU
	4.3. Biological Resources				
4.3-1	**Have a substantial adverse effect, either directly or through habitat modifications, on special-status plant species.**	S	*4.3-1(a)*	*An appropriately timed botanical survey (May through June) conducted by a qualified botanist within the vicinity of the development footprint shall be conducted within the project site to determine presence or absence of special-status plant species, inclusive of Butte County Checkerbloom and veiny monardella. If feasible, the survey shall be paired with reference population inspections of known populations in the region to ensure that the timing of the survey is suitable. If the survey determines that special-status plant species are absent, further mitigation shall not be required. If a population of a special-status plant species is identified within 50*	LS

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		feet from the development footprint of the project site, mitigation shall be required. • *Avoidance: In consultation with a qualified botanist, and to the maximum extent feasible, the project shall be reconfigured in such a way as to avoid substantial direct and indirect impacts to the species. Avoidance measures shall include a permanent disturbance-free buffer around the plant population(s). The size of the buffer will be determined by the botanist, based on the species, scope of the population, and type of construction disturbance occurring near the plant population. The disturbance-free buffer shall be no less than 10 feet and no greater than 100 feet.* • *Compensation: If open space that will not be developed as part of the project contains a healthy population of the impacted plant species, and the areas comprise equal or more area and equal or more plants than the impact footprint of the project, then onsite preservation can be used as mitigation.* *The mitigation site shall be confirmed by a qualified botanist to support populations of the impacted species and protected in perpetuity with a deed restriction, conservation easement, or other such vehicle which*	

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		prohibits future disturbance. Also, a qualified botanist should prepare a Preservation Plan for the site containing, at a minimum, the following elements: ○ *A monitoring plan and performance criteria for the preserved plant population;* ○ *A description of remedial measures to be performed if performance criteria are not met; and* ○ *A description of maintenance activities to be conducted on the site during the maintenance period including weed control, trash removal, irrigation, and control of herbivory by livestock and wildlife.* *If onsite preservation is not feasible, offsite preservation can be used if an equivalent population occurs within an offsite parcel that can be deed restricted or otherwise encumbered to prevent future impacts. The same criteria for preservation of an onsite population would be required for offsite preservation. If neither suitable onsite populations nor offsite preservation is available, mitigation can be achieved through restoration of an onsite population and*	

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		subsequent onsite preservation as discussed above. *4.3-1(b) If special-status plant species are identified during the botanical survey, then prior to commencement of ground-disturbing activities, a qualified botanist shall conduct an environmental awareness training for all construction personnel. The training shall include information on the identification of special-status plant species, including Butte County Checkerbloom and veiny monardella, as well as their habitat, other sensitive natural communities, required practices before the start of construction, general measures that are being implemented to conserve the species as they relate to the proposed project, penalties for non-compliance, and boundaries of the development footprint and of the permitted disturbance zones. Supporting materials containing training information shall be prepared and distributed to construction personnel during the training. Upon completion of training, all construction personnel shall sign a form stating that they have attended the training and understand all of the measures. Proof of training completion shall be kept on-file with the project applicant, as well as submitted to the Butte County Department of Development Services.* *4.3-1(c) If the project cannot be designed to avoid impacts to a rare plant population, and if onsite populations within preserved open space are not sufficient to*	

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		offset the impact, then onsite restoration and preservation shall be utilized to establish and preserve an onsite population that is equivalent to or greater in extent than the impacted population. A Habitat Restoration Plan shall be developed for the species by a qualified botanist and/or restoration ecologist and approved by the County prior to the start of project construction. The objective of the mitigation measure would be to replace the special-status plant numbers and area lost during project implementation. The mitigation could include increasing the extent of a smaller onsite population within the preserved open space portions of the site. The Habitat Restoration Plan shall be based on the best available science and ecological research for the impacted species. The restoration plan shall include a monitoring program wherein the mitigation site shall be monitored for a period of 10 years (e.g., Years 1-3, 5, 7, and 10) from the date of initial restoration installation. At a minimum, the Habitat Restoration Plan shall contain the following: • *Identification of appropriate locations on-site as determined by the botanist or plant ecologist (i.e., areas with habitat types, suitable soils, aspect, hydrology, etc.) to restore lost plant populations.* • *A description of any additional plant species to be used in the mitigation. For example, it is known that Butte County checkerbloom*	

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		occurs near blue oak trees, including under the canopies of such trees. Therefore, planting of additional blue oak trees to replace those that were lost during site impacts (i.e., trees lost due to development of the golf course and fire recovery camp and/or due to the Camp Fire) and thus increase the potential habitat for this species may be a critical element for restoration of Butte County checkerbloom. • *A description of the propagation and planting techniques to be employed in the restoration effort, including evidence that the plant materials are provided from local sources (onsite is preferred) and grown under sanitary nursery conditions.* • *A timetable for implementation of the restoration plan.* • *A monitoring plan, performance criteria, and final success criteria.* • *Adaptive management measures to be performed if initial restoration measures are unsuccessful in meeting the performance criteria.* • *A site maintenance plan. The site maintenance plan may include weed control, irrigation, control of herbivory by livestock and wildlife, and public education to reduce potential tromping or vandalism impacts.*	

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		• *Documentation of any research used to prepare the Habitat Restoration Plan.*	
4.3-2 Impacts to coast horned lizard either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. Based on the analysis below, the impact is *less than significant*.	LS	*None required.*	N/A
4.3-3 Impacts to special-status birds either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.	LS	*None required.*	N/A
4.3-4 Impacts to bats either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.	S	*4.3-4(a) A detailed bat survey shall be conducted by a qualified bat biologist within 30 days of any tree removal or partial or complete building demolition to determine if bats are roosting or breeding in the onsite trees or buildings prior to the work. The biologist shall look for individuals, guano, staining, and vocalization by direct observation. Ideally, the survey should be conducted during the times of year when bats are active, from March 1 to April 15 and from August 15 to October 15; however, the survey*	LS

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		could be conducted at any point during the year. If bats are detected between October 15 and March 1, demolition shall be delayed until after March 1 or until a qualified biologist determines that bats are absent. An initial survey could be conducted to provide early warning if bats are present, but a follow-up survey will be necessary within 30 days of demolition. If bats are not observed to be roosting or breeding in the structures, then further action shall not be required, and tree removal and/or demolition can proceed. *If a non-breeding bat colony is found in the trees or structures to be demolished, the individuals shall be humanely evicted using accepted methods. For example, humane eviction can include opening up the tree canopy or partial dismantlement of the buildings prior to demolition. This eviction shall be conducted under the direction and supervision of a qualified biologist to ensure that no harm or "take" would occur to any bats as a result of tree removal or demolition activities. Although not likely, if a maternity colony is detected, then a minimum 25-foot construction-free buffer shall be established around the structure and remain in place until it has been determined by the bat biologist that the nursery is no longer active.* *4.3-4(b) If protected bat species are identified during the bat survey, then prior to commencement of tree removal*	

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			or demolition activities, a qualified bat biologist shall conduct an environmental awareness training for all construction personnel. The training shall include information on the identification of protected bat species, including Townsend's big-eared bat, as well as their habitat, other sensitive natural communities, required practices before the start of tree removal or demolition activities, general measures that are being implemented to conserve the species as they relate to the proposed project, penalties for non-compliance, and boundaries of the development footprint and of the permitted disturbance zones. Supporting materials containing training information shall be prepared and distributed to personnel during the training. Upon completion of training, all personnel shall sign a form stating that they have attended the training and understand all of the measures. Proof of training completion shall be kept on-file with the project applicant, as well as submitted to the Butte County Department of Development Services.	
4.3-5 Impacts to migratory nesting birds and raptors either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.	S	*4.3-5(a)*	*If initial site disturbance activities, including tree removal, grading, and mobilization of project equipment and materials, would occur during the breeding season (February 1 to August 31), a qualified biologist shall conduct pre-construction surveys for nesting migratory birds onsite and within 250 feet of the construction footprint, including laydown areas and ingress and egress, where accessible. The survey shall occur no later than 14*	LS

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		days of the onset of ground disturbances if such disturbances are to commence during the nesting bird season. If site impacts will be phased such that impacts to some areas will occur more than 14 days after impacts to other areas, additional surveys shall be conducted so that nesting bird surveys correspond with the timing of impacts such that all areas of the site are surveyed within 14 days of the direct implementation of impacts within those areas. Results of the survey shall be submitted to the Butte County Department of Development Services. If nesting migratory birds are not found, further mitigation is not required. *If a nesting migratory bird is detected during the surveys, an appropriate construction-free buffer shall be established. If active raptor nests are found, construction activities shall not take place within 500 feet of the nest until the young have fledged. If active songbird nests are found, a 100-foot non-disturbance buffer shall be established. The buffer shall be monitored periodically by the biologist to ensure compliance, and the buffer shall not be removed until the biologist has confirmed that the nest(s) is complete and young of the nest have fledged.* *4.3-5(b) If nesting migratory birds are identified during the pre-construction surveys, then prior to commencement of construction activities, a qualified*	

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		biologist shall conduct an environmental awareness training for all construction personnel. The training shall include information on the identification of nesting migratory birds, as well as their habitat, other sensitive natural communities, required practices before the start of construction activities, general measures that are being implemented to conserve the species as they relate to the proposed project, penalties for non-compliance, and boundaries of the development footprint and of the permitted disturbance zones. Supporting materials containing training information shall be prepared and distributed to personnel during the training. Upon completion of training, all personnel shall sign a form stating that they have attended the training and understand all of the measures. Proof of training completion shall be kept on-file with the project applicant, as well as submitted to the Butte County Department of Development Services. *4.3-5(c) When it has been determined that the size of the non-disturbance buffer requires the project biologist to monitor the nest, that monitoring shall include observations about the bird's behaviors relative to the construction activities. Should construction activities cause a nesting bird to do any of the following in a way that would be considered a result of construction activities, then the exclusionary buffer shall be increased such that activities are far enough from the nest to stop the following agitated*	

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			behavior(s): vocalize, make defensive flights at intruders, get up from a brooding position, or fly off the nest. The revised non-disturbance buffer shall remain in place until the chicks have fledged or as otherwise determined by a qualified biologist in consultation with the County. *Construction activities may only resume within the non-disturbance buffer after a follow-up survey by the project biologist has been conducted and a report has been prepared indicating that the nest (or nests) is no longer active, and that new nests have not been identified.*	
4.3-6 Impacts to ringtail either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.	S	*4.3-6(a)*	*A ringtail survey shall be conducted by a qualified biologist within 30 days prior to any tree removal or partial or complete building demolition to determine if ringtails are denning and/or breeding in the onsite trees or buildings prior to the start of construction work. The survey can be paired with the bat survey, given the overlap in suitable habitat types (Mitigation Measure 4.3-3). The biologist shall look for individuals, scat, and prints, and they may utilize tools such as camera scopes to investigate suitable crevices such as tree hollows. If ringtails are detected during the times of year when ringtails may be breeding, from March 15 through July 31, and a natal den (i.e., an active breeding den) is detected, tree removal and demolition must be delayed within a 300-foot disturbance-free buffer of the natal den until after a qualified biologist determines that*	LS

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		ringtails are absent. The buffer shall be delineated with bright and secure fencing such as chain-link and/or snow fencing. *If a non-breeding ringtail den is found in the trees or structures to be demolished, construction or demolition actions shall not commence until the ringtail has self-relocated. Self-relocation when a natal den is not present can be encouraged by utilizing methods that are considered safe for ringtails such as implementing work up to 50 feet from the den. If no ringtails are observed to be denning in these trees or structures, further action shall not be required, and tree removal and/or demolition can proceed.* *4.3-6(b)* *If ringtails are identified during the ringtail and/or bat survey, then prior to commencement of any tree removal or partial or complete building demolition, a qualified bat biologist shall conduct an environmental awareness training for all construction personnel. The training shall include information on the identification of ringtail, as well as their habitat, other sensitive natural communities, required practices before the start of any tree removal or partial or complete building demolition, general measures that are being implemented to conserve the species as they relate to the proposed project, penalties for non-compliance, and boundaries of the development footprint and of the	

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		permitted disturbance zones. Supporting materials containing training information shall be prepared and distributed to personnel during the training. Upon completion of training, all personnel shall sign a form stating that they have attended the training and understand all of the measures. Proof of training completion shall be kept on-file with the project applicant, as well as submitted to the Butte County Department of Development Services.	
4.3-7 Have a substantial adverse effect on riparian habitat or other sensitive natural community, or State or Federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	S	*4.3-7 Prior to the initiation of ground-disturbing activities, the project applicant shall submit a formal wetland delineation to the USACE for verification to determine the extent of all hydrological features, their jurisdictional status, and the extent of any impacts of the currently proposed project. A summary of the wetland delineation shall be submitted to the Butte County Department of Development Services.* *If jurisdictional waters are not identified on the site, further mitigation is not required. However, if the project is unable to avoid features deemed to be under the jurisdiction of either the USACE or RWQCB, the proposed project shall comply with all State and federal laws and regulations related to disturbance of such jurisdictional waters, such as obtaining a Section 404 Clean Water Act permit from the USACE, Section 401 water quality certification from the RWQCB, and/or Section 1602 Streambed Alteration Agreement from the CDFW prior to*	LS

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		initiating any construction within the identified area of jurisdictional water. The project applicant shall comply with all conditions set forth by agency permit conditions, which could include purchase of suitable credits at an approved wetland mitigation bank or creation/enhancement of suitable aquatic features on or off-site. Compensation measures should include habitat replacement at a minimum of a 1:1 replacement-to-loss ratio, as well as reseeding of vegetation in temporarily disturbed areas. It is expected that all compensation measures can be accommodated at one or more locations along the channel or elsewhere onsite in areas that are proposed for preservation as open space. If these areas cannot fully accommodate the compensation measures, then offsite restoration would be necessary. Compensation measures should either result in the creation of new habitat as replacement for habitat lost or enhance the quality of existing habitat for native plants and wildlife. A fully executed copy of the permit(s) shall be provided to the Butte County Department of Development Services.	
4.3-8 Interfere substantially with the movement of any 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.	LS	*None required.*	N/A

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4.3-9 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	S	*4.3-9(a)* *Avoidance Measures: Prior to approval of Improvement Plans, to the extent feasible and to the satisfaction of the Butte County Department of Development Services, the project shall be designed to reduce the number of living native trees that are removed. All trees that may potentially be retained and that occur near the project footprint shall be mapped and incorporated into project plans to ensure that trenching and grading do not impact the trees. The location of each tree and their corresponding critical root zones (CRZ), approximately 1.25 times the dripline area of the tree, shall be included in project plans.* *4.3-9(b)* *Minimization Measures: Once the grading and demolition plans are finalized, and prior to grading and tree removal, a certified arborist shall review the final grading plan and prepare a Tree Resources Protection Plan for review and approval by the Butte County Department of Development Services that identifies which trees require protection measures during project buildout. The plan shall incorporate tree protection measures outlined below to protect trees that occur near the project footprint, including any areas used for material storage, laydown, parking, ingress/egress, or soil borrowing, from development impacts.* • *Each tree to be retained that is near the project development footprint shall be*	LS

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		enclosed by a "tree protection zone," to be established prior to site grading and retained for the duration of construction. Where possible, tree protection zones shall be designed to encompass an area approximately 1.5 times the dripline area of the trees. The zones shall be marked with sturdy and highly visible fencing material. Off-limits signs shall be posted on the fences that state that equipment is not to enter the tree protection zone. Signs will not be posted on the trunk of any trees. Fencing shall be maintained and not removed during the project development period. The type of fencing to be utilized will be at the direction of the consulting arborist. • *Stockpiling of materials, soils, and equipment storage shall not be permitted within the fenced tree protection zone.* • *Any activities that must take place within the dripline of retained trees shall be done by hand or with light equipment that does not cause soil compaction. If roots will be impacted, a certified arborist shall be present to provide guidance on the action.* • *Any limb or root pruning to be conducted on retained trees shall be approved and supervised by the consulting arborist and shall follow best management practices developed by the International Society of Arboriculture. If*	

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		feasible, any pruning work within the vicinity of the trees shall be scheduled for fall or winter, when the trees are dormant or semi-dormant. • *Should any roots need to be severed during construction, any exposed or cut roots shall be covered with burlap, soil, or mulch as soon as possible until the native soil can be backfilled. Clean and sharp tools (chainsaw or axe) shall be used for pruning roots. Equipment such as excavators shall not be used for root pruning, as the damage from such equipment can be extensive.* • *Supplemental irrigation shall be applied to retained trees as determined by the consulting arborist.* • *If any of the retained trees should be damaged during the construction phase, they shall be evaluated at the earliest possible time by the consulting arborist so that appropriate measures can be taken.* • *The project applicant shall provide a copy of the final Tree Resources Protection Plan to all contractors and project managers, including the architect, civil engineer, and landscape designer or architect, as well as the Butte County Department of Development Services.* *4.3-9(c)* *<u>Compensation Measures</u>: To mitigate for the trees that are removed as part of project buildout, replacement trees shall be accommodated within the*	

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		open space of the site. Replacement trees shall be installed, maintained, and monitored semi-annually for a period of 7-years (e.g., Years 1-3, 5, and 7). A Habitat Restoration Plan shall be prepared by a qualified restoration ecologist for review and approval by the Butte County Department of Development Services to guide the tree planting effort. The Habitat Restoration Plan shall include a summary of impacts and mitigations, and it should define a planting strategy, a maintenance approach, monitoring methods, and adaptive management measures to overcome potential interim setbacks and failures (e.g., from vandalism, herbivory, or general dieback). The plan shall include success criteria that must be met for the restoration/tree planting effort to be considered completely implemented. Success criteria shall include, at a minimum, survival of a minimum of 60% of the required number of replacement trees by Year 5, and 50% of the required number of replacement trees by Year 7. The required replacement trees are determined by an accounting of the number of trees that are removed from the site and their corresponding replacement ratios. All native trees with a diameter at breast height (DBH) 5 inches or greater shall be replaced at a 3:1 ratio. Trees shall be sourced from seed stock within the planting site's watershed (preferred) or County to the extent practicable. If container grown trees that were grown from seed sources located in the southern Cascade	

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			Mountain foothills are available, they can be used in place of contract grown trees. *For the Tuscan Ridge Project, the replacement plantings constitute a blue oak woodland habitat restoration/enhancement. If onsite areas of the site cannot accommodate the required numbers of trees, an offsite location shall be identified to accommodate the remainder of the blue oak woodland habitat restoration. This means, the offsite location shall be appropriate for restoration and/or enhancement of blue oak woodlands.*	
4.3-10 Cumulative loss of habitat for special-status species.	CC and S	*4.3-10*	*Implement Mitigation Measures 4.3-1(a) through 4.3-1(c), 4.3-4(a) and 4.3-4(b), 4.3-5(a) through 4.3-5(c), 4.3-6(a) and 4.3-6(b), 4.3-7, and 4.3-9(a) through 4.3-9(c).*	LCC
4.4. Cultural Resources				
4.4-1 Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5.	LS	*None required.*		N/A
4.4-2 Cause a substantial adverse change in the significance of a unique archeological resource pursuant to CEQA Guidelines, Section 15064.5 or disturb human remains, including those interred outside of dedicated cemeteries.	S	*4.4-2*	*The following requirements shall be included through a notation on all project improvement plans prior to their approval and shall be implemented during project construction, to the satisfaction of the County Engineer:* *In the event subsurface deposits believed to be cultural or human in origin are discovered during*	LS

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		construction, all work shall halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for precontact and historic archaeologists, shall be retained by the applicant to evaluate the significance of the find. The following notations on project improvement plans shall apply, depending on the nature of the find: • *If the professional archaeologist determines that the find does not represent a cultural resource, work may resume immediately, and agency notifications are not required.* • *If the professional archaeologist determines that the find does represent a cultural resource from any time period or cultural affiliation, he or she shall immediately notify Butte County, the applicable landowner, and a traditionally and culturally affiliated California Native American tribe. Appropriate treatment measures that preserve or restore the character and integrity of a find may be, but are not limited to, processing materials for reburial, minimizing handling of historical objects, leaving objects in place within the landscape, construction monitoring of further construction activities, and/or returning objects to a location within the project area where they will not be subject to future impacts. Work shall not resume within the no-*	

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		work radius until the determination is made through consultation, as appropriate, that the site either: 1) is not a historical resource under CEQA, as defined in Section 15064.5(a) of the CEQA Guidelines; or 2) that the treatment measures have been completed to the County's satisfaction. • *If the find includes human remains, or remains that are potentially human, the professional archaeologist shall ensure reasonable protection measures are taken to protect the discovery from disturbance (Assembly Bill [AB] 2641). The archaeologist shall notify Butte County and the Butte County Coroner (per Section 7050.5 of the Health and Safety Code). The provisions of Section 7050.5 of the California Health and Safety Code, Section 5097.98 of the California PRC, and AB 2641 shall be implemented. If the Coroner determines the remains are Native American, the Coroner shall notify the NAHC, which then shall designate a Native American Most Likely Descendant (MLD) for the proposed project (Section 5097.98 of the PRC). The designated MLD shall have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC shall mediate (Section 5097.94 of the*	

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		PRC). If an agreement is not reached, the landowner shall rebury the remains where they shall not be further disturbed (Section 5097.98 of the PRC). The burial shall also include either recording the site with the NAHC or the appropriate information center, using an open space or conservation zoning designation or easement, or recording a reinternment document with Butte County (AB 2641). Work shall not resume within the no-work radius until the County, through consultation as appropriate, determines that the treatment measures have been completed to their satisfaction.	
4.4-3 Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is: listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources	S	*4.4-3 Implement Mitigation Measure 4.4-2.*	LS

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	as defined in Public Resources Code section 5020.1(k); or a resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1.				
4.4-4	**Cause a cumulative loss of cultural and tribal cultural resources.**	LS		*None required.*	N/A
	4.5. Geology and Soils				
4.5-1	**Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, and landslides.**	LS		*None required.*	N/A
4.5-2	**Result in substantial soil erosion or the loss of topsoil.**	S	*4.5-2*	*Prior to issuance of any grading permits, the contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) for review and approval by the CVRWQCB. The contractor shall file the Notice of Intent (NOI) and associated fee to the SWRCB. The SWPPP shall serve as the framework for identification, assignment, and implementation of BMPs. The contractor shall implement BMPs to*	LS

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		reduce pollutants in stormwater discharges to the maximum extent practicable. Construction (temporary) BMPs for the project may include, but are not limited to: fiber rolls, straw bale barrier, straw wattles, storm drain inlet protection, velocity dissipation devices, silt fences, wind erosion control, stabilized construction entrance, hydroseeding, revegetation techniques, and dust control measures. The SWPPP shall be submitted to both the County Director of Public Works and the County Engineer for review and approval and shall remain on the project site during all phases of construction. Following implementation of the SWPPP, the contractor shall subsequently demonstrate the SWPPP's effectiveness and provide for necessary and appropriate revisions, modifications, and improvements to reduce pollutants in stormwater discharges to the maximum extent practicable.	
4.5-3 Be located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse, or be located on expansive soil, as defined in Table 18-1B of the	S	*4.5-3 Prior to approval of Improvement Plans, a qualified geotechnical engineer, in coordination with the County Engineer, shall review the Improvement Plans and specifications to assess whether all recommendations from the Geotechnical Engineering Report1 prepared for the proposed project have been properly implemented and shall evaluate if additional recommendations are required. The recommendations include, but are not limited to:*	LS

1 Wallace Kuhl & Associates. *Geotechnical Engineering Report Tuscan Ridge Subdivision.* May 6, 2021.

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	Uniform Building Code, creating substantial risks to life or property.		• *Site clearing during demolition and subgrade preparation to expose firm and stable soils;* • *Grading to address areas containing undocumented fill;* • *The use of continuous and/or isolated spread foundations that extend at least 12 inches below lowest adjacent soil grade; and* • *Several recommendations regarding the materials used for fill, such as requiring the use of compactable, well-graded, granular soils with a Plasticity Index not exceeding 15, an Expansion Index of 20 or less, and particles less than three inches in maximum dimension.*	
4.5-4	**Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.**	LS	*None required.*	N/A
4.5-5	**Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.**	LS	*None required.*	N/A
4.5-6	**Cumulative increase in the potential for geological related impacts and hazards.**	LS	*None required.*	N/A

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4.6. Hazards and Hazardous Materials			
4.6-1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	LS	*None required.*	N/A
4.6-2 Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.	S	*4.6-2(a) Prior to initiation of ground-disturbing activities, the project applicant shall complete testing of on-site soils along the former rail alignment for contaminants including CAM 17 metals, organochlorine pesticides, total petroleum hydrocarbons, and polycyclic aromatic hydrocarbons. In addition, on-site soils in the vicinity of the ASTs and the mobile fuel area shall be tested for total petroleum hydrocarbons, BTEX, and fuel oxygenates. All on-site soil testing shall be conducted in accordance with U.S. Environmental Protection Agency (USEPA) testing methods. In the event that soils are determined to be hazardous by exceeding the USEPA Regional Screening Levels, the soil shall be transported and disposed of at a Class I facility permitted by the California Department of Toxic Substances Control. Hazardous waste shall be transported for disposal by a licensed hazardous waste hauler under a uniform hazardous waste manifest. The results of soil sampling and analysis, as well as verification of proper remediation and disposal, if warranted, shall be submitted to the Butte County Community*	LS

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		Development Services Department for review and approval. *4.6-2(b)* *Prior to initiation of ground-disturbing activities, the project applicant shall obtain documentation of on-site stained soil removal activities associated with the mobile fueling area from PG&E environmental services. Proof of obtainment shall be submitted to the Butte County Community Development Services Department for review and approval.* *If documentation of on-site stained soil removal activities cannot be obtained, the project applicant shall complete testing of on-site soils within the vicinity of mobile fueling area in accordance with the requirements set forth in Mitigation Measure 4.6-2(a). The results of soil sampling and analysis, as well as verification of proper remediation and disposal, if warranted, shall be submitted to the Butte County Community Development Services Department for review and approval.*	
4.6-3 Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment	LS	*None required.*	N/A

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4.6-4 Cumulative exposure to potential hazards and increases in the transport, storage, and use of hazardous materials.	LS	*None required.*	N/A
4.7. Hydrology and Water Quality			
4.7-1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during construction.	S	*4.7-1 Implement Mitigation Measure 4.5-2.*	LS
4.7-2 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during operations.	S	*4.7-2(a) Prior to approval of final project improvement plans, a detailed Best Management Practice (BMP) and water quality maintenance plan shall be submitted to the County Director of Public Works, and the County Engineer for review and approval. The BMP and water quality maintenance plan shall meet the standards of the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook for New Development and Redevelopment. Site design measures, source control measures, hydromodification management, and Low Impact Development (LID) standards, as necessary, shall be incorporated into the design and shown on the improvement plans.* *4.7-2(b) Prior to approval of final project improvement plans, the project applicant shall obtain a new permit from the SWRCB and/or Butte County Environmental*	LS

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		Health Division to allow use of the new on-site water system as a community water system. All SWRCB and/or Butte County Environmental Health Division permit requirements shall be incorporated into the project design and shown on the improvement plans. Proof of compliance shall be submitted to the Butte County Director of Public Works for review and approval. *4.7-2(c)* *Prior to approval of final project improvement plans, the project applicant shall obtain a new Waste Discharge Requirements (WDR) Permit from the SWRCB for the proposed improvements to the existing on-site wastewater treatment system. All WDR Permit requirements shall be incorporated into the project design and shown on the improvement plans. Proof of compliance shall be submitted to the Butte County Director of Public Works for review and approval.* *4.7-2(d)* *Prior to the completion of construction, the applicant shall prepare and submit, for the County's review, an acceptable Stormwater Control Operation and Maintenance Plan identifying the maintenance entity for the project's storm drainage system and maintenance requirements for the review and approval by the Butte County Director of Public Works. Typical routine maintenance consists of the following:*	

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		• *Limit the use of fertilizers and/or pesticides. Mosquito larvicides shall be applied only when absolutely necessary.* • *Visually inspect for ponding water to ensure that filtration is occurring.* • *After all major storm events, inspect basins to ensure that the system is functioning as intended and is not clogged.* • *Continue general landscape maintenance, including pruning and cleanup throughout the year.* • *Irrigate throughout the dry season. Irrigation shall be provided with sufficient quantity and frequency to allow plants to thrive.* • *Excavate, clean and or replace and screen or filter media to ensure ongoing infiltration.*	
4.7-3 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	LS	*None required.*	N/A
4.7-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a	S	*4.7-4 As part of the Improvement Plan submittal process, the preliminary drainage report provided during environmental review shall be submitted in final format. The final drainage report may require more*	LS

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	stream or river or through the addition of impervious surfaces, in a manner which would: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or 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.		*detail than that provided in the preliminary report, and will be reviewed in concert with the Improvement Plans to confirm conformity between the two. The report shall be prepared by a Registered Civil Engineer and shall, at a minimum, include: written text addressing existing conditions; the effects of the proposed improvements; all appropriate calculations; watershed maps; changes in flows and patterns; and proposed on- and off-site improvements to accommodate flows from the project. The report shall identify water quality protection features and methods to be used during construction, as well as long-term post-construction water quality measures. The final drainage report shall be prepared in conformance with the requirements set forth by Butte County at the time of Improvement Plan submittal and shall be approved by the County Director of Public Works, and the County Engineer.*	
4.7-5	**Cumulative impacts related to the violation of water quality standards or waste discharge requirements, and impacts resulting from the alteration of existing drainage patterns.**	LS	*None required.*	N/A
4.8. Land Use and Planning/Population and Housing				
4.8-1	**Physically divide an established community.**	LS	*None required.*	N/A
4.8-2	**Cause a significant environmental impact due to a**	LS	*None required.*	N/A

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	conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.			
4.8-3	**Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure).**	LS	*None required.*	N/A
4.8-4	**Cause a significant cumulative environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.**	LS	*None required.*	N/A
4.8-5	**Cumulative substantial unplanned population growth.**	LS	*None required.*	N/A
	4.9. Noise			
4.9-1	**Generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise**	LS	*None required.*	N/A

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	ordinance, or applicable standards of other agencies.			
4.9-2	**Generation of a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.**	LS	*None required.*	N/A
4.9-3	**Generation of excessive groundborne vibration or groundborne noise levels.**	LS	*None required.*	N/A
4.9-4	**Generation of a substantial permanent increase in ambient noise levels associated with the proposed project in combination with cumulative development.**	LCC	*None required.*	N/A
	4.10. Public Services and Recreation			
4.10-1	**Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times,**	LS	*None required.*	N/A

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or other performance objectives for fire protection services.			
4.10-2 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police protection services.	LS	*None required.*	N/A
4.10-3 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for schools.	LS	*None required.*	N/A
4.10-4 Result in substantial adverse physical impacts associated	LS	*None required.*	N/A

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with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for parks; increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.			
4.10-5 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant	LS	*None required.*	N/A

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environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for other public facilities.			
4.10-6 Cumulative impacts to public services.	LS	*None required.*	N/A
4.11. Transportation			
4.11-2 Conflict with a program, plan, ordinance, or policy addressing the circulation system related to bicycle and pedestrian facilities.	S	*4.11-1(a) Prior to recordation of the first map/phase of development, the project applicant shall provide an irrevocable offer of dedication to Butte County and any future public or non-profit assignees (e.g., Butte County Association of Governments, Paradise Park and Recreation District, etc.) for a public recreational access easement along the project frontage with Skyway as shown in Figure 4.11-6 below [***see Chapter 4.11 of the Draft EIR for this figure***], from the eastern to the western boundaries of the project site. Total dedication width shall be 28 to 30 feet in order to provide 8 to 10 feet of paved surface consistent with Caltrans Class I bicycle facility standards, along with 10 feet of width on either side for shoulders, signs, and maintenance vehicles, subject to Butte County Public Works Department review and approval.* *4.11-1(b) Prior to map recordation, the project applicant shall construct or bond for improvements related to construction of bicycle lanes (Class II) or better (e.g., Class I or IV) on the internal collector street*	LS

N/A = *Not Applicable*; LS = *Less Than Significant*; LCC = *Less Than Cumulatively Considerable*; S = *Significant*; CC = *Cumulatively Considerable*; SU = *Significant and Unavoidable*

Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures		Level of Significance After Mitigation
			connecting to the on-site Class I bicycle facility. The project applicant shall construct the bicycle lanes concurrent with initial site improvements.	
4.11-2 Conflict with a program, plan, ordinance, or policy addressing the circulation system related to transit facilities.	S	*4.11-2*	*Prior to map recordation, the project applicant shall include an easement to develop the frontage along Skyway for future deceleration and acceleration lanes, as well as a designated location for a bus turnout within the development near the primary project entrance on "Street H" and north of the roundabout at the terminus of Street H (i.e., on northbound Street H approximately 400 feet from the Skyway and Street H intersection or as close to the retail uses as feasible) or another acceptable location identified through coordination with BCAG. Street H shall be designed to accommodate bus turnarounds. At buildout of 165 housing units or as determined by BCAG in an unmet transit needs analysis, the project applicant shall install a bus turnout at the agreed-upon location in conformance with City of Chico Standard Plan No. S-28, or BCAG standards if adopted prior to construction. In conjunction with the installation of the bus turnout, the applicant shall construct the deceleration and acceleration lanes at the project's main access along Skyway to the satisfaction of BCAG and Butte County Public Works Department.*	LS
4.11-3 Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).	S	*4.11-3*	*Prior to issuance of building permits, the project applicant shall develop a TDM Plan for review and approval by the Butte County Department of Public Works. The TDM Plan shall contain VMT reduction*	SU

N/A = *Not Applicable*; LS = *Less Than Significant*; LCC = *Less Than Cumulatively Considerable*; S = *Significant*; CC = *Cumulatively Considerable*; SU = *Significant and Unavoidable*

Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		strategies identified in the Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (California Air Pollution Control Officers Association [CAPCOA], 2021) or an equivalent reference where the effectiveness of strategies is supported by substantial evidence. The TDM Plan may include, but would not necessarily be limited to, the CAPCOA strategies presented in Table 4.11-3 below.	

Table 4.11-3
Applicable CAPCOA Strategies

Category	Measure	Strategy Description	VMT Mitigation Reduction Potential
Neighborhood Design	T-21-A/B	Implement Carshare Program (Conventional or Electric)	0 – 0.18% of vehicle travel in the community, based upon number of vehicles deployed and project VMT
Trip Reduction Programs	T-7	Implement Commute Trip Reduction Marketing	0 – 4 4.0% of vehicle travel in the community, based upon employee commute VMT.
	T-9	Implement Subsidized or Discounted Transit Program	0 – 5.5% of vehicle travel in the community, based upon employee/resident vehicles accessing the site.
	T-23	Provide Community-Based Travel Planning	0 – 2.3% of vehicle travel in the community, based upon residences in community

Sources: ***Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (CAPCOA, 2021), Fehr & Peers, 2022.***

N/A = *Not Applicable*; LS = *Less Than Significant*; LCC = *Less Than Cumulatively Considerable*; S = *Significant*; CC = *Cumulatively Considerable*; SU = *Significant and Unavoidable*

Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
4.11-4 Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) or result in inadequate emergency access.	S	*4.11-4(a)* *Prior to building permit issuance for the 55th single-family unit, commercial uses, or any combination thereof that results in the equivalent of 548 daily trips or more, whichever comes first, the project applicant shall construct a three-way traffic signal at the intersection of Santa Rosa Road and Skyway, and frontage improvements necessary to support the signal. The configuration shall maintain the existing lane configuration on Skyway, with two through lanes and one turn storage lane in both directions. Acceleration lanes shall be eliminated due to the timed control. Separate left- and right-turn lanes shall be provided at the primary project access to better serve egressing project trips. Frontage improvements shall consist of appropriate advanced warning signage, flashing beacons, pavement markings, and intersection lighting on Skyway to increase the visibility of the signal and alert drivers that a stop is approaching at the primary access point. Design and installation of improvements shall be in compliance with the California Highway Design Manual and the California Manual on Uniform Traffic Control Devices. In no case shall these improvements be delayed until the certificate of occupancy for the 55th single family home or commercial uses.* *4.11-4(b)* *Prior to recordation of the first map/phase of development, the applicant shall construct or enter into a subdivision improvement agreement to secure*	LS

N/A = *Not Applicable*; LS = *Less Than Significant*; LCC = *Less Than Cumulatively Considerable*; S = *Significant*; CC = *Cumulatively Considerable*; SU = *Significant and Unavoidable*

Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		*future improvements at the secondary access road and Skyway, which shall include a deceleration and acceleration lane as shown conceptually in Figure 4.11-7 [***see Chapter 4.11 of the Draft EIR for this figure***]. The intersection shall include a paved emergency vehicle access median cut-out on Skyway, as well as a contrasting surface treatment within the triangular area between the right-turn deceleration lane and acceleration lane that delineates space, as shown in Figure 4.11-7. Secondary access improvements shall be constructed prior to the issuance of a certificate of occupancy for the first unit under Phase C, D, E, or F of the project, whichever comes first, as shown on the project phasing plan.* *4.11-4(c) Prior to issuance of any grading or site improvement permits, the applicant shall submit a Construction Traffic Management Plan to address the potential for high-speed conflicts at the Santa Rosa Road/Skyway intersection. The Traffic Management Plan shall use the 85th percentile prevailing speed of 70 miles per hour as noted in the Tuscan Ridge Safety Assessment and Intersection Control Evaluation Technical Memorandum prepared for the project in order to determine design parameters. The plan shall address both ingress and egress, including prohibiting right turns, and how left turns will be accomplished.*	

N/A = *Not Applicable*; LS = *Less Than Significant*; LCC = *Less Than Cumulatively Considerable*; S = *Significant*; CC = *Cumulatively Considerable*; SU = *Significant and Unavoidable*

Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
4.12. Utilities and Service Systems			
4.12-1 Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.	S	*4.12-1 Implement Mitigation Measures 4.7-2(b) and 4.7-2(c).*	LS
4.12-2 Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, single dry, and multiple dry years.	LS	*None required.*	N/A
4.12-3 Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.	S	*4.12-3 Implement Mitigation Measure 4.7-2(c).*	LS
4.12-4 Generate solid waste in excess of State or local standards, or in excess of the capacity of	LS	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

	Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
	local infrastructure, or otherwise impair the attainment of solid waste reduction goals, or conflict with federal, State, and local management and reduction statutes and regulations related to solid waste.			
4.12-5	**Increase in demand for utilities and service systems associated with the proposed project, in combination with future buildout of the Butte County General Plan.**	LS	*None required.*	N/A
	4.13. Wildfire			
4.13-1	**Substantially impair an adopted emergency response plan or emergency evacuation plan.**	LS	*None required.*	N/A
4.13-2	**Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.**	S	*4.13-2* *In conjunction with the submittal of and prior to the approval of Improvement Plans, the applicant shall submit a Vegetation Management Plan (VMP), as defined in the FRRP prepared for the proposed project, for review and approval by Butte County Fire, BCCFA, and the Butte County Department of Development Services. Proof of compliance with the VMP shall be submitted for review and approval by Butte County Fire annually.*	LS
4.13-3	**Require the installation or maintenance of associated**	LS	*None required.*	N/A

N/A = *Not Applicable*; LS = *Less Than Significant*; LCC = *Less Than Cumulatively Considerable*; S = *Significant*; CC = *Cumulatively Considerable*; SU = *Significant and Unavoidable*

Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.			
4.13-4 Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.	LS	*None required.*	N/A
4.13-5 Increase in wildfire risk attributable to the proposed project, in combination with cumulative development.	LS	*None required.*	N/A

N/A = *Not Applicable*; LS = *Less Than Significant*; LCC = *Less Than Cumulatively Considerable*; S = *Significant*; CC = *Cumulatively Considerable*; SU = *Significant and Unavoidable*

3. Project Description

3. PROJECT DESCRIPTION

3.1 INTRODUCTION

The Project Description chapter of the EIR provides a comprehensive description of the Tuscan Ridge Project (proposed project) in accordance with CEQA Guidelines Section 15124. A detailed description of the project location, project setting and surrounding uses, project objectives, project components, and required project approvals is presented below.

3.2 PROJECT LOCATION

The project site consists of 163.12 acres of what was formerly the Tuscan Ridge Golf Course, located on the southeast side of Skyway, in unincorporated Butte County, between Chico and Paradise, California, and is identified by eight Assessor's Parcel Numbers (APNs) 040-520-104 through -111 (see Figure 3-1). The site is located approximately three miles southwest of the Town of Paradise, 0.77-mile northeast of the Rocky Bluffs residential subdivision, across Skyway, and four miles east of the City of Chico. Skyway, which is identified by the Butte County General Plan as a designated scenic route, is the sole roadway in the immediate project vicinity, and runs the entire length of the northwest site boundary. State Route (SR) 99 lies approximately four miles to the west and SR 191 is approximately five miles to the east (see Figure 3-2).

3.3 PROJECT SETTING AND SURROUNDING LAND USES

Section 15125 of the CEQA Guidelines requires an EIR to include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the Notice of Preparation (NOP) is published, from a local and regional perspective. Knowledge of the existing environmental setting is critical to the assessment of environmental impacts. Pursuant to CEQA Guidelines Section 15125, the description of the environmental setting shall not be longer than necessary to understand the potential significant effects of the project.

The following sections describe the existing setting of the project site and the surrounding land uses in the project vicinity. Please note that detailed discussions of the existing setting in compliance with CEQA Guidelines Section 15125, specific to each environmental resource area, are included in each corresponding technical chapter of this EIR.

Site Characteristics

The site is currently highly disturbed, with large graveled and/or paved areas void of vegetation, due to damage sustained immediately before, during, and after the 2018 Camp Fire. In mid-2018, prior to the Camp Fire, the site was used as a Pacific Gas and Electric Co. (PG&E) vegetation management camp. The site was subsequently burnt during the wildfire, then leveled and graveled for use as a base camp and staging area by PG&E and ECC Constructors during the wildfire response. PG&E continued to use portions of the site as a base camp for debris removal until March 2020. Primary site access is provided through an existing driveway from Skyway, which is located near the center of the site and has boulder accent walls on either side with two metal gates prohibiting public entry. A secondary access point from Skyway was created in the northeastern portion of the site during the site's use as a base camp, but has since been blocked off by boulders and is currently inaccessible.

Figure 3-1
Regional Location

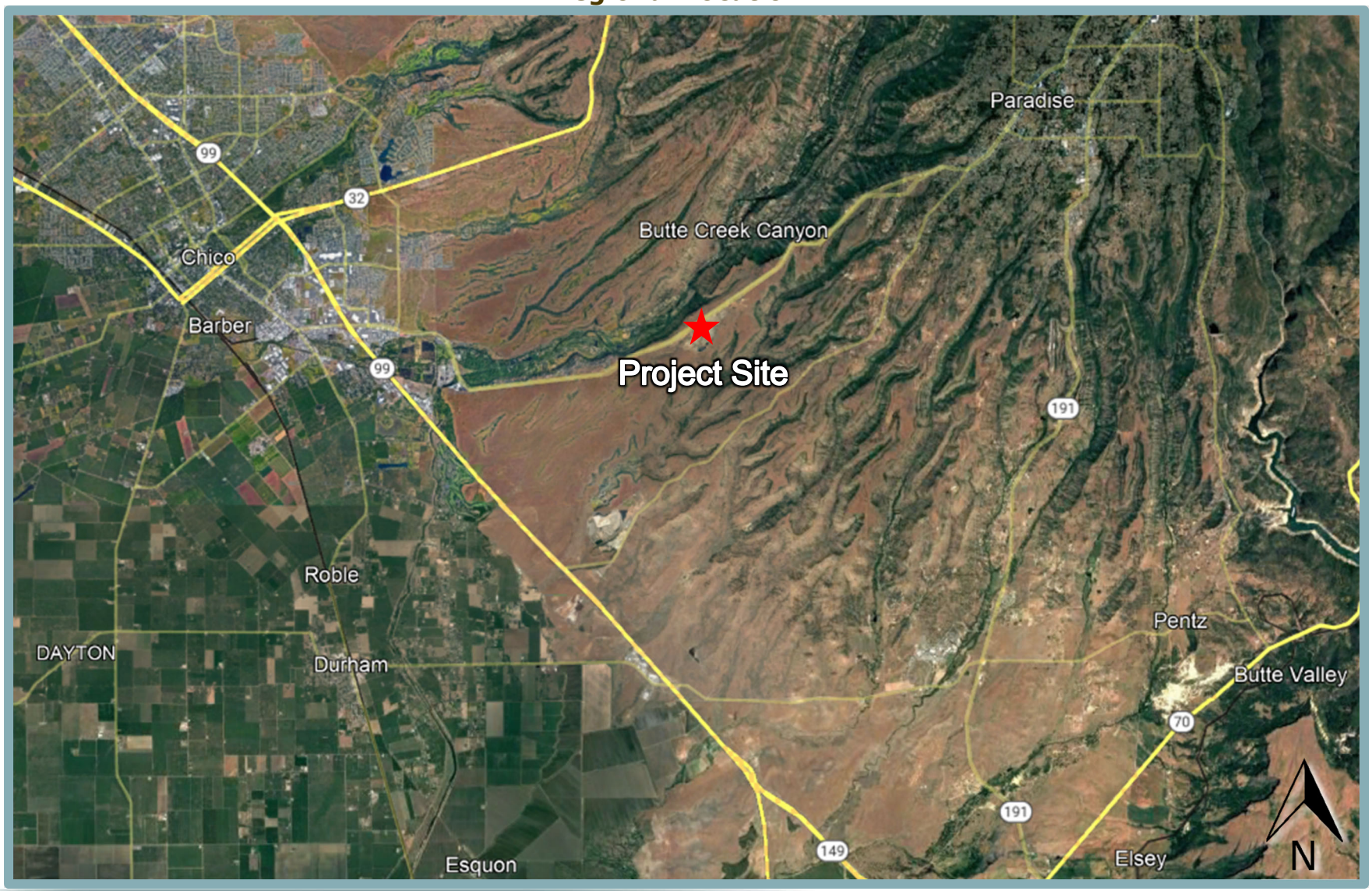
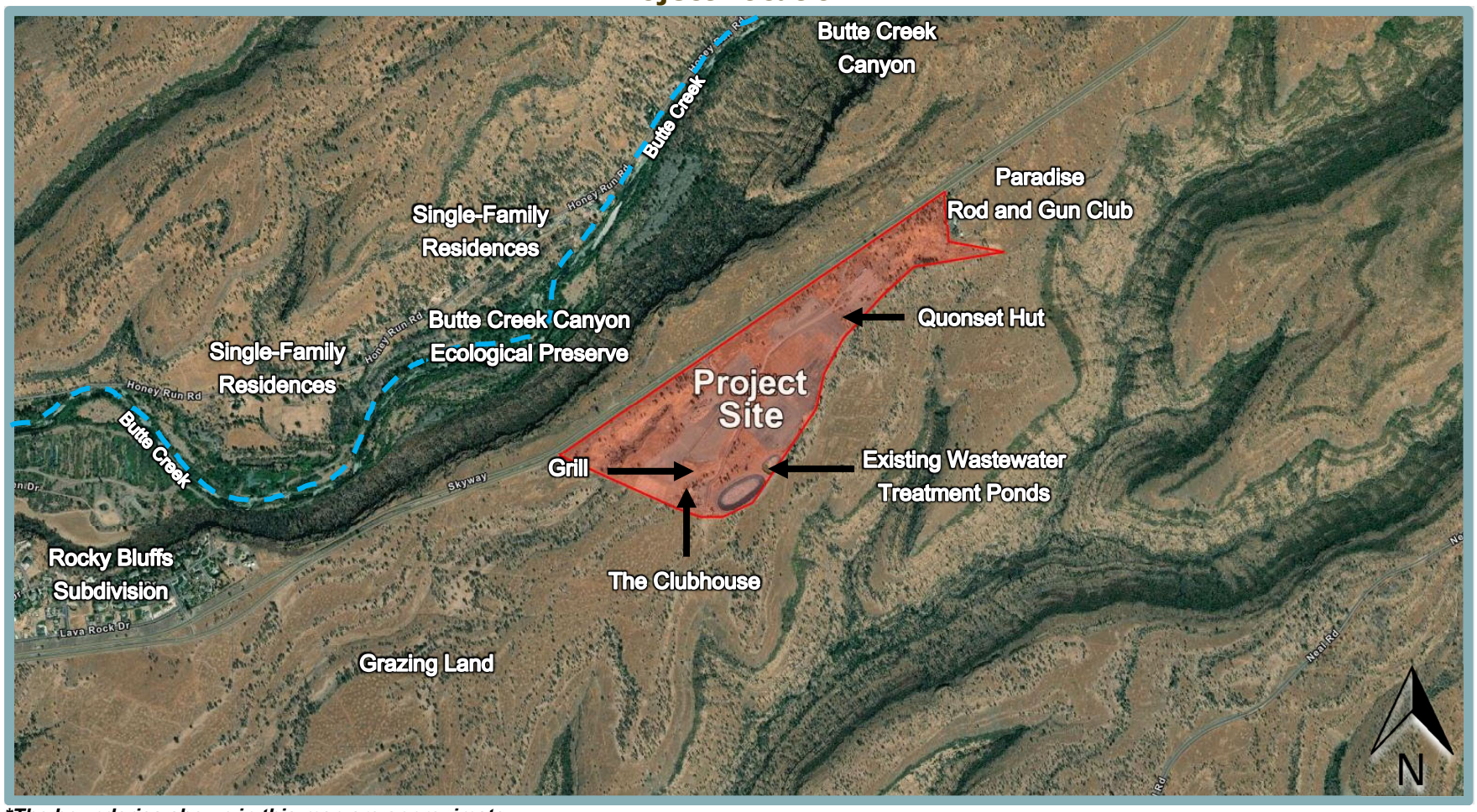


Figure 3-2
Project Location



**The boundaries shown in this map are approximate.*

A small area near the secondary access point location is currently being leased by Henkels & McCoy for construction materials storage and a portable administrative building. The terrain of the project site is varied from flat to gently sloped, with elevations ranging from approximately 650 feet above mean sea level (amsl) in the west to approximately 925 feet amsl in the east. Vegetation on the site consists primarily of sparse ruderal vegetation, along with scattered oak and pine trees. An existing drainage ravine is located within the northwestern portion of the site, generally parallel with Skyway, and includes a culvert under the main access driveway, as well as under an existing access easement in the western portion of the site. Generally following the alignment of the ravine within the northern portion of the site is an existing meandering path associated with the prior use of the site as a golf course. An existing outfall is located near the westernmost border of the site. A number of easements are present throughout the project site, including the access easement within the western portion of the site for the adjacent agricultural property, as well as power utility easements across the site. The access easement is currently used only occasionally by the adjacent property owner to move small pieces of equipment to and from their property.

Three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Course currently exist on-site: a 2,440-square-foot (sf) grill building, an 1,830-sf clubhouse, and a Quonset hut. In addition, an existing potable water well and associated system, including two 10,000-gallon aboveground storage tanks, as well as an existing wastewater treatment system, including septic tanks, leach field, and disposal ponds, are located in the southwestern portion of the site. The existing potable water and wastewater treatment systems are described in further detail in the Utilities section of the Project Components description below.

The project site currently has a County of Butte General Plan land use designation of Planned Unit Development (PUD) and is zoned Planned Development. In adopting the Butte County 2030 General Plan, the County prepared an EIR in 2010 and a supplemental EIR (SEIR) in 2012. Both the 2010 EIR and 2012 SEIR assume that the project site will be built out with a golf course and 165 dwelling units (see, e.g., 2010 Draft EIR, pg. 3-49 [Table 3-5]; and 2012 Draft SEIR, pg. 3-45 [Table 3-5]). However, the recently adopted Butte County General Plan 2040 includes the following language regarding the project site:

> The Tuscan Ridge PUD will determine the mix of uses that will occur in a 165-acre area along the Skyway at the site of the former Tuscan Ridge Golf Course. A mix of residential uses, community commercial uses, and water and/or sanitary sewer facilities provided by a public or private entity may be developed in this area. Additionally, approximately 49 acres of the site would consist of landscaped areas, as well as recreational and open space areas to include bicycle and pedestrian trails.

Skyway is identified by the Butte County 2030 General Plan as a County-designated scenic route. In addition, the area extending 350 linear feet from the centerline of the roadway is considered to be a Scenic Highway (SH) Overlay Zone and is subject to the requirements of Section 24-42 of the Butte County Code.

Surrounding Land Uses

The project site is predominantly bounded by Skyway to the north and large undeveloped parcels to the east, south, and west, with the exception of Paradise Rod & Gun Club, which is located adjacent to the northeast border of the site. The Paradise Rod & Gun Club consists of two buildings with associated parking spaces, and two outdoor shooting ranges. Butte Creek is located to the north of, and runs roughly parallel to, Skyway. The Butte Creek Ecological Preserve

is also located north of the site, across Skyway, with Butte Creek Canyon located further to the northeast. Butte Creek and the Butte Creek Ecological Preserve are separated from the project site by Skyway and an approximately 380-foot decline in elevation.

The land to the south of the project site is designated Agriculture (AG) in the General Plan and zoned Agriculture (AG) with a minimum parcel size of 40 acres and a maximum of one unit per parcel (AG-40). The land across Skyway, north of the project site, is designated as Foothill Residential (FR) and zoned Foothill Residential with a maximum of one unit per 20-acre parcel (FR-20). The area designated FR is separated from the project site by an approximately 2,700-foot distance and an approximately 434-foot decline in elevation. The Rocky Bluffs subdivision, located approximately 4,100 feet to the southwest of the project site, is designated and zoned Medium Density Residential (MDR), which allows for a maximum density of six dwelling units per acre.

3.4 PROJECT OBJECTIVES

The following project objectives have been developed by the project applicant:

1. Establish an approximately 163-acre mixed-use market rate development that incorporates smart growth principles;
2. Develop a site in the County with approximately 165 market rate single-family residential units and approximately 132,600 square feet of retail/commercial development.
3. Develop a site in the County with existing utility infrastructure and existing capacity to promote efficient use of existing resources;
4. Develop a previously developed site to minimize impacts to agricultural, open space, and habitat areas within Butte County;
5. Provide a land use plan which includes a range of compatible land uses, including market rate single-family residential, commercial, open space, and recreational uses in an area of Butte County that is designated for urban development in the General Plan;
6. Provide a development pattern and uses that promote water conservation;
7. Provide a land use plan with a balance of uses and density that result in increased property and sales tax revenues for the County; and
8. Develop a diversity of lot sizes to promote market rate housing opportunities responsive to the needs of Butte County residents.

3.5 PROJECT COMPONENTS

The proposed project would include subdivision of the project site to develop a total of 165 residential units, commercial development, recreation areas, open space, various on-site road improvements, and a sanitary waste disposal station. The proposed project would require County approval of a Planned Development Rezone; Vesting Tentative Subdivision Map; and a Minor Use Permit for development within the SH Overlay Zone. Other approvals necessary to implement the proposed project would include Paradise Irrigation District (PID) operation and maintenance of the proposed project's water and sewer lines. PID maintenance of such facilities would be covered by an extraterritorial service agreement or annexation of the project site into the PID service area, which would be subject to approval by the Butte Local Agency Formation Commission (LAFCo). In the event that annexation is required, a Sphere of Influence (SOI) Amendment would be required to amend PID's SOI to include the project site. In the absence of an approved agreement or annexation to the PID, the County would require the formation of a County Service Area (CSA) to fund operations and maintenance of the water and wastewater systems.

The proposed project components, along with all required entitlements and approvals, are described in further detail below.

Planned Development Rezone

The site currently has a Butte County land use designation of PUD and a zoning designation of Planned Development. The land use and zoning designations of the site were approved by the Board of Supervisors as part of the development of the Butte County General Plan 2030 and the 2012 Zoning Map update, respectively, at the request of the property owner. According to Article II, Division 6, Section 24-28 (D) of the Butte County Code, the purpose of the Planned Development zone is to allow for high-quality development that deviates from standards and regulations applicable to other zones within the County. The Planned Development zone is intended to promote creativity in building design, flexibility in permitted land uses, and innovation in development concepts. The Planned Development zone is also intended to ensure project consistency with the General Plan, sensitivity to surrounding land uses, and the protection of sensitive natural resources. The Planned Development zone provides landowners with enhanced flexibility to take advantage of unique site characteristics to develop projects that will provide public benefits for residents, employees, and visitors to Butte County. Accordingly, the Planned Development zone is intended to allow for a variety of uses and development.

Pursuant to Article II, Division 6, Section 24-32, *Planned Development Zone Requirements*, and Article VI, Division 4, *Zoning Ordinance Amendments*, of the Butte County Code, the proposed project would require a Planned Development Rezone to specifically allow for the proposed uses. The proposed Land Use Plan (see Figure 3-3) provides a visual depiction of the anticipated land uses proposed as part of the project.

Subdivision

The proposed project would include a Vesting Tentative Subdivision Map (see Figure 3-4) to subdivide the project into 165 single-family residential lots, six commercial use lots, 36.7 acres of open space, 4.1 acres of landscaped areas, 20.5 acres of roadway, and 49 acres of special utility district associated with the on-site water and sewer systems, as shown in Table 3-1.

Table 3-1
Proposed Land Uses

Proposed Land Use	Acreage
Single-Family Residential	36.9
Commercial	15.9
Landscape	4.1
Open Space	36.7
Roadway	20.5
Special Utility District	49
Total	**163.1**

Single-Family Residential

The proposed 165 residential lots would range from 3,000 sf to 20,000 sf. The residences would generally be located in the center of the site, with the larger residential lots located nearest to the southern border of the project site, where expansive views are available to the south.

Figure 3-3
Land Use Plan

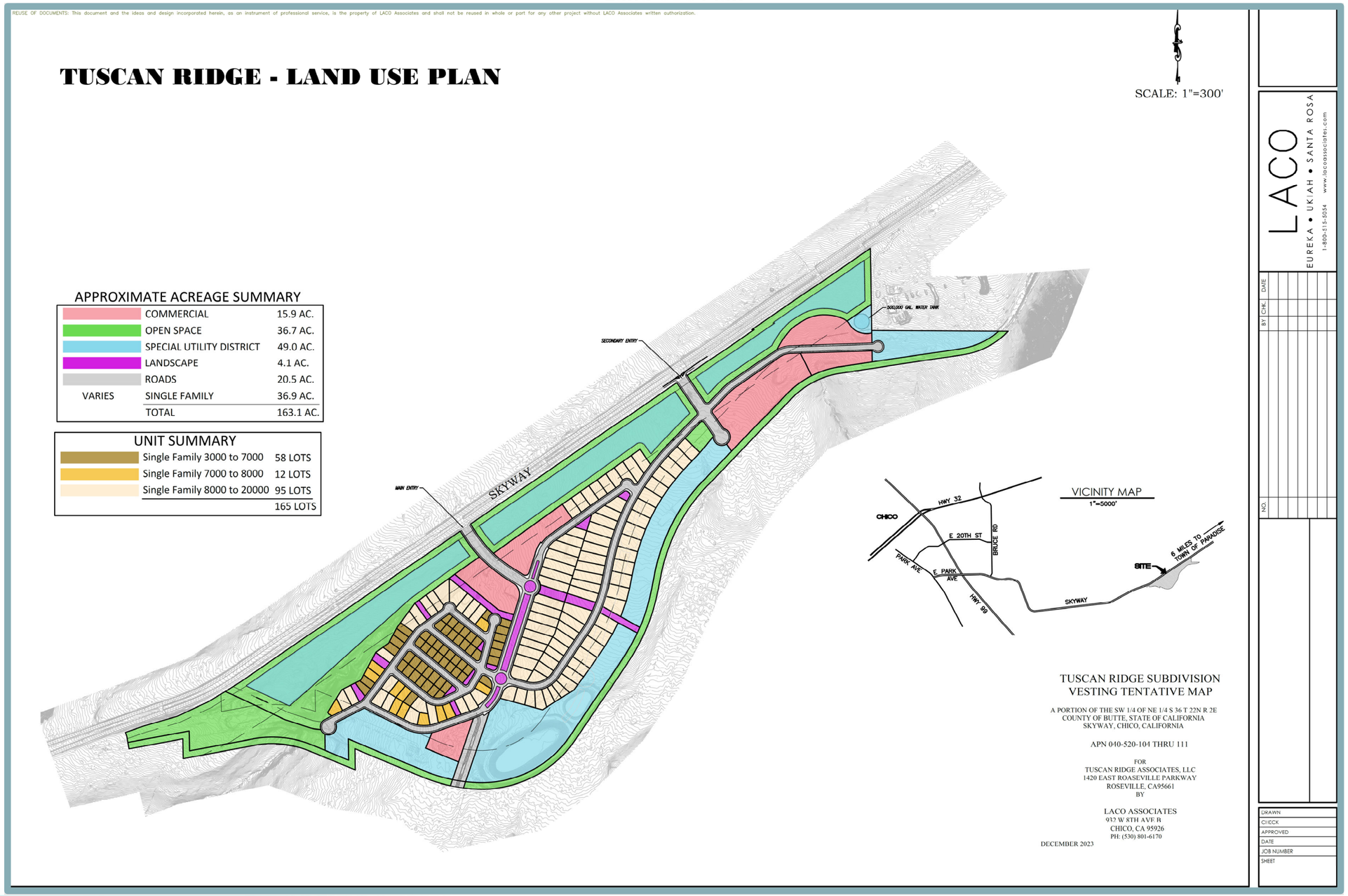
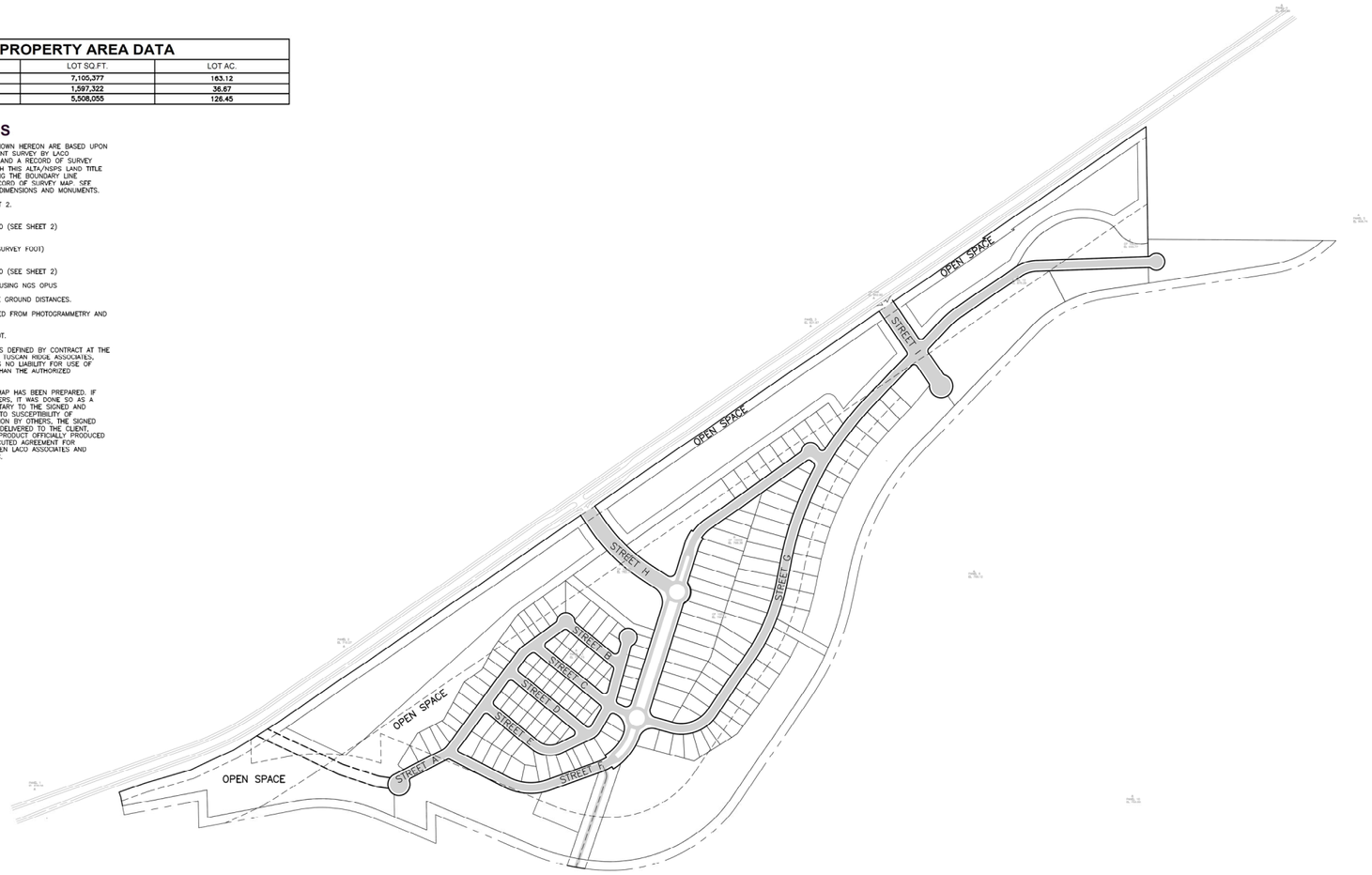


Figure 3-4
Vesting Tentative Subdivision Map

PROPERTY AREA DATA		
LOT NAME	LOT SQ.FT.	LOT AC.
OVERALL GROSS AREA	**7,105,377**	**163.12**
OPEN SPACE, EASEMENTS	**1,597,322**	**36.67**
NET AREA	**5,508,055**	**126.45**

GENERAL NOTES

1. BOUNDARY LINE DIMENSIONS SHOWN HEREON ARE BASED UPON A BOUNDARY LINE ESTABLISHMENT SURVEY BY LACO ASSOCIATES IN OCTOBER 2020 AND A RECORD OF SURVEY PREPARED IN CONJUNCTION WITH THIS ALTA/NSPS LAND TITLE SURVEY. FOR DETAILS REGARDING THE BOUNDARY LINE RESOLUTION REFER TO THE RECORD OF SURVEY MAP. SEE SHEET 2 FOR BOUNDARY LINE DIMENSIONS AND MONUMENTS.
2. BASIS OF BEARINGS: SEE SHEET 2.
3. BASIS OF COORDINATES:
   SURVEY CONTROL POINT #10000 (SEE SHEET 2)
   NORTHING: 2386212.26
   EASTING: 6643603.26
   (NAD83, CA SPC ZONE II, US SURVEY FOOT)
4. BASIS OF ELEVATIONS:
   SURVEY CONTROL POINT #10000 (SEE SHEET 2)
   ELEVATION: 762.79 NAVD88
   FROM STATIC GPS PROCESSED USING NGS OPUS
5. DISTANCES SHOWN HEREON ARE GROUND DISTANCES.
6. TOPOGRAPHIC MAPPING COMPILED FROM PHOTOGRAMMETRY AND SUPPLEMENTAL SURVEYING.
7. CONTOUR INTERVAL IS ONE FOOT.
8. THE CONTENT OF THIS MAP WAS DEFINED BY CONTRACT AT THE REQUEST OF SCOTT BATES AND TUSCAN RIDGE ASSOCIATES, LLC. LACO ASSOCIATES ACCEPTS NO LIABILITY FOR USE OF THIS MAP BY ANYONE OTHER THAN THE AUTHORIZED REPRESENTATIVE THEREOF.
9. AN ELECTRONIC FILE OF THIS MAP HAS BEEN PREPARED. IF TRANSMITTED FOR USE BY OTHERS, IT WAS DONE SO AS A COURTESY AND IS SUPPLEMENTARY TO THE SIGNED AND SEALED ELECTRONIC PDF. DUE TO SUSCEPTIBILITY OF ELECTRONIC FILES TO CORRUPTION BY OTHERS, THE SIGNED AND SEALED ELECTRONIC PDF, DELIVERED TO THE CLIENT, CONSTITUTES THE ONLY WORK PRODUCT OFFICIALLY PRODUCED IN ACCORDANCE WITH THE EXECUTED AGREEMENT FOR PROFESSIONAL SERVICES BETWEEN LACO ASSOCIATES AND TUSCAN RIDGE ASSOCIATES, LLC.



SCALE: 1"=300'

OVERALL SITE PLAN

TUSCAN RIDGE SUBDIVISION
VESTING TENTATIVE MAP

A PORTION OF THE SW 1/4 OF NE 1/4 S 36 T 22N R 2E
COUNTY OF BUTTE, STATE OF CALIFORNIA
SKYWAY, CHICO, CALIFORNIA

APN 040-520-104 THRU 111

FOR
TUSCAN RIDGE ASSOCIATES, LLC
1420 EAST ROSEVILLE PARKWAY
ROSEVILLE, CA95661
BY

LACO ASSOCIATES
2561 CALIFORNIA PARK DR #200
CHICO, CA 95928
PH: (530) 801-6170 FX: (707) 123-4567

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Commercial Development

The proposed project would include 15.9 acres divided into six lots for commercial uses. As currently designed, the proposed project would include an approximately 3,600-sf gas station/convenience store with up to 16 fuel dispensers and up to approximately 76,000 sf of commercial space, across one- and two-story buildings, along the primary site entrance. Additionally, the eastern portion of the project site would be developed with a mini-storage use with outdoor RV and boat storage. The mini-storage would offer up to approximately 53,000 sf of space for storage units. Furthermore, the existing clubhouse located in the southwestern portion of the project site would be demolished and replaced with a commercial use intended to serve the future residents of the proposed project, such as a community center.

While the specific uses within the approximately 76,000 sf of commercial space along the primary site entrance is currently unknown, such uses under the Planned Development zoning would be limited to the permitted and conditionally permitted uses allowed within the General Commercial (GC) and Neighborhood Commercial (NC) zoning districts, pursuant to Table 24-22-1, *Permitted Land Uses in the Commercial and Mixed Use Zones*, of the County Code. In addition, as part of the Planned Development zoning, the maximum floor area ratio would be limited to 0.4 and the maximum height would be limited to 50 feet, as required for development within the GC zoning district. The following list of additional commercial uses that would be consistent with the GC and NC zoning districts, subject to the permit or approval noted, would be permissible through the Planned Development zoning:

- Drive-Through Facility – subject to a Minor Use Permit;
- Offices, Professional – Permitted, subject to a Zoning Clearance;
- Personal Services – Permitted, subject to a Zoning Clearance;
- Restaurant – Permitted, subject to a Zoning Clearance;
- Retail, General – Permitted, subject to a Zoning Clearance;
- Commercial Recreation, Indoor – subject to a Minor Use Permit;
- Construction, Maintenance and Repair Services – subject to a Minor Use Permit;
- Child Care Center (facility providing child care) – subject to a Minor Use Permit;
- Child Day Care, Large (home providing child care for seven to fourteen children) – Permitted, subject to a Zoning Clearance;
- Child Day Care, Small (home providing child care for eight or fewer children) – Permitted, subject to a Zoning Clearance;
- Community Centers – subject to a Conditional Use Permit;
- Medical Office and Clinic – Permitted, subject to a Zoning Clearance; and
- Bars, Nightclubs, Lounges – subject to a Conditional Use Permit.

The anticipated gas station/convenience store and mini-storage uses would also be consistent with the allowable uses under the GC and NC zoning districts.

Access and Circulation

Access to the proposed project would be provided by two entrances from Skyway, as shown in Figure 3-3 and Figure 3-4. The existing entrance located near the center of the site would be improved and would serve as the main entryway to the site, and a new entrance would be established in the eastern portion of the site. Based on the recommendations set forth within the Tuscan Ridge Safety Assessment and Intersection Control Evaluation Technical Memorandum study prepared for the proposed project by Fehr & Peers, the main entryway would be improved

to a full signalized intersection.[1] The existing access easement in the western portion of the project site for the adjacent agricultural property would remain and could serve as additional emergency ingress/egress, if needed.

The main entrance from Skyway would connect to the internal roadways at a roundabout, from which the internal roadways would extend to the northeast and southwest, providing access to the residences. The main entry road would be designed with a 96-foot right-of way with a greenway and sidewalk along both sides. The internal roadways would generally be designed consistent with County standards, with a 60-foot right-of-way, containing two 16-foot lanes with sidewalk, curb and gutter. The proposed gas station/convenience store and additional commercial uses would be located along the main entry road. All project roadways would be public and would be dedicated to the County for maintenance.

The eastern driveway from Skyway would be located at the currently blocked-off access point that was previously used during wildfire response efforts. The eastern entrance would primarily serve the proposed sanitary waste disposal station and mini-storage use proposed in the eastern portion of the site, while also providing secondary access to the residences within the northeastern portion of the site. The eastern driveway would be required to be a limited right-turn only intersection.[2]

Open Space, Trails, and Landscaping

As part of the proposed project, a total of approximately 36.7 acres of open space is proposed within the project site (see Figure 3-3), which would primarily be located in the southwestern portion of the project site, as well as in areas surrounding the portions of the project site anticipated for Special Utility District uses (discussed further below under the Utilities subheading). The existing meandering path located within the northern portion of the site would be upgraded to a Caltrans Class I bicycle facility. A number of additional multi-use trails would be located throughout the project site and would provide connectivity between the proposed uses and the Class I trail, as well as allow for passive recreation, such as walking, jogging, and bicycling. A formal improved park space is not proposed.

The proposed project would include approximately 4.1 acres of landscaped area. Landscaping on the project site would reflect the native vegetation in the area. For example, landscaping within the open space areas would include the planting of native vegetation along the sound wall proposed for the eastern border of the site, adjacent to the Paradise Rod & Gun Club, and revegetation of any disturbed areas with native vegetation, consistent with the surrounding area.

Utilities

The proposed project would include utility improvements related to water, sanitary sewer, and storm drainage services, which are discussed further below. The proposed project would include PID maintenance of the proposed project's water and sewer lines. PID maintenance of such facilities would be covered by an extraterritorial service agreement or annexation of the project site into the PID service area, which would be subject to approval by the Butte LAFCo and is discussed further below. It should be noted that in the event that annexation is required, an SOI

[1] Please see Mitigation Measure 4.11-4(a) on page 4.11-21 of the Transportation chapter of this EIR, which requires the project applicant to install a signal at the main entryway.

[2] Please see Mitigation Measure 4.11-4(b) on page 4.11-21 of the Transportation chapter of this EIR, which requires the project applicant to construct a limited right-turn only intersection in accordance with County design standards at the eastern entryway.

Amendment would be required to amend PID's SOI to include the project site. As noted above, in the absence of an approved agreement or annexation to the PID, the County would require the formation of a CSA to fund operations and maintenance of the water and wastewater systems.

Water

The existing on-site water system consists of an on-site well at a depth of 735 feet. Water produced from the well is currently sent to two 10,000-gallon aboveground storage tanks using a 75-horsepower (hp) turbine pump, and is subsequently pulled from the tank using two 10-hp pumps and pressurized into a distribution system through four pressure tanks. The water system is generally located near the center of the southern border of the project site. The existing well was initially installed in 1999 for the purposes of irrigating the Tuscan Ridge Golf Course and providing services to the associated bistro. The well was subsequently used for potable water purposes by PG&E and ECC Constructors during their occupation of the site. The water system is currently permitted as a domestic water supply through the Butte County Environmental Health Division (Permit Number 04-09182) and the State Water Resources Control Board (SWRCB) Division of Drinking Water.

A number of improvements to the existing on-site water system would be required in order to upgrade the system to accommodate the proposed project, including the installation of an additional water supply well, a water treatment system, a water distribution system, water meters at each service connection, and additional water tanks for storage. The proposed water system would be subject to the standards and monitoring requirements set forth by federal, State, and local laws, including, but not limited to, public health standards of Title 22 of the California Code of Regulations (CCR), the California Safe Drinking Water Act, and Butte County standards. The water distribution system and proposed second well would be constructed in accordance with the California Waterworks Standards (Title 22, Chapter 16). The water system would be capable of meeting the maximum daily demand of the proposed project, in accordance with Title 22, Section 64554(c). Any additional water tanks needed to support the proposed development would be constructed using materials that meet appropriate California Department of Forestry and Fire Protection (CAL FIRE) standards. A minimum of approximately 400,000 gallons of water storage is anticipated to be required to meet minimum fire flows; however, the water storage requirements would be determined in consultation with the Butte County Fire Department and CAL FIRE. An approximately 487,000-gallon water tank would be located in the northeastern portion of the project site, adjacent to the proposed mini-storage facility. The tank would be approximately 72 feet in diameter and 16 feet in height, and would be surrounded by a 125-foot by 125-foot security fence. A new permit through the SWRCB and/or Butte County Environmental Health Division would be required to allow use of the system as a community water system.

Sewer

The existing wastewater treatment system was constructed to serve the temporary base camp that provided wildfire response efforts and currently operates under the SWRCB General Order 2014-0153-DWQ-R5309. The existing permit specifies a discharge limit of 100,000 gallons per day (gpd) and requires treatment of effluent to meet basic secondary treatment levels (including ultraviolet [UV] disinfection). The existing wastewater treatment system is designed to treat and dispose of up to an average daily flow of 100,000 gpd. The treatment process currently includes solids separation and anaerobic digestion, aerobic digestion, media filtration, and UV disinfection. Processing is accomplished using septic tanks, aerobic treatment modules, and UV disinfection units. More specifically, wastewater is pumped through four 40,000-gallon septic tanks then through one of four 25,000 gpd Presby multi-level treatment beds. Effluent from each Presby

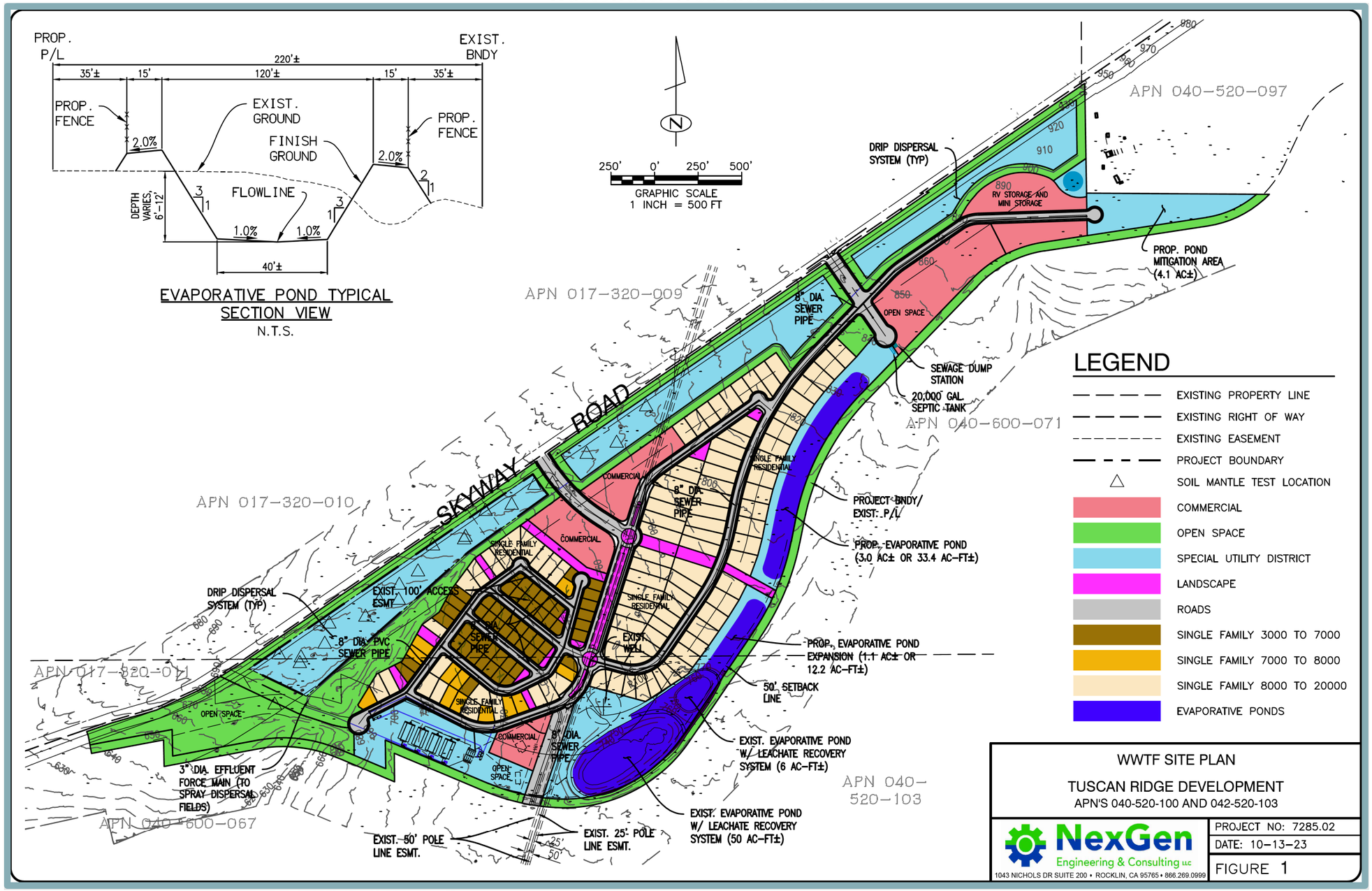
module is collected via gravity to a connected 3,000-gallon collection pump tank with UV treatment, providing tertiary treatment. The treated effluent is then routed through a two-inch force main to the evaporative ponds with bottom-mounted aerators for disposal. The two ponds, located in the southernmost portion of the project site, are 48.6 and 6.1 acre-feet and have 3:1 (Horizontal:Vertical) interior and external slopes and a minimum 15-foot wide crest that provides access around the perimeter. The containment system for the ponds consists of a 40-mil high-density polyethylene (HDPE) geosynthetic liner, eight-ounce non-woven geotextile fabric, and a leak collection/detection system to fully contain the treated effluent.

In order to adequately handle the wastewater generated by the proposed uses and the associated wastewater characteristics, improvements to the existing wastewater system and additional infrastructure are needed (see Figure 3-3). For example, a new sewer collection system would be required in order to collect and convey the wastewater from the proposed residential and commercial land uses to the treatment system. In addition to the proposed residential and commercial land uses, the proposed project would include a new sanitary waste disposal station that would be located at a cul-de-sac at the end of the proposed eastern entryway to the project site, which would also serve as the main entrance to the mini-storage use. The sanitary waste disposal station would be subject to a daily maximum limit of 10,000 gpd, and would be primarily intended to serve future patrons of the mini-storage use, particularly by providing a convenient location for dumping sewage waste from RVs and boats stored on-site. The sanitary waste disposal station would include an adjacent 40,000-gallon solids holding tank, which would digest solid waste and overflow through commercial effluent filters into a 20,000-gallon clarification tank that would eventually allow the pretreated waste to flow into the wastewater treatment system.

Wastewater generated by the proposed uses, including wastewater from the septic tank associated with the sanitary waste disposal station, would flow by gravity through a network of eight- and 10-inch sewer laterals and mains located within the internal roadways to two new 20,000-gallon equalization tanks located near the existing wastewater treatment system in the southwestern portion of the project site. Grease interceptors would be installed, where necessary, to intercept fats, oils, and grease (FOG) prior to entering the collection system. From the equalization tanks, wastewater would be pumped through a new headworks/bar screen before being processed through the existing wastewater treatment system (e.g., septic tanks, Presby modules, and UV disinfection). Following treatment by the on-site system, treated effluent flows would be pumped to either the lined evaporative ponds in the southern portion of the project site or the subsurface drip dispersal system, which would be located within the open space areas adjacent to Skyway, as shown as Special Utility District areas in Figure 3-5. The lined evaporative ponds that would serve the proposed project would consist of the two existing ponds, as well as 4.1 acres of proposed evaporative pond expansion, including two new evaporative ponds, that would be located to the east of the existing ponds along the southern property boundary. The lined evaporative ponds would be used during the wet weather season (between November and March) or during periods of inclement weather, whereas the subsurface drip dispersal system would be used during the dry weather season (between April and October), particularly during the summer months.

Solid waste pumped from the tanks would be hauled away and disposed of at a local sewage treatment facility. A new Waste Discharge Requirements (WDR) Permit from the SWRCB would be required for the proposed improvements to the existing wastewater treatment system.

Figure 3-5
Wastewater Treatment Plan



Storm Drainage

As shown in Figure 3-6, three watershed areas (A, B, and C) are present on the project site. The project site has three primary drainages: between the planned development and Skyway going towards the west (Discharge Point A, where Watershed A discharges); along the trail easement down to the existing sanitary sewer ponds towards the southeast of the site (Discharge Point B, where Watershed B discharges); and above the northeast property line from Skyway and down across the southern property line (Discharge Point C, where Watershed C discharges). In total, three separate stormwater pipe networks are proposed to collect the runoff generated from the proposed project within the three watershed areas.

Due to the increase in runoff, two detention ponds would be needed to detain the excess stormwater runoff. Both ponds are proposed to be placed in areas designated as open space; one is proposed in the southwestern corner of the site, and the other is proposed near the secondary entry cul-de-sac. The proposed stormwater drainage system would be designed in compliance with the standards and requirements of Chapter 50, *Stormwater Management and Discharge Control*, of the Butte County Code.

Dry Utilities

PG&E would provide electricity to the site by way of an existing on-site connection. To provide a conservative analysis, this EIR assumes new electrical infrastructure would be installed aboveground, with the exception of any infrastructure within the SH Overlay Zone, which would be required to be underground pursuant to Section 24-42 of the Butte County Code. Natural gas would not be used at the site; however, propane or another form of gas may be used by both residential and commercial users, for residential and commercial applications.

As propane supply is not part of the proposed project, it would be the responsibility of individual users to establish propane service from a local provider such as Suburban Propane or Hunt Propane, both of which are located in Chico, California. Additionally, the proposed project would be served by the Butte County Sheriff's Department, California Highway Patrol (CHP), Butte County Fire, and Chico Unified School District (grades K-12). Law enforcement would be provided by the Sheriff's Department, while traffic-related enforcement services would be provided by CHP. The nearest Butte County Fire Station is South Chico Fire Station, located at 2334 Fair Street, Chico, which is located approximately 6.5 miles west of the project site.

Phasing Plan

Construction of the proposed project would occur over a total of six phases, as shown in Figure 3-7 and labeled Phase 1 through Phase 6.

Phase 1 would consist of open space/easements and 44 residential lots within the central and western portions of the site. Phase 2 would include an additional 58 residential lots. Phase 3 would include 15 residential lots in the northern/central portion of the site, six lots of commercial use near the main project entrance, and the secondary access road. Phase 4 would result in construction of 29 residential lots. Phase 5 would consist of 19 residential lots. Finally, Phase 6 would include the commercial lots in the northeastern portion of the project site, including the mini-storage facility and the proposed sanitary waste disposal station.

Figure 3-6
Preliminary Drainage Plan

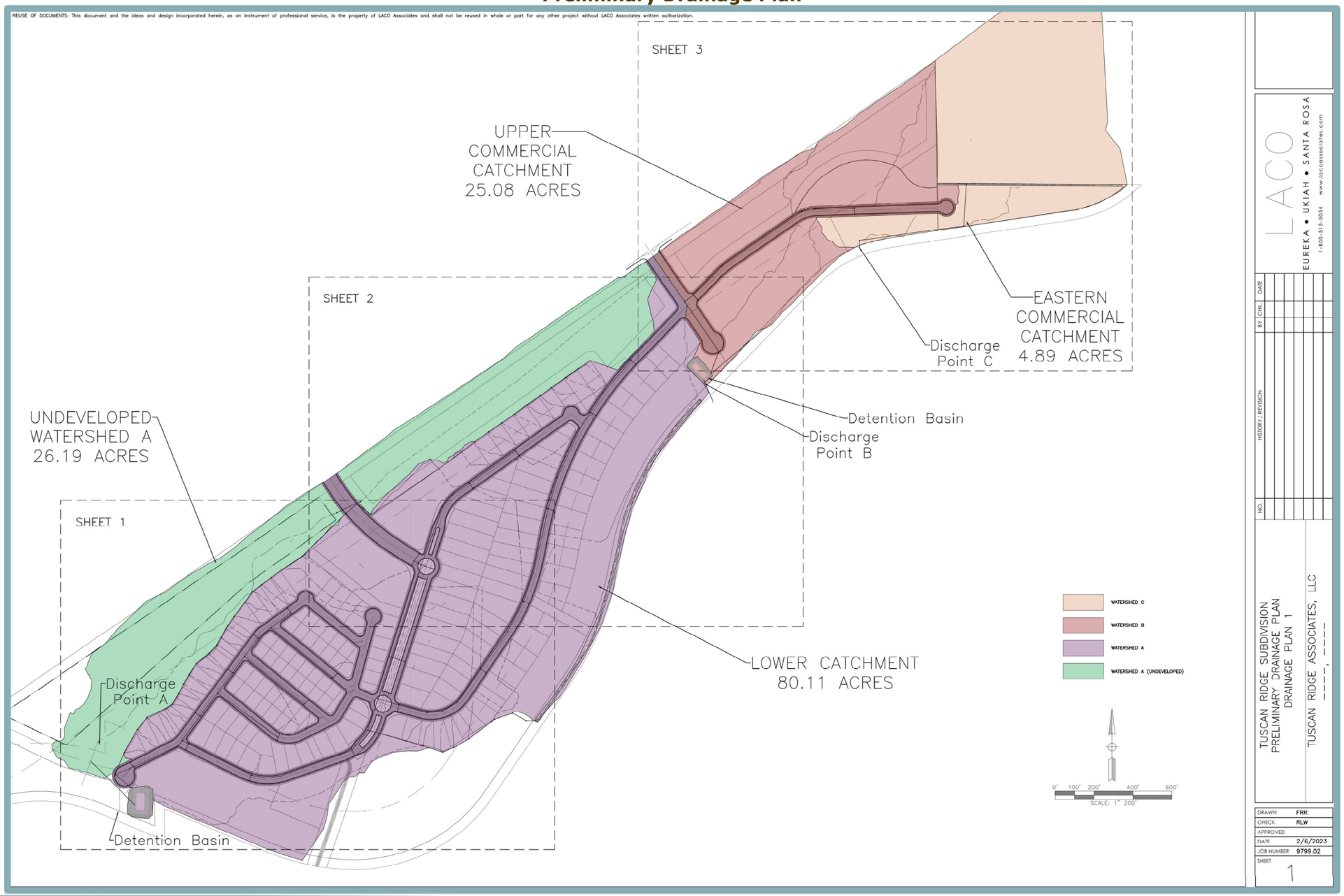


Figure 3-7
Phasing Plan

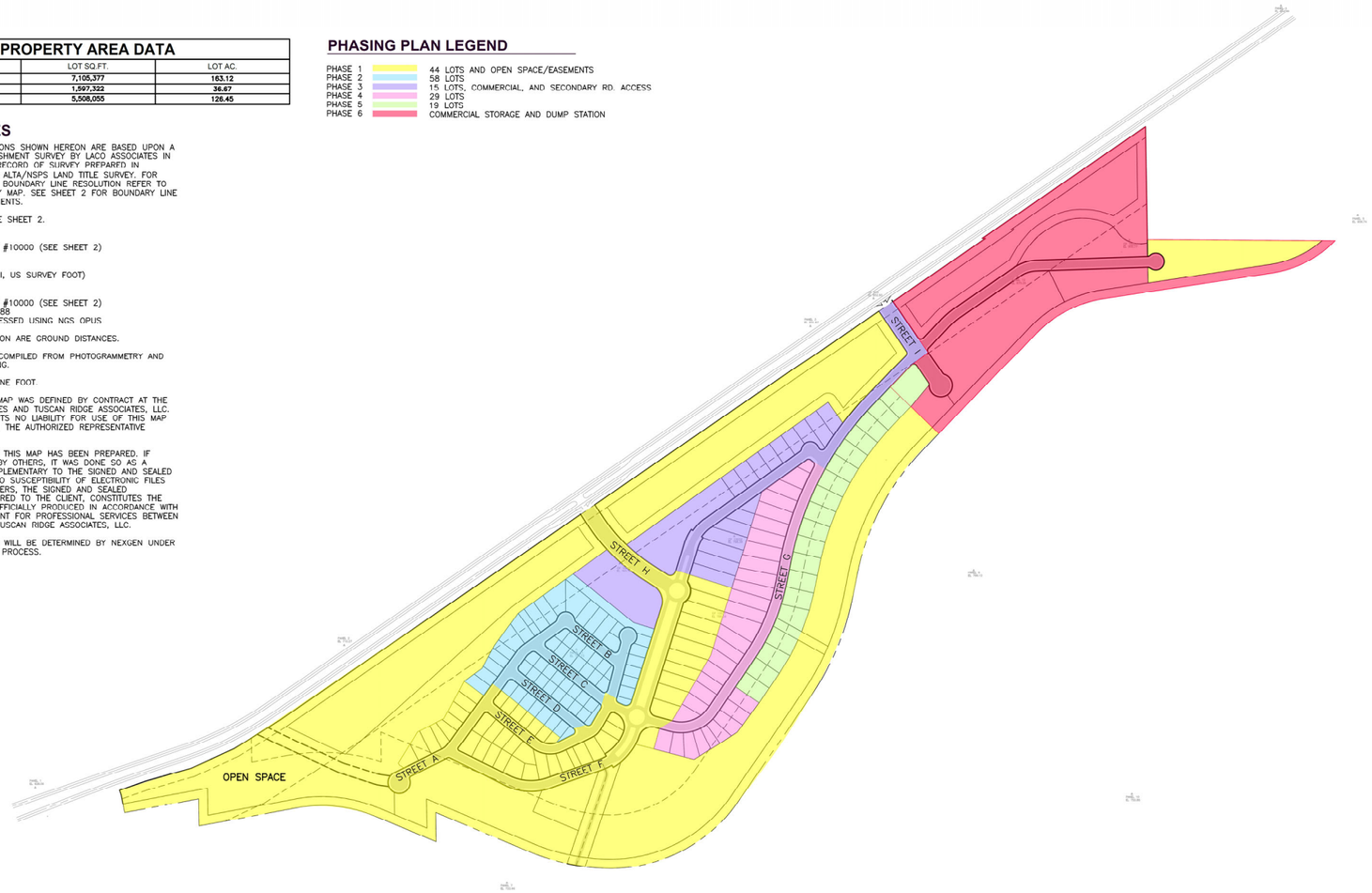
PROPERTY AREA DATA		
LOT NAME	LOT SQ.FT.	LOT AC.
OVERALL GROSS AREA	7,105,377	163.12
OPEN SPACE, EASEMENTS	1,597,322	36.67
NET AREA	5,508,055	126.45

GENERAL NOTES

1. BOUNDARY LINE DIMENSIONS SHOWN HEREON ARE BASED UPON A BOUNDARY LINE ESTABLISHMENT SURVEY BY LACO ASSOCIATES IN OCTOBER 2020 AND A RECORD OF SURVEY PREPARED IN CONJUNCTION WITH THIS ALTA/NSPS LAND TITLE SURVEY. FOR DETAILS REGARDING THE BOUNDARY LINE RESOLUTION REFER TO THE RECORD OF SURVEY MAP. SEE SHEET 2 FOR BOUNDARY LINE DIMENSIONS AND MONUMENTS.
2. BASIS OF BEARINGS: SEE SHEET 2.
3. BASIS OF COORDINATES:
   SURVEY CONTROL POINT #10000 (SEE SHEET 2)
   NORTHING: 2386212.26
   EASTING: 6643603.26
   (NAD83, CA SPC ZONE II, US SURVEY FOOT)
4. BASIS OF ELEVATIONS:
   SURVEY CONTROL POINT #10000 (SEE SHEET 2)
   ELEVATION: 762.79 NAVD88
   FROM STATIC GPS PROCESSED USING NGS OPUS
5. DISTANCES SHOWN HEREON ARE GROUND DISTANCES.
6. TOPOGRAPHIC MAPPING COMPILED FROM PHOTOGRAMMETRY AND SUPPLEMENTAL SURVEYING.
7. CONTOUR INTERVAL IS ONE FOOT.
8. THE CONTENT OF THIS MAP WAS DEFINED BY CONTRACT AT THE REQUEST OF SCOTT BATES AND TUSCAN RIDGE ASSOCIATES, LLC. LACO ASSOCIATES ACCEPTS NO LIABILITY FOR USE OF THIS MAP BY ANYONE OTHER THAN THE AUTHORIZED REPRESENTATIVE THEREOF.
9. AN ELECTRONIC FILE OF THIS MAP HAS BEEN PREPARED. IF TRANSMITTED FOR USE BY OTHERS, IT WAS DONE SO AS A COURTESY AND IS SUPPLEMENTARY TO THE SIGNED AND SEALED ELECTRONIC PDF. DUE TO SUSCEPTIBILITY OF ELECTRONIC FILES TO CORRUPTION BY OTHERS, THE SIGNED AND SEALED ELECTRONIC PDF, DELIVERED TO THE CLIENT, CONSTITUTES THE ONLY WORK PRODUCT OFFICIALLY PRODUCED IN ACCORDANCE WITH THE EXECUTED AGREEMENT FOR PROFESSIONAL SERVICES BETWEEN LACO ASSOCIATES AND TUSCAN RIDGE ASSOCIATES, LLC.
10. SEWER SYSTEM PHASING WILL BE DETERMINED BY NEXGEN UNDER THE RWQCB PERMITTING PROCESS.

PHASING PLAN LEGEND

PHASE 1	44 LOTS AND OPEN SPACE/EASEMENTS
PHASE 2	58 LOTS
PHASE 3	15 LOTS, COMMERCIAL, AND SECONDARY RD. ACCESS
PHASE 4	29 LOTS
PHASE 5	19 LOTS
PHASE 6	COMMERCIAL STORAGE AND DUMP STATION



SCALE: 1"=300'

PHASING PLAN

TUSCAN RIDGE SUBDIVISION
VESTING TENTATIVE MAP

A PORTION OF THE SW 1/4 OF NE 1/4 S 36 T 22N R 2E
COUNTY OF BUTTE, STATE OF CALIFORNIA
SKYWAY, CHICO, CALIFORNIA

APN 040-520-104 THRU 111

FOR
TUSCAN RIDGE ASSOCIATES, LLC
1420 EAST ROSEVILLE PARKWAY
ROSEVILLE, CA95661
BY

LACO ASSOCIATES
2561 CALIFORNIA PARK DR #200
CHICO, CA 95928
PH: (530) 801-6170 FX: (707) 123-4567
DECEMBER 15, 2023 SHEET 1 OF 1

Minor Use Permit

Pursuant to Section 24-42 C, *Scenic highway overlay zone*, of the Butte County Code, any development within the 350-foot SH Overlay Zone from Skyway requiring the approval of a building permit shall also require the approval of a Minor Use Permit, with the exception of single-family homes, accessory structures associated with single-family homes, parking facilities with 10 or fewer parking spaces, and demolition; walls and fences pursuant to Article 13 shall be subject to an Administrative Permit.

While the majority of the proposed development would be set back beyond the 350-foot SH Overlay Zone, the site entrances, as well as portions of the access roads, sound walls, some residential backyards, and limited portions of the commercial development would be located within the SH Overlay Zone. Consistent with the Butte County Code, the proposed project would include a request for the approval of a Minor Use Permit to allow for development within the 350-foot SH Overlay Zone from Skyway.

Extraterritorial Service Agreement/Annexation

The proposed project would include PID maintenance of the proposed project's water and sewer lines. PID maintenance of such facilities would be covered by an extraterritorial service agreement or annexation of the project site into the PID service area, which would be subject to approval by the Butte LAFCo, which is discussed further below. The extraterritorial service agreement or annexation would apply only to the project site itself, rather than the intervening area between the site and Paradise, California. Connections to PID's existing water distribution system would not be extended to the project site. It should be noted that in the event that annexation is required, an SOI Amendment would be required to amend PID's SOI to include the project site. Upon approval of all pertinent permits, the PID would own, operate, and maintain the water and wastewater systems as an independent utility. The existing permits to own and operate the water distribution and wastewater system would be transferred to PID. As noted above, in the absence of an approved agreement or annexation to the PID, the County would require the formation of a CSA to fund operations and maintenance of the water and wastewater systems.

3.6 PROJECT APPROVALS

The proposed project would require County approval of the following:

- Certification of the EIR;
- Adoption of the Mitigation Monitoring and Reporting Program;
- Planned Development Rezone;
- Vesting Tentative Subdivision Map; and
- Minor Use Permit for development within the SH Overlay Zone.

It should be noted that additional Minor Use Permits and/or Conditional Use Permits may subsequently be required for specific commercial uses in the future.

In addition to the above County approvals, the project would also require the following approval by the Butte LAFCo, as a Responsible Agency:

- Extraterritorial service agreement or annexation of the project site into the PID service area for water and sewer service. If annexation is required, an SOI amendment would also be required to amend PID's SOI to include the project site.

4. Existing Environmental Setting, Impacts, and Mitigation

4.0. Introduction to the Analysis

4.0 INTRODUCTION TO THE ANALYSIS

4.0.1 INTRODUCTION

The technical chapters of this EIR include the analysis of the potential impacts of buildout of the proposed project on a range of environmental issue areas. Chapters 4.1 through 4.13 of the EIR describe the environmental setting related to each specific issue area, methods of analysis, project-specific impacts and mitigation measures, and a cumulative impact analysis for each issue area. The format of each of the technical chapters is described at the end of this chapter. It should be noted that technical reports are either attached to this EIR, available by request from the County, or available on the County's website at: https://www.buttecounty.net/389/Notable-Projects.

According to CEQA Guidelines Section 15125(d), the EIR shall discuss any inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans. An "applicable" plan is a plan that has already been adopted and, thus, legally applies to a project; draft plans need not be evaluated.[1] Since the Notice of Preparation (NOP) was circulated for public review, Butte County has updated its General Plan, first by adoption of the 2022-2030 Housing Element of the General Plan on February 22, 2023, and secondly by the adoption of the 2040 Butte County General Plan on March 28, 2023. However, at the time of the NOP, the adopted General Plan for Butte County was the 2030 General Plan. Thus, this EIR relies on the 2030 Butte County General Plan when determining whether any inconsistencies would occur between the proposed project and the applicable General Plan.

4.0.2 DETERMINATION OF SIGNIFICANCE

Under CEQA, a significant effect is defined as a substantial or potentially substantial adverse change in the environment (Public Resources Code Section 21068). The CEQA Guidelines require that the determination of significance be based on scientific and factual data. The specific criteria for determining the significance of a particular impact are identified within in each technical chapter, and are consistent with significance criteria set forth in the CEQA Guidelines or as based on the professional judgment of the EIR preparers.

Significance Criteria

The CEQA Guidelines 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, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." In addition, the Guidelines state, "An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant." (CEQA Guidelines Section 15382).

[1] Stephen L. Kostka and Michael H. Zischke. *Practice Under the California Environmental Quality Act, Volume 1.* Continuing Education of the Bar: March 2022, Section 12.27.

As presented in Section 4.0.4 below, the level of significance of an impact prior to mitigation is included at the end of each impact discussion throughout the technical chapters of this EIR. The following levels of significance prior to mitigation are used in this EIR:

1) Less than Significant: Impacts that may be adverse, but that do not exceed the specified thresholds of significance;
2) Significant: Impacts that exceed the defined standards of significance and require mitigation;
3) Less than Cumulatively Considerable: Where cumulative impacts have been identified, but the project's incremental contribution towards the cumulative impacts would not be considered significant; and
4) Cumulatively Considerable: Where cumulative impacts have been identified and the project's incremental contribution towards the cumulative impacts would be considered significant.

If an impact is determined to be significant or cumulatively considerable, mitigation is included, if available, in order to reduce the specific impact to the maximum extent feasible. A statement of the level of significance of an impact after mitigation is also included in each impact discussion throughout the technical chapters of this EIR. The following levels of significance after implementation of mitigation are used in the EIR:

1) Less than Significant: Impacts that exceed the defined standards of significance but can be eliminated or reduced to a less-than-significant level through the implementation of feasible mitigation measures;
2) Less than Cumulatively Considerable: Where the project's incremental contribution towards cumulative impacts would be eliminated or reduced to a less than cumulatively considerable level through the implementation of feasible mitigation measures; and
3) Significant and Unavoidable Impact: An impact (project-level or cumulative) that cannot be eliminated or reduced to a less-than-significant or less than cumulatively considerable level through the implementation of feasible mitigations measures.

Each environmental area of analysis uses a distinct set of significance criteria. The significance criteria are identified at the beginning of the Impacts and Mitigation Measures section in each of the technical chapters of this EIR. Although significance criteria are necessarily different for each resource considered, the provided significance levels ensure consistent evaluation of impacts for all resource areas evaluated.

4.0.3 ENVIRONMENTAL ISSUES ADDRESSED IN THIS EIR

The EIR provides the analysis necessary to address the technical environmental impacts of the proposed project. The following environmental issues are addressed in the separate technical chapters of this EIR:

- Aesthetics;
- Air Quality, Greenhouse Gas Emissions, and Energy;
- Biological Resources;
- Cultural and Tribal Cultural Resources;
- Geology and Soils;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;

- Land Use and Planning/Population and Housing;
- Noise;
- Public Services and Recreation;
- Transportation;
- Utilities and Service Systems; and
- Wildfire.

Chapter 5, Effects Not Found to be Significant, will address the project's effects that were determined not to be significant, and, thus, were not discussed in detail in a technical chapter of the EIR. See Section 6.3, Cumulative Impacts, of Chapter 6, Statutorily Required Sections, for additional information on the scope of the cumulative impact analysis for each environmental issue area addressed in the EIR.

4.0.4 TECHNICAL CHAPTER FORMAT

Each technical chapter addressing a specific environmental issue begins with an **introduction** describing the purpose of the section. The introduction is followed by a description of the project's **existing environmental setting** as the setting pertains to that particular issue. The setting description is followed by the **regulatory context** and the **impacts and mitigation measures** discussion, which contains the **standards of significance**, followed by the **method of analysis**. The standards of significance section includes references to the specific checklist questions consistent with Appendix G of the CEQA Guidelines. The **impacts and mitigation measures** discussion includes impact statements prefaced by a number in bold-faced type (for both project-specific and cumulative analyses). An explanation of each impact and an analysis of the impact's significance follow each impact statement, followed by all mitigation measures pertinent to each individual impact (see below). The degree of relief provided by identified mitigation measures is also evaluated. An example of the format is shown below.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in comparison with the standards of significance.

4.x-1 Statement of Project-Specific Impact

Discussion of impact for the proposed project in paragraph format.

Statement of ***level of significance*** of impact prior to mitigation is included at the end of each impact discussion. The following levels of significance are used in the EIR: less than significant, significant, or significant and unavoidable. If an impact is determined to be significant, mitigation will be included in order to reduce the specific impact to the maximum extent feasible. Impacts that cannot be reduced to a less-than-significant level with implementation of all feasible mitigation would be considered to remain significant and unavoidable.

Mitigation Measure(s)

Statement of *level of significance* after the mitigation is included immediately preceding mitigation measures.

4.x-1(a) *Required mitigation measure(s) presented in italics and listed in consecutive order.*

4.x-1(b) *Required additional mitigation measure, if necessary.*

Cumulative Impacts and Mitigation Measures

The following discussion of cumulative impacts is based on implementation of the proposed project in combination with cumulative development within the applicable area or region.

4.x-2 Statement of Cumulative Impact

Discussion of cumulative impacts for the proposed project in paragraph format.

As discussed in detail in Chapter 6, Statutorily Required Sections, of the EIR, the cumulative setting for the proposed project is generally considered to be development anticipated to occur upon buildout of the Butte County General Plan (i.e., Butte County).

Statement of ***level of significance*** of cumulative impact prior to mitigation is included at the end of each impact discussion. The following levels of significance are used in the EIR for cumulative impacts: less than significant, less than cumulatively considerable, cumulatively considerable, or significant and unavoidable. If an impact is determined to be cumulatively considerable, mitigation will be included in order to reduce the specific impact to the maximum extent feasible. Impacts that cannot be reduced to less-than-significant or less than cumulatively considerable levels with the implementation of all feasible mitigation would be considered to remain significant and unavoidable.

Mitigation Measure(s)

Statement of *level of significance* after the mitigation is included immediately preceding mitigation measures.

4.x-2(a) *Required mitigation measure(s) presented in italics and listed in consecutive order.*

4.x-2(b) *Required additional mitigation measure, if necessary.*

4.1. Aesthetics

4.1. AESTHETICS

4.1.1 INTRODUCTION

The Aesthetics chapter of the EIR describes existing aesthetic resources in the area of the proposed project and the broader region, and evaluates the potential aesthetic impacts of the project. CEQA describes the concept of aesthetic resources in terms of scenic vistas, scenic resources (such as trees, rock outcroppings, and historic buildings within a State scenic highway), and the existing visual quality or character of the project area. In addition, pursuant to CEQA Guidelines, this chapter describes potential impacts related to light and glare. The following analysis is based on information drawn from the 2030 Butte County General Plan,[1] the 2030 Butte County General Plan EIR,[2] and the 2030 Butte County General Plan Supplemental EIR (SEIR).[3]

Pursuant to the court ruling in *Preserve Poway v. City of Poway* (2016) 245 Cal. App.4th 560 [199 Cal.Rptr. 3d 600], community character is separate and apart from aesthetic impacts and, thus, is not a CEQA issue. Rather, the analysis of aesthetics should be limited to tangible, physical evidence that a project is visually inconsistent with the surrounding community (rather than a psychological "feel"). Therefore, where applicable, the analysis presented within this chapter focuses on potential physical changes to visual composition of the project site and surrounding area, rather than overall community character.

4.1.2 EXISTING ENVIRONMENTAL SETTING

The following setting information provides an overview of the existing conditions of visual resources in the project region and within the vicinity of the project site.

Visual Character of the Region

The regional area encompassing the proposed project is rural in character and with prominent geographic features, such as mountains, hills, and rivers. The area is situated within the foothills in the central portion of Butte County, located east of the City of Chico and west of the Town of Paradise. The foothill area occupies approximately 25 percent of the County's land area and consists of extensive rolling foothills with elevations ranging from about 200 to 2,100 feet above mean sea level (amsl). Foothill oak woodland, intermixed with chaparral, forms a transitional region between the valley grasslands in the western portion of the County and the mountain forests in the western portion of the County. According to the 2030 Butte County General Plan, the foothills form a distinct and highly attractive landscape which is more varied in topography and vegetation than the valley.

While viewpoints within the foothill area provide sweeping panoramas of the valley area and beyond, the visual character of the foothills is less open than the valley, which makes up the western portion of the County. The rolling topography is frequently punctuated by distinctive clusters of oaks or landforms such as Table Mountain. The foothills contain views of rivers, creeks, and ravines, and include vast grassland areas used for grazing, as well as significant rural,

1 Butte County. *Butte County General Plan 2030.* November 6, 2012.
2 Butte County. *Butte County General Plan 2030 Draft EIR*. April 8, 2010.
3 Butte County. *Butte County GPA & Zoning Ordinance Update Draft Supplemental EIR*. May 31, 2012.

suburban, and urban development. Because the vegetation in the foothills is primarily grasslands and chaparral, the foothills provide important scenic vistas along river and creek canyons and out across the Sacramento Valley, such as the views from Skyway, Neal Road, and State Route (SR) 70.

The 2030 Butte County General Plan identifies the following scenic resources within the County: Table Mountain Spring Floral Area; Central Buttes; Sacramento River and its Riparian Corridor; Butte Creek Canyon; Lake Oroville; Philbrook Lake; and the Feather Falls Scenic Area Features; as well as seasonal scenic resources, such as orchards in the valley areas of the County during the early spring when almonds and other trees are blossoming. Butte Creek Canyon is the nearest scenic resource to the project site and is located north of the project site, across Skyway.

Scenic Roadways

The nearest State highways to the project site are SR 99, which is located approximately 3.6 miles to the southwest, and SR 70, which is located 8.7 miles to the southeast. SR 99 is not an officially designated State scenic highway and officially designated State scenic highways are not located in Butte County.

According to the California Department of Transportation (Caltrans) map of designated and eligible scenic routes under the California Scenic Highway Program, a portion of SR 70, north of the intersection of SR 149, is eligible for official designation as a State scenic highway[4] and is included on the State's Master Plan. In addition, portions of SR 32 and SR 70 were designated as scenic highways by the 1977 Butte County Scenic Highway Element and are maintained as County-designated scenic highways under the 2030 General Plan. However, the aforementioned highways are not located in close proximity to the project site.

Skyway, which is adjacent to the project site, allows for scenic views of Butte Creek Canyon and the Northern Sacramento Valley, and is identified by the 2030 Butte County General Plan as a County-designated scenic route. In addition, the area extending 350 linear feet from the centerline of the roadway is considered to be a Scenic Highway (SH) Overlay Zone and is subject to the requirements of Section 24-42 of the Butte County Code of Ordinances.[5]

Visual Character of the Project Site and Surrounding Area

The following information provides an overview of the physical conditions of the project site and surrounding area in relation to visual character.

Project Site

The project site consists of approximately 163 acres of what was formerly the Tuscan Ridge Golf Course, located on the southeast side of Skyway, in unincorporated Butte County, between Chico and Paradise, California (see Figure 4.1-1). The project site is located within the west-facing foothills of the Cascade Mountains. Butte Creek Canyon is located approximately 0.25-mile northeast of the site and Nance Canyon is located approximately 0.2-mile south of the site.

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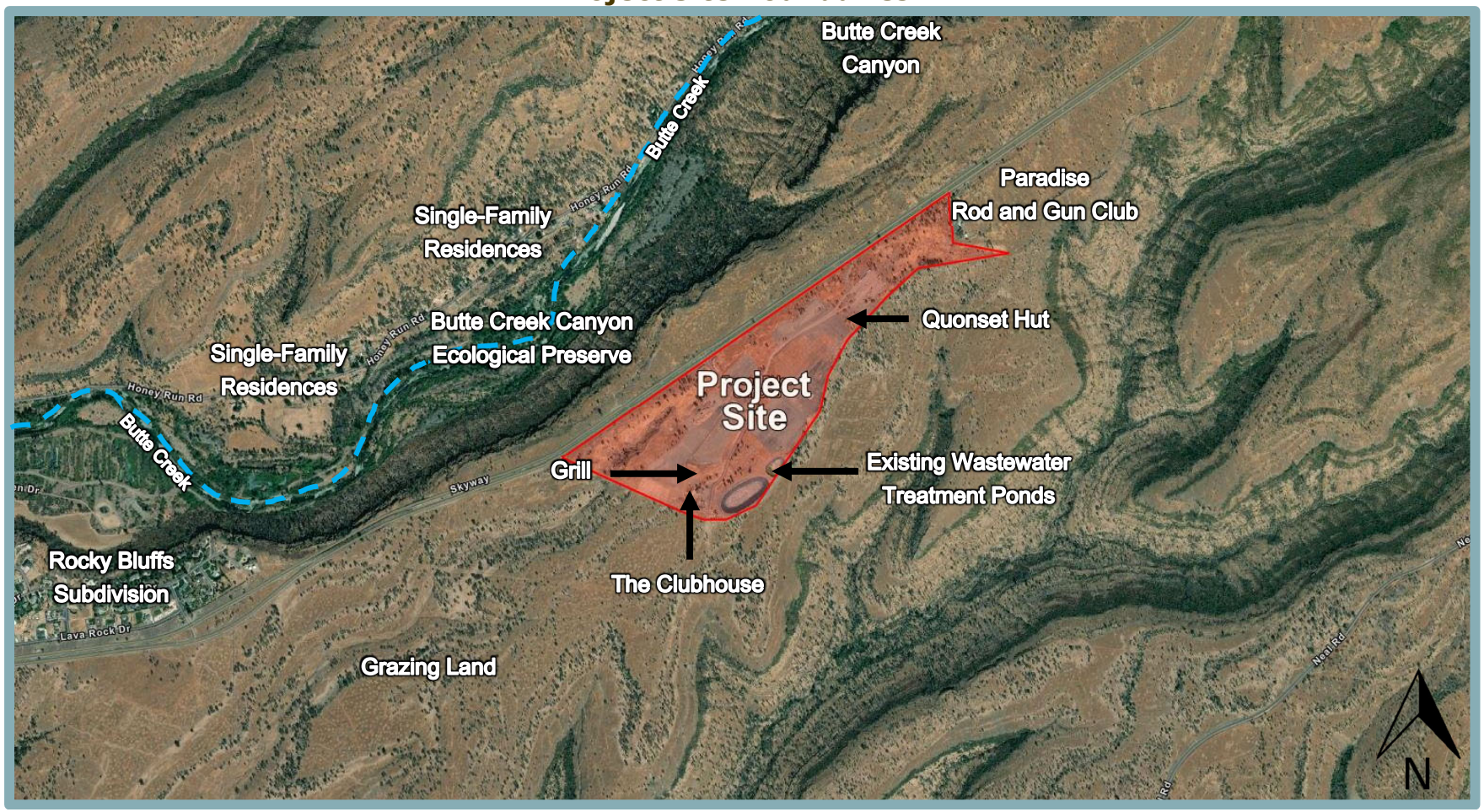
4 California Department of Transportation. *California State Scenic Highway System Map.* Available at: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed November 2022.

5 Butte County. *Butte County General Plan 2030* [pg. 10-47 and Figure COS-9]. November 6, 2012.

Figure 4.1-1
Project Site Boundaries



Skyway, which connects the City of Chico and the Town of Paradise, is the sole roadway in the immediate project vicinity and, as noted above, is identified by the 2030 Butte County General Plan as a County-designated scenic route. Currently, access to the project site is provided by an existing driveway from Skyway near the center of the site. The existing driveway has decorative boulder walls on either side and two metal gates prohibiting public entry. SR 32 lies approximately three miles to the north of the project site, SR 99 is approximately four miles to the west of the project site, and SR 191 is approximately five miles to the east of the project site.

In 2001, the site was developed into the Tuscan Ridge Golf Course, which included a clubhouse and bistro restaurant, and was in operation through 2017. In mid-2018, a portion of the site was used as a vegetation management camp for Pacific Gas & Electric (PG&E). The site was later burned during the 2018 Camp Fire and was subsequently leveled and graded to be used as a base camp for wildfire response and a post-fire housing and staging area by PG&E and debris removal contractors. This usage was completed in mid-2020, and a small footprint of the site is currently used as a staging area for a construction firm.

The terrain of the project site is varied from flat to gently sloped, with elevations ranging from approximately 650 feet amsl in the west to approximately 925 feet amsl in the east. Although the project site is located on a ridge where the terrain slopes downward from east to west north of the project site, and from west to east south of the project site, the site itself is relatively flat. Vegetation on the site consists primarily of sparse ruderal vegetation, along with scattered oak and pine trees. An existing drainage ravine is located within the northwestern portion of the site, generally parallel with Skyway, and includes a culvert under the main access driveway, as well as under an existing access easement in the western portion of the site. An existing outfall is located near the westernmost border of the site. A number of easements are present throughout the project site, including the access easement within the western portion of the site for the adjacent agricultural property, as well as power utility easements across the site. The access easement is currently used only occasionally by the adjacent property owner to move small pieces of equipment to and from their property.

Three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Course currently exist on-site: a 2,440-square foot (sf) grill building, an 1,830-sf clubhouse, and a Quonset hut. In addition, an existing potable water well and associated system, including two 10,000-gallon aboveground storage tanks, as well as an existing wastewater treatment system, including septic tanks, leach field, and disposal ponds, are located in the southwestern portion of the site.

Surrounding Areas

The project site is located on the southeast side of Skyway in a rural area south of Butte Creek Canyon. The landscape adjacent to the project site is comprised of dry canyons sloping toward lower and flatter foothill areas. The area surrounding the project site is predominantly undeveloped and is defined by several canyons, which primarily run northeast to southwest across the landscape. Sweeping views of the Northern Sacramento Valley are located south of the project site. The land to the north, across Skyway, consists of Butte Creek Canyon, Butte Creek, the Butte Creek Ecological Preserve, and scattered residences, beyond which are stretches of undeveloped land. As discussed above, the 2030 Butte County General Plan identifies Butte Creek Canyon as a scenic resource. The Rocky Bluffs subdivision is located approximately 4,100 feet to the southwest of the project site, across Skyway. The area south of the project site consists of grazing land and the topography is defined by dry canyons. The

Paradise Rod & Gun Club is located adjacent to the northeast border of the project site and consists of two buildings with associated parking spaces, and two outdoor shooting ranges.

Viewer Types

Viewer types in the vicinity that have views of the project site include the following:

- *Motorists* along Skyway would have existing views of the project site while driving past the site. Views of the site from Honey Run Road, north of Skyway, are entirely obscured by existing intervening topography and vegetation.
- *Residents* of the existing single-family residences to the southwest have limited views of the site. In addition, views are partially blocked by existing vegetation associated with the residences and oak woodlands. The single-family residences north of the project site are primarily located on Honey Run Road, and thus, views of the site from the single-family residences would be obscured by existing intervening topography and vegetation.

Public Versus Private Views

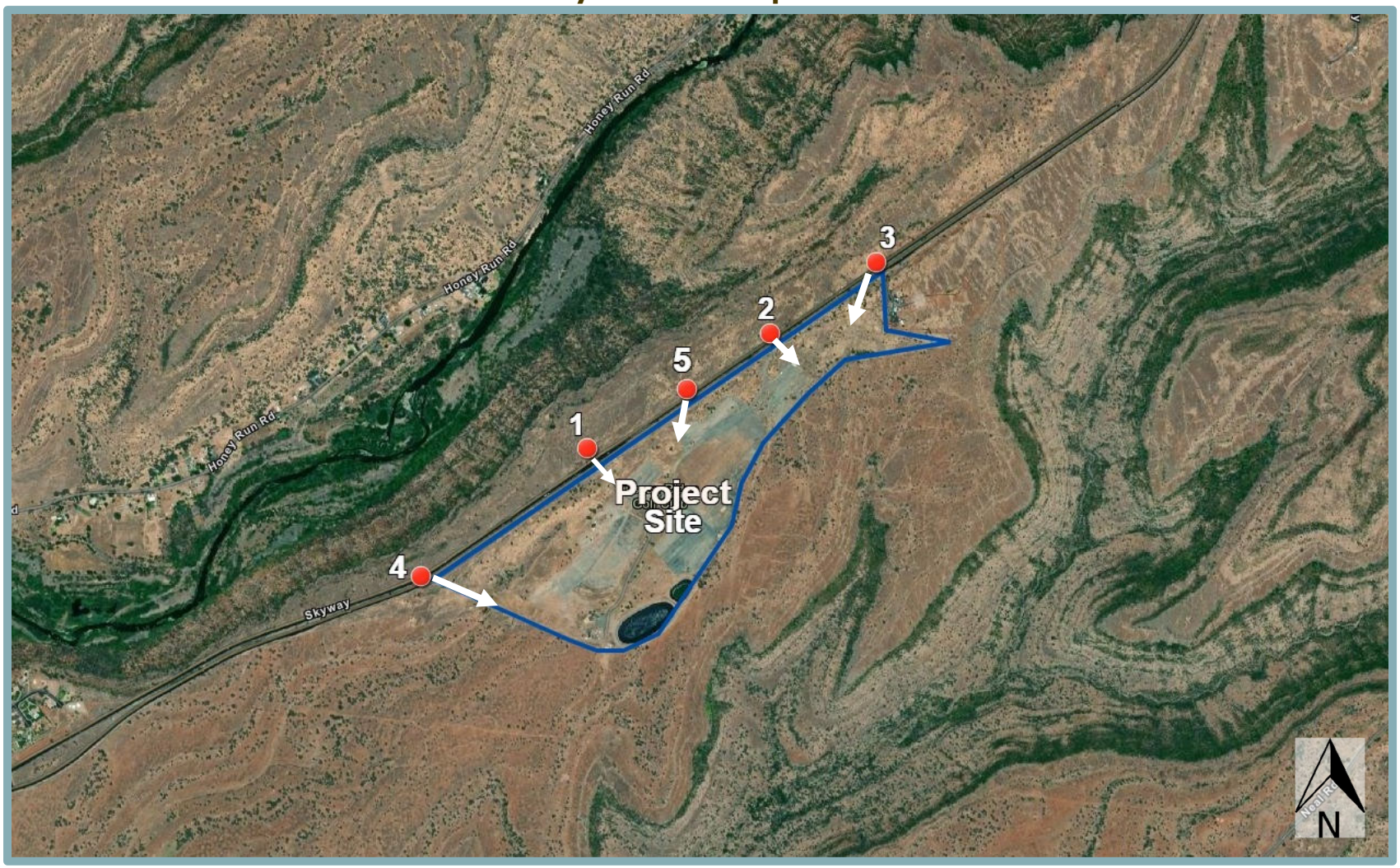
Travelers along nearby roadways, as well as the nearby residences located north of the project site across Skyway, would be considered sensitive visual receptors. However, it is important to distinguish between public and private views. Private views are views seen from privately-owned land and are typically viewed by individual viewers, including views from private residences. Public views are views that are experienced by the collective public. In the case of the proposed project, public views would consist primarily of views from Skyway in the project vicinity.

CEQA (Public Resources Code Section 21000 et seq.) case law has established that only public views, not private views, are protected under CEQA. For example, in *Association for Protection etc. Values v. City of Ukiah* (1991) 2 Cal.App.4th 720 [3 Cal. Rptr.2d 488] the court determined that "we must differentiate between adverse impacts upon particular persons and adverse impacts upon the environment of persons in general. As recognized by the court in *Topanga Beach Renters Assn. v. Department of General Services* (1976) 58 Cal.App.3d 188 [129 Cal.Rptr. 739]: '[A]ll government activity has some direct or indirect adverse effect on some persons. The issue is not whether [the project] will adversely affect particular persons but whether [the project] will adversely affect the environment of persons in general.'" Such a conclusion is consistent with the thresholds of significance established in Appendix G of the CEQA Guidelines. Therefore, it is appropriate to focus the aesthetic impact analysis on potential impacts to public views, rather than private views.

Existing Conditions of Key Viewpoints

Butte County, in coordination with the environmental consultant team for the project, selected key public viewpoints that would most clearly display the proposed project's potential visual effects. Segments of Skyway within the project vicinity are characterized as key public viewpoints (see Figure 4.1-2).

Figure 4.1-2
Key Public Viewpoints



View 1: Views from Skyway/Main Entry

The view from Skyway toward the project site's main entry is shown in Figure 4.1-3. As shown in View 1, the view from Skyway toward the main entry of the project site consists of trees and grasses, as well as two decorative boulder walls on either side of an existing graded driveway, a property sign associated with the former Tuscan Ridge Golf Course, and a metal vehicle access gate in the foreground. Views also include a private road, which is located on the property and proceeds from the foreground into the background. Grasses, trees, and graded and gravel-covered areas are prominent in the midground and grasses and trees can be seen in the background.

View 2: Views from Skyway/Secondary Entry

The view from Skyway toward the project site's proposed secondary entry is shown in Figure 4.1-4. As shown in View 2, the view from Skyway toward the secondary entry of the project site consists of trees and grasses. Views also include a private road, which is located on the property and proceeds from the foreground to the background. Grasses, trees, and graded and gravel-covered areas are prominent in the midground and canopies of trees can be seen in the background.

View 3: Views from North of the Project Site Along Skyway (Looking Southwest Toward Project Site)

Views from north of the project site along Skyway looking southwest toward the project site are shown in Figure 4.1-5. As shown in View 3, the view from Skyway toward the project site consists of trees and grasses in the foreground. Grasses, trees, and graded and gravel-covered areas are prominent in the midground and canopies of trees can be seen in the background. Beyond the canopies of trees, views of the Northern Sacramento Valley can be seen further south.

View 4: Views from South of the Project Site Along Skyway (Looking Southeast Toward Project Site)

Views from south of the project site along Skyway looking southeast toward the project site are shown in Figure 4.1-6. As shown in View 4, the view from Skyway toward the project site consists of scattered trees and grasses in the foreground and midground. Scattered trees and grasses along rolling hills can be seen in the background.

View 5: Views from Skyway (Looking Southwest Toward Project Site)

Views from Skyway looking southwest toward the project site, where a gap in existing on-site vegetation occurs, are shown in Figure 4.1-7. As shown in View 5, the view from Skyway toward the project site consists primarily of grasses with scattered trees in the foreground and midground, with the Northern Sacramento Valley in the background.

Light Pollution and Glare

Light pollution refers to all forms of unwanted light in the night sky, including glare, light trespass, sky glow, and excessive illumination at an intensity that is inappropriate. Views of the night sky can be an important part of the natural environment, particularly in communities surrounded by extensive open space. Excessive light and glare can also be visually disruptive to humans and nocturnal animal species.

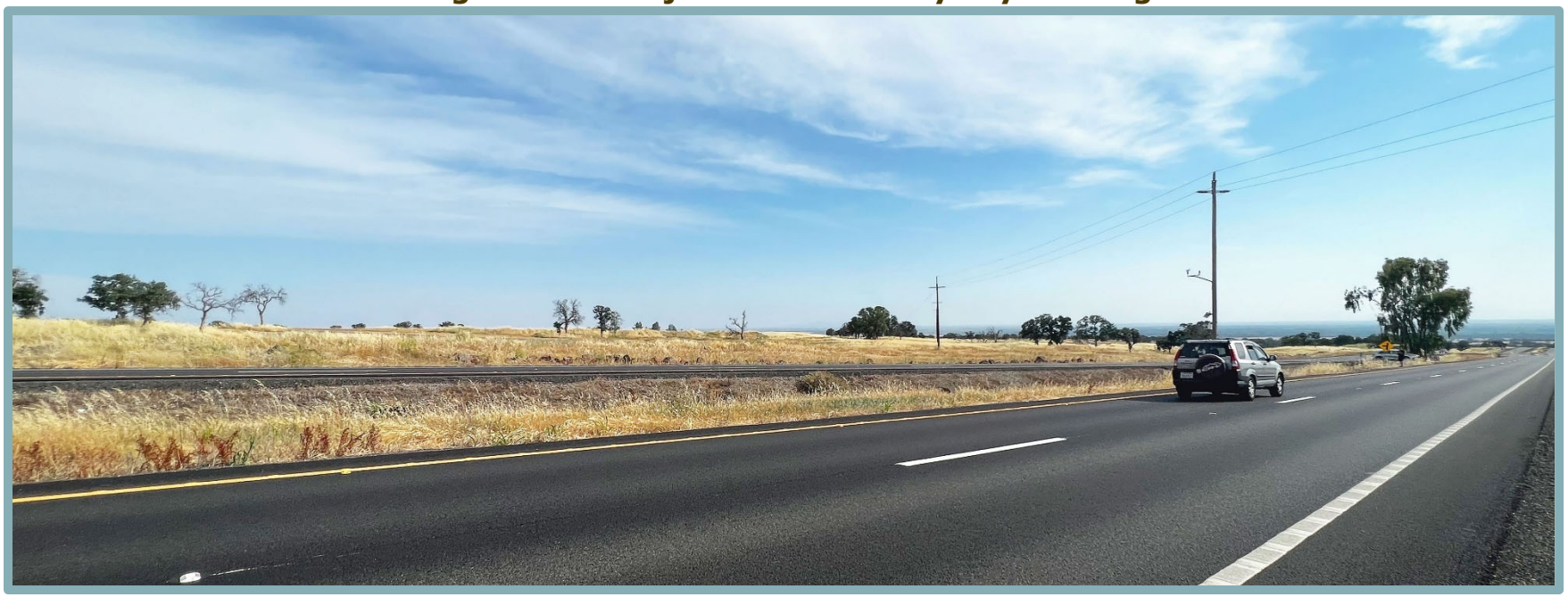
Figure 4.1-3
View 1: Existing View of Project Site from Skyway/Main Entry Looking South

Figure 4.1-4
View 2: Existing View of Project Site from Skyway/Secondary Entry Looking Southeast

Figure 4.1-5
View 3: Existing View of Project Site from North of the Project Site Along Skyway Looking Southwest

Figure 4.1-6
View 4: Existing View of Project Site from the South of the Project Site Along Skyway Looking Southeast

Figure 4.1-7
View 5: Existing View of Project Site from Skyway Looking Southwest



Currently, the project site is primarily characterized by an undeveloped, unlit landscape. The project site is located within the vicinity of existing sources of light and glare associated with the nearby Paradise Rod and Gun Club to the northeast. Lighting associated with existing development and headlights from vehicles traveling on Skyway, currently contributes to the overall nighttime lighting environment of the project area.

4.1.3 REGULATORY CONTEXT

Applicable federal laws or regulations pertaining to the aesthetic quality of the project area do not exist. The existing State and local laws and regulations applicable to the proposed project are listed below.

State Regulations

The following is an applicable State regulation related to aesthetic resources.

California Scenic Highway Program

The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. Such highways are identified in Section 263 et seq. of the California Streets and Highways Code.

Local Regulations

The following local regulations are applicable to the proposed project.

2030 Butte County General Plan

The following design goals and policies of the 2030 Butte County General Plan are applicable to the proposed project:

Goal COS-17 Maintain and enhance the quality of Butte County's scenic and visual resources.

Policy COS-P17.1 Views of Butte County's scenic resources, including water features, unique geologic features and wildlife habitat areas, shall be maintained.

Policy COS-P17.2 Ridgeline development near scenic resources shall be limited via the adoption of specific development guidelines in order to minimize visual impacts.

Goal COS-18 Protect and enhance scenic areas adjacent to and visible from highways for enjoyment by residents and visitors.

Policy COS-P18.1 The County shall designate scenic corridors based on careful consideration of the following factors:

a. Relationship to the scenic highway system, including proximity to urban population centers, gateways, integration with other highways and scenic highways and access to major recreation areas.
b. Safety characteristics, including road surface and alignment, shoulder width, traffic levels, number of

intersections, access points, turnouts and rest areas.

c. Scenic characteristics, including vista points, geologic resources, native plant and animal species, waterways, historic resources and agricultural, timber and recreation uses.
d. Government policies, including public lands, eligibility for State scenic highway designation, and consistency with other Butte County General Plan 2030 elements.
e. Economic impacts on properties affected by a scenic highway designation.

4.1.4 IMPACTS AND MITIGATION MEASURES

This section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to aesthetics. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an impact related to aesthetics is considered significant if the proposed project would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway;
- In a non-urbanized area, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point) or, in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality; or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Method of Analysis

The section below gives full consideration to the development of the proposed project and acknowledges physical changes to the existing setting. Impacts to the existing environment of the project area are to be determined by the contrast between the visual setting before and after buildout of the proposed project. The standards of significance listed above are used to delineate the significance of any visual alterations of the site, including alterations that would impact views from public viewsheds in the project area. The standards are not based solely on a change in the visual character or quality of the site and its surroundings, but whether the changes would substantially degrade said visual character or quality.

19six Architects, under contract with Raney Planning & Management (Raney), prepared computer-generated simulations of the selected five viewpoints to aid in the visual character evaluation of the proposed project. 19six Architects 3D modeled the entire project site with the completed development based on project-specific information. 19six Architects then overlayed photos of the existing project site from each designated location and aligned each 3D model view to ensure that the view angle and perspective matched the photos of the project site. The

composition of the photo simulations consists of the existing setting as the top layer, the completed development (3D model) as the middle layer, and the background as the final layer.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts related to aesthetics is based on implementation of the proposed project in comparison to existing conditions and the standards of significance presented above.

4.1-1 Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway. Based on the analysis below, the impact is *less than significant.*

As previously noted, officially designated State scenic highways are not located in Butte County. County-designated scenic highways and an area extending 350 feet from the centerline of the scenic highway are zoned SH. According to the 2030 Butte County General Plan EIR, such scenic highways include portions of SR 32, north of the City of Chico; SR 70, north of the SR 149 intersection; SR 191; SR 162, near Lake Oroville; Skyway through Butte Creek Canyon; Forbestown Road; and Lumpkin Road.

While the project site is not within view of a State-designated scenic highway, the project site is located within view of Skyway, which is identified by the 2030 Butte County General Plan as a County-designated scenic route. In addition, the project area extending 350 linear feet from the centerline of the roadway is considered to be an SH Overlay Zone and is subject to the requirements of Section 24-42 of the Butte County Code of Ordinances. However, Skyway is not included on the 2030 County General Plan's map of County Scenic Highways (see Figure COS-8 of the 2030 General Plan). Impacts related to views from Skyway are further discussed in Impact 4.1-2 below.

Butte Creek Canyon is the nearest scenic resource to the project site and is located north of the project site, across Skyway. The proposed project would not have a visual impact to Butte Creek Canyon. However, as previously noted, State scenic highways do not occur within the County. With respect to scenic resources, the project site does not include scenic resources, such as historic buildings or rock outcroppings.

Based on the above information, because officially designated State scenic highways are not located near the project site, the proposed project would not substantially damage scenic resources, including but limited to, trees, rock outcroppings, and historic buildings, within a State scenic highway. Therefore, the project would result in a ***less-than-significant*** impact.

Mitigation Measure(s)

None required.

4.1-2 Have a substantial adverse effect on a scenic vista or, in a non-urbanized area, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point) or, in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality. Based on the analysis below, even with implementation of mitigation, the impact is *significant and unavoidable*.

Because the proposed project would be generally consistent with the 2030 General Plan land use designation for the site, potential impacts to scenic vistas and visual character associated with future development of the project site were already evaluated and considered in the 2030 General Plan EIR analysis, which concluded that the 2030 General Plan's goals, policies, and programs would mitigate any potential impacts on the aesthetic qualities inherent in the General Plan area.[6] In addition, following approval of the Planned Development Rezone, the proposed project would be required to comply with the adopted Final Development Plan of the Planned Development District for the project site. The adopted Final Development Plan would include development standards for development features such as landscaping; building materials; fences, walls, and screenings; and open space. However, as previously discussed, the 2030 General Plan EIR determined that development on a significant amount of land could result in a significant change to the visual character and quality of the County.

Potential impacts to scenic vistas and the visual character and quality of public views as a result of the proposed project are discussed in detail below.

Scenic Vista

A scenic vista, as defined in this EIR, is an area that is designated, signed, and accessible to the public for the express purposes of viewing and sightseeing. A scenic vista includes any such areas designated by a federal, State, or local agency.

According to the 2030 Butte County General Plan, the rural setting and unique geography of Butte County and its surrounding area have created a number of scenic vistas and corridors. For example, the foothills of Butte County, in which the project site is located, provide important scenic vistas along river and creek canyons and out across the Sacramento Valley, such as the views from Skyway, which is adjacent to the project site. Motorists traveling on Skyway have public views of the Butte Creek Canyon, located northwest of the project site, across Skyway, as well as the Northern Sacramento Valley, which can be seen in the distant background to the south of the project site. Because Butte Creek Canyon and the project site are located on opposite sides of Skyway, development of the proposed project would not obstruct public views of the Butte Creek Canyon. However, as shown on Figure 4.1-16 and Figure 4.1-7, views of the Northern Sacramento Valley are currently offered for motorists traveling on Skyway when looking south toward the project site. Therefore, development of the

[6] Butte County. *Butte County General Plan 2030 Draft EIR* [pgs. 4.I-9 through 4.I-14]. April 8, 2010.

proposed project could obstruct public views of the Northern Sacramento Valley from Skyway.

Visual Character and Quality

Given that the existing development in the immediate vicinity of the site is primarily rural in nature, the analysis within this chapter considers the project area to be non-urbanized. The proposed project would include subdivision of the project into 165 single-family residential lots, six commercial use lots, 36.7 acres of open space, 4.1 acres of landscaped areas, 20.5 acres of roadway, and 49 acres of special utility district associated with the on-site water and sewer systems. The residences would generally be located in the center of the site, with the largest residential lots located nearest to the southern border of the project site, where expansive views are available to the south.

The proposed project would include 15.9 acres divided into six lots for commercial uses. As currently designed, the proposed project would include an approximately 3,600-sf gas station/convenience store with up to 16 fuel dispensers and up to approximately 76,000 sf of commercial space, across one- and two-story buildings, along the primary site entrance. The specific uses within the approximately 76,000 sf of commercial space near the main entry are currently unknown. One known use of the commercial portion of the proposed project would be a mini-storage facility with outdoor RV and boat storage located in the eastern portion of the project site. The mini-storage facility would offer up to approximately 53,000 sf of space for storage units.

As part of the proposed project, a total of approximately 36.7 acres of open space is proposed within the project site, which would primarily be located in the southwestern portion of the project site, as well as in areas surrounding the on-site areas anticipated for Special Utility District Uses. The proposed project would include approximately 4.1 acres of landscaped area. Landscaping on the project site would reflect the native vegetation in the area. As discussed in Impact 4.3-9 of Chapter 4.3, Biological Resources, of this EIR, it is estimated that approximately 375 of the 843 on-site trees could be subject to removal to develop the proposed project. However, the project would include new trees and other landscaping elements throughout the project site and enhanced landscaping at the project entries. As such, the proposed landscaping would help to screen the project from public views.

As previously discussed, Skyway, which is adjacent to the project site, allows for scenic views of Butte Creek Canyon and the Northern Sacramento Valley, and is identified by the 2030 Butte County General Plan as a County-designated scenic route. In addition, the 2030 Butte County General Plan has established that the area extending 350 linear feet from the centerline of Skyway is within the SH Overlay Zone and is subject to the requirements of Section 24-42 of the Butte County Code of Ordinance. As shown in Figure 4.1-8 through Figure 4.1-12, the majority of the proposed development would be set back beyond the 350-foot SH Overlay Zone. However, the main and secondary site entrances; seven lots west of the main entrance; nine lots east of the main entrance; portions of the access roads, sound walls, some residential backyards; and limited portions of the commercial development would be located within the SH Overlay Zone.

Figure 4.1-8
Project Area Within the SH Overlay Zone (1 of 5)

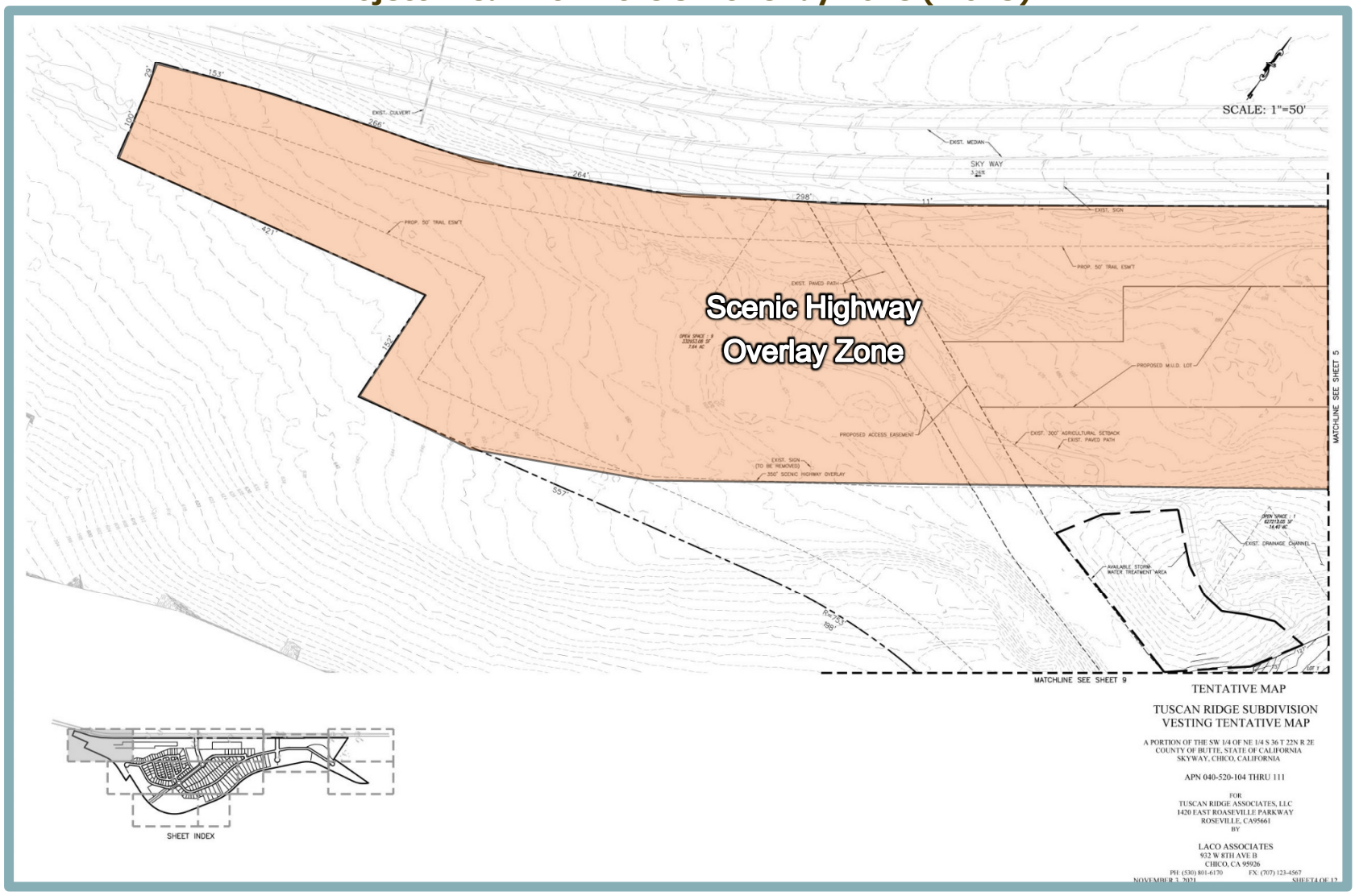


Figure 4.1-9
Project Area Within the SH Overlay Zone (2 of 5)

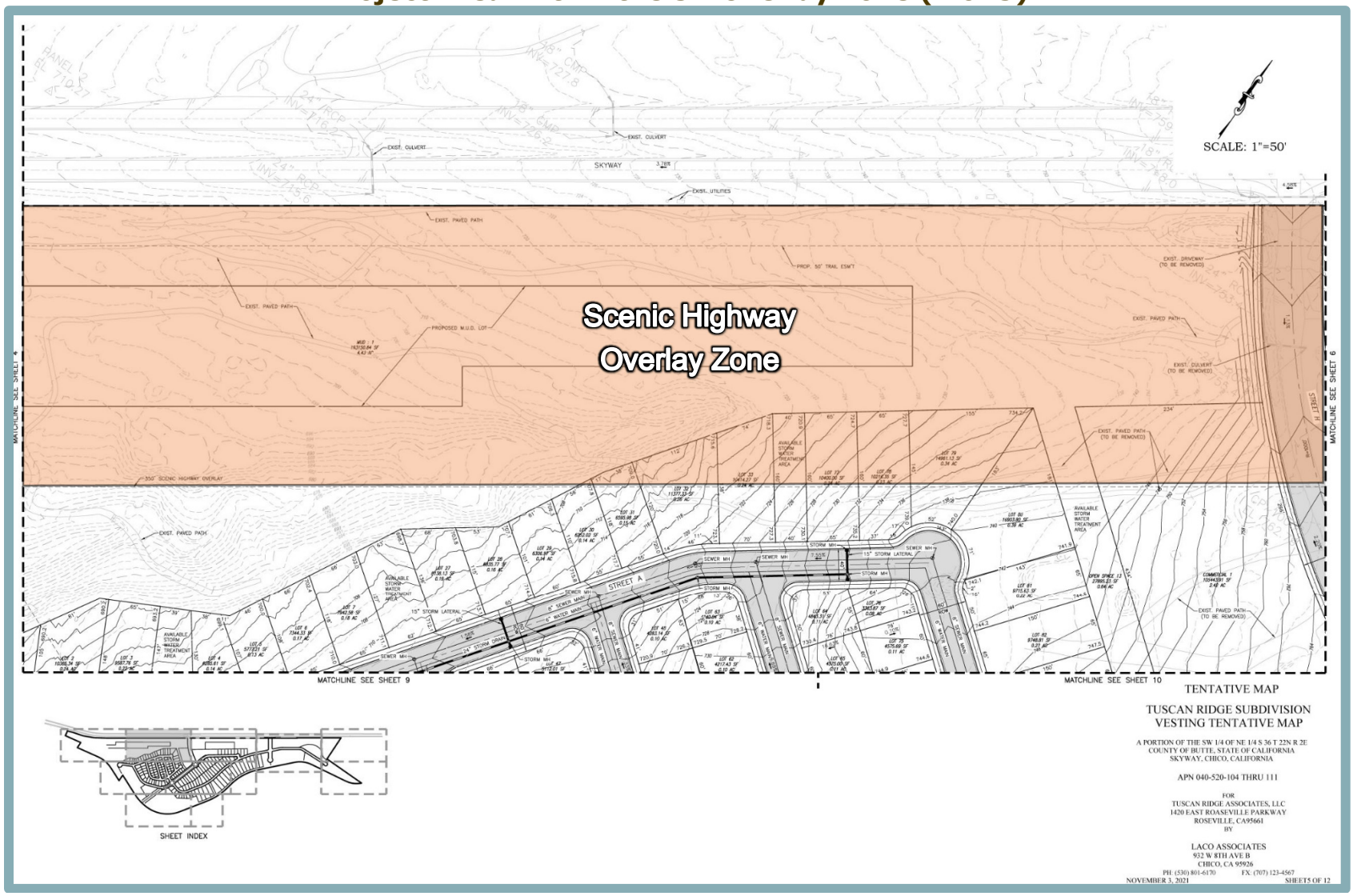


Figure 4.1-10
Project Area Within the SH Overlay Zone (3 of 5)

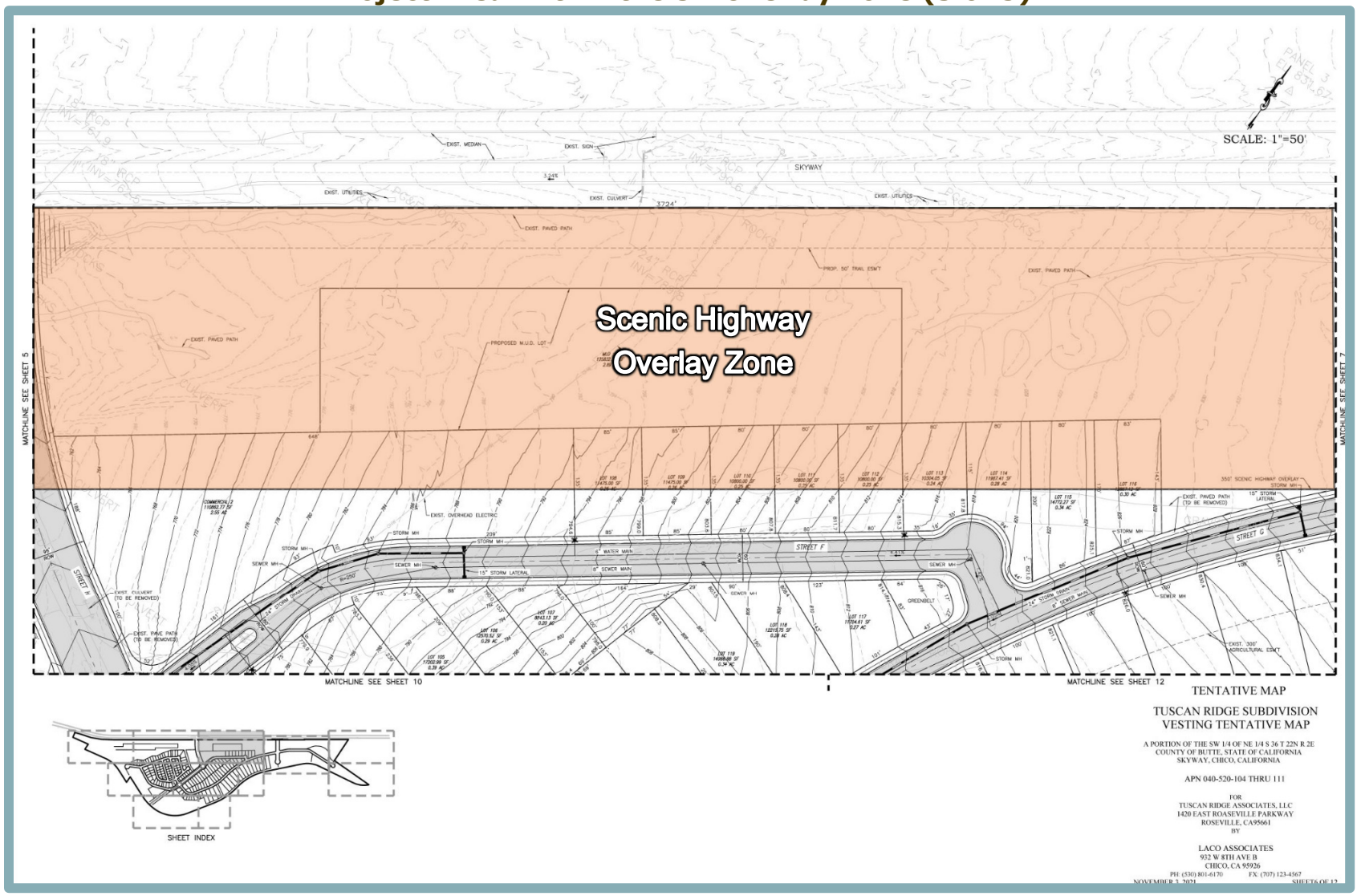


Figure 4.1-11
Project Area Within the SH Overlay Zone (4 of 5)

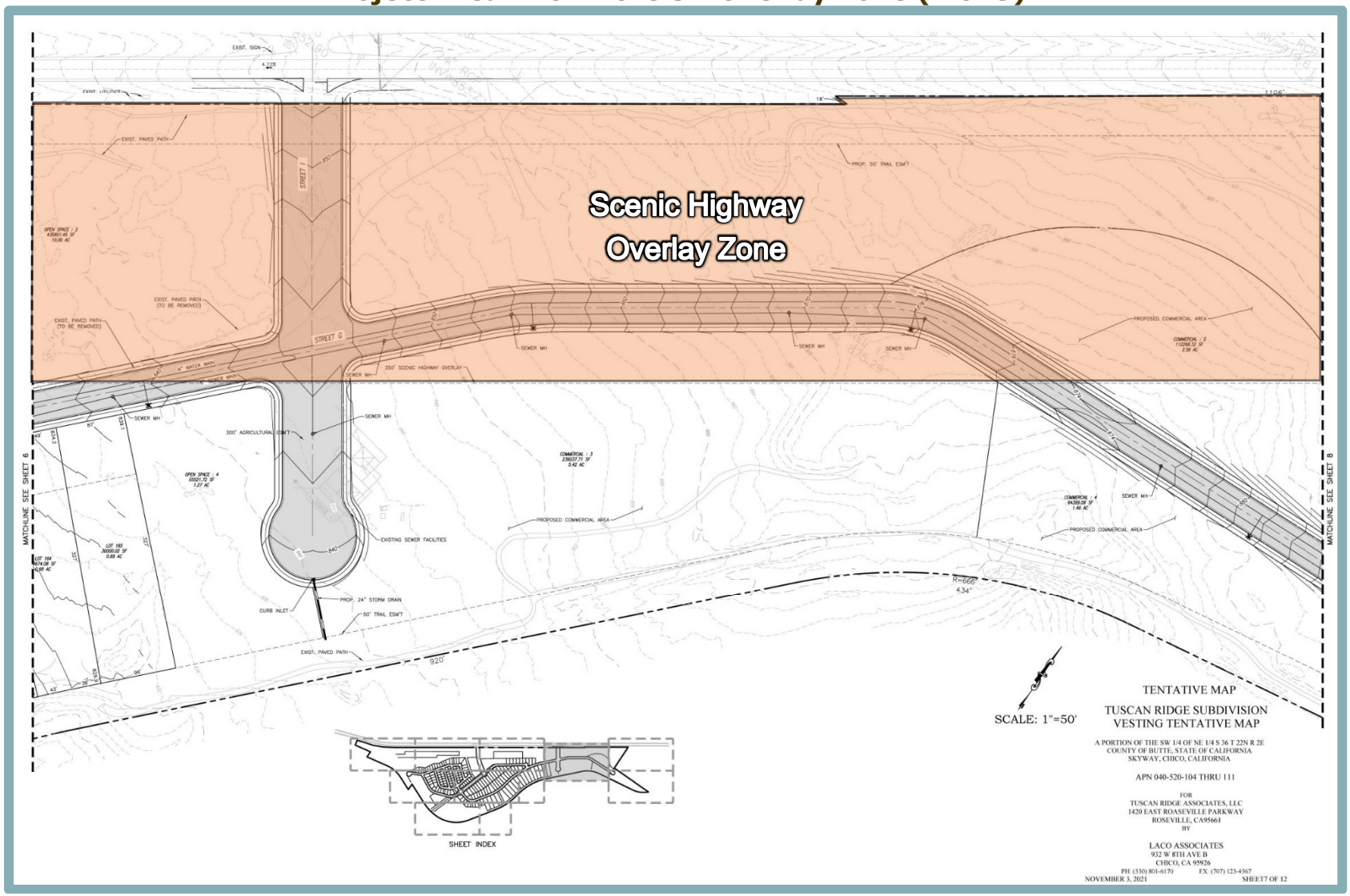
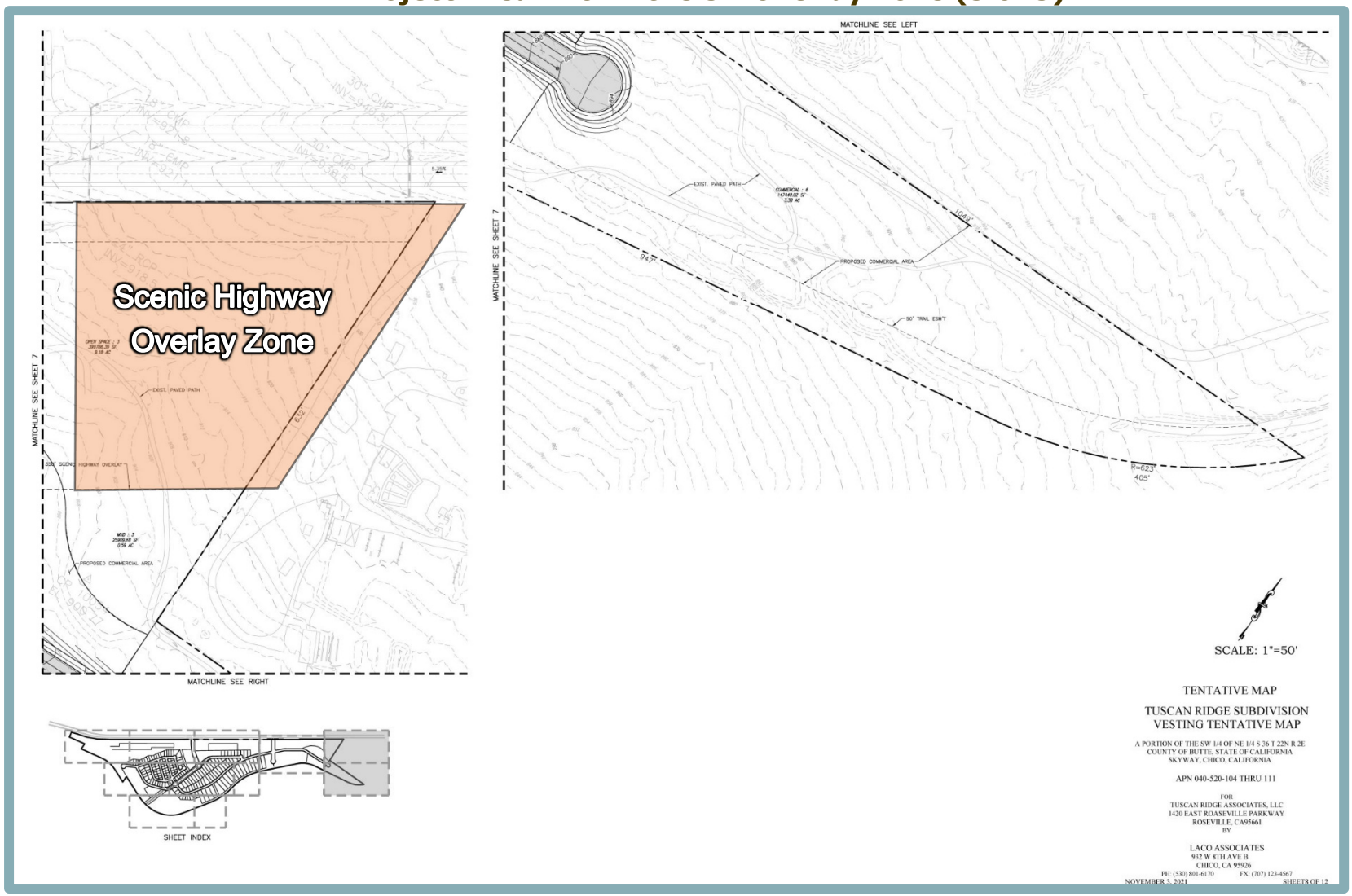


Figure 4.1-12
Project Area Within the SH Overlay Zone (5 of 5)



The proposed project would include a request for the approval of a Minor Use Permit to allow for development within the 350-foot SH Overlay Zone from Skyway pursuant to Section 24-42 C, *Scenic highway overlay zone*, of the Butte County Code of Ordinances. Pursuant to Section 24-42 C, single-family residences are exempt from the 350-foot setback requirement. Furthermore, portions of the proposed project located within the SH Overlay Zone would be required to comply with the Development Standards for the SH Overlay Zone.

As discussed above, public views of the project site are afforded from Skyway. Changes to the aforementioned key public viewpoints due to development of the proposed project are discussed separately in further detail below.

View 1: Views from Skyway/Main Entry

Currently, the view from this public vantage point along Skyway at the proposed main entry to the project site consists of trees, grasses, as well as two decorative boulder walls on either side of an existing graded driveway, a Tuscan Ridge Golf Course property sign, and a metal vehicle access gate in the foreground. A private road winds from the foreground into the background of the property. Grasses, trees, and graded and gravel-covered areas are prominent in the midground, and grasses and trees can be seen in the background.

19six Architects prepared a photo simulation representing daytime public views of the project site from this viewpoint with a rendering of the proposed project. The simulations of the viewpoint from the proposed main entry at Skyway include a new paved road, greenway with sidewalks along both sides, and a roundabout in the foreground. The proposed gas station and convenience store, commercial buildings, and landscaping are viewable in the midground and background. Figure 4.1-13 shows the existing viewshed from Skyway as compared to the view with the proposed project incorporated.

As shown in Figure 4.1-13, the existing view of a paved road with decorative boulder walls and a property sign with trees and grasses would generally remain unchanged with development of the proposed project. However, the proposed entry road, commercial development (i.e., gas station and convenience store) and a limited number of single-family residences would be visible from Skyway. Furthermore, the main entry road and the gas station and convenience store would be located within the SH Overlay Zone associated with Skyway. Therefore, as noted above, the proposed project would include a request for the approval of a Minor Use Permit to allow for development within the 350-foot SH Overlay Zone from Skyway pursuant to Section 24-42 C, *Scenic highway overlay zone*, of the Butte County Code of Ordinances.

The proposed open space and sidewalks along the main entry road and internal roadways would allow for a more pedestrian-oriented streetscape, consistent with Goal LU-3 of the Land Use Element from the 2030 Butte County General Plan. All aspects of the proposed landscaping and open space areas would be designed in accordance with the applicable provisions of the County Code of Ordinances.

Figure 4.1-13
View 1: Existing Versus Post-Project Conditions

Furthermore, the speed limit on Skyway is 50 miles per hour (mph) along the project frontage. Given the speed limit, public views are temporary, occurring only as motorists briefly pass by the project site.

While the proposed project would include a Planned Development Rezone to allow for development of the site at the proposed specifications, the County has previously considered buildout of the project site with 165 dwelling units and a golf course, given the project site's current land use designations of Planned Unit Development (PUD). The proposed project would not include an increase in residential units; however, the project would include development of commercial uses unrelated to the golf course, which was not originally anticipated by the 2030 General Plan EIR

Furthermore, the 2030 General Plan EIR determined that development of a significant amount of land could result in a significant impact. Although the site was previously developed with the Tuscan Ridge Golf Course, the proposed commercial development would be more intensive than what was originally anticipated for the project site.

Based on the above, the existing visual character and quality of public views of the project site and its surroundings from View 1 would be considered to be substantially degraded by the proposed project.

View 2: Views from Skyway/Secondary Entry

Similar to the discussion of View 1 above, the current view of the project site from Skyway toward the secondary entry of the project site consists of trees and grasses. Views also include a private road, which is located on the property and proceeds from the foreground to the background. Grasses, trees, and graded and gravel-covered areas are prominent in the midground. Shipping containers and other temporary structures associated with the Camp Fire are scattered in the midground on the graded and gravel-covered areas and are partially screened by trees and other vegetation. Canopies of trees can also be seen in the background.

19six Architects prepared a photo simulation representing a daytime rendering of the proposed project from this public viewpoint. The simulation from Skyway/Secondary Entry viewpoint assumes a new paved driveway, which ends in a stubbed street and has connections to the internal roadway to the left and right. The proposed commercial uses and residences are partially screened from view by existing trees and other vegetation. However, the proposed commercial uses and nine residential lots and backyards would be located within the SH Overlay Zone and are visible from Skyway. As previously discussed, pursuant to Section 24-42 C, single-family residences are exempt from the 350-foot setback requirement. Figure 4.1-14 shows the existing viewshed from Skyway/Secondary Entry as compared to the view with the proposed project incorporated.

Following project construction, the existing trees and vegetation would be retained, and the existing private road would be improved as a paved secondary entry to the site. As shown in Figure 4.1-14, the proposed commercial uses and residences are discernible from Skyway/Secondary Entry and would be partially screened by existing trees and other vegetation.

Figure 4.1-14
View 2: Existing Versus Post-Project Conditions

As previously discussed, the proposed project would include new landscaping within the open space areas along the project frontage, which would reflect the native vegetation of the area and would further help to screen the proposed development from view.

The level of visual intrusion of the single-family residences and the commercial buildings would be similar to that of the Skyway/Main Entry viewpoint. For example, although partially screened from view, the commercial uses and residences would be temporarily visible to motorists traveling along Skyway. However, while the 2030 General Plan EIR anticipated development of residences at the project site, development of commercial uses was not previously anticipated by the 2030 General Plan EIR. Furthermore, the 2030 General Plan EIR determined that development of a significant amount of land could result in a significant impact.

Although the site was previously developed with the Tuscan Ridge Golf Course, the proposed commercial development would be more intensive than what was originally anticipated for the project site. Additionally, as previously discussed, the proposed commercial uses and nine residential lots and backyards would be located within the SH Overlay Zone and would be visible from Skyway. Thus, given that the project site is predominantly undeveloped and affords views from Skyway of grasses and trees, the existing visual character of the parcels would be significantly altered following development of the proposed project.

Based on the above, the existing visual character and quality of public views of the project site and its surroundings from View 2 would be considered to be substantially degraded by the proposed project.

View 3: Views from North of the Project Site Along Skyway (Looking Southwest Toward Project Site)

Figure 4.1-15, shows the existing viewshed from Skyway looking southwest toward the project site compared to the view with the proposed project incorporated. As shown in Figure 4.1-15, the current view from the public vantage point along Skyway looking southwest toward the project site is comprised of trees and grasses in the foreground and midground, with scattered graded and gravel-covered areas also in the midground. Canopies of trees are seen in the background on the hillside. Beyond the canopies of trees, views of the Northern Sacramento Valley can be seen further south.

19six Architects prepared a photo simulation representing a daytime rendering of the proposed project from this public viewpoint. The simulated view from Skyway looking southwest toward the project site assumes development of the commercial buildings, including the mini-storage facility and RV and boat storage facility, as well as the water tank. The simulated view includes the retention of existing vegetation along the project site frontage.

As shown in Figure 4.1-15, the proposed commercial development and water tank are slightly discernible from Skyway, beyond the existing trees and vegetation. Following project construction, the existing trees and vegetation would be predominantly retained and the proposed landscaping would help to further screen the project from public views.

Figure 4.1-15
View 3: Existing Versus Post-Project Conditions

However, while the visual intrusion of the commercial buildings and water tank would be less substantial than that of the views from Skyway/Main Entry or Skyway/Secondary Entry, the proposed commercial uses and water tank would still be slightly discernible from Skyway and would be located within the SH Overlay.

Based on the above, while development of the proposed project would be predominantly screened from public view due to the existing trees and vegetation, because development of the proposed project would still be discernible and would occur within the SH Overlay, the existing visual character and quality of public views of the project site from Skyway looking southwest would be considered to be substantially degraded by the proposed project.

View 4: Views from South of the Project Site Along Skyway (Looking Southeast Toward Project Site)

The current view of the project site from Skyway looking southeast, consists of scattered trees and grasses in the foreground and midground. Scattered trees and grasses along rolling hills can be seen in the background.

19six Architects prepared a photo simulation representing a daytime rendering of the proposed project from this public viewpoint. The viewpoint simulation from Skyway looking southeast toward the project site assumed open space would be located in the foreground and midground and single-family residences would be located in the background, while the existing vegetation would be retained. Figure 4.1-16, shows the existing viewshed from Skyway looking southeast toward the project site compared to the view with the proposed project incorporated.

As shown in Figure 4.1-16, following project construction, the views of the existing trees and vegetation in the foreground and midground would be substantially retained as open space. Furthermore, the proposed single-family residences presented in View 4 would not be within the 350-foot setback of the SH Overlay Zone. However, the proposed single-family residences would be a noticeable addition to an otherwise primarily undeveloped landscape. Thus, the visual intrusion of the development would be similar to that of views from Skyway/Main Entry. While the project site was planned for development with 165 dwelling units and a golf course, the single-family residences would alter the views of the site from primarily undeveloped to residential uses.

Based on the above, the existing visual character and quality of public views of the project site and its surroundings from Skyway looking southeast would be considered to be substantially degraded by the proposed project.

View 5: Views from Skyway (Looking Southwest Toward Project Site)

The current view of the project site from Skyway looking southwest consists of grasses and scattered trees in the foreground and midground, with the Northern Sacramento Valley in the background.

Figure 4.1-16
View 4: Existing Versus Post-Project Conditions

19six Architects prepared a photo simulation representing a daytime rendering of the proposed project from this public viewpoint. The viewpoint simulation from Skyway looking southwest toward the project site assumed open space would be located in the foreground and single-family residences would be located in the midground and background. Figure 4.1-17 shows the existing viewshed from Skyway looking southwest toward the project site compared to the view with the proposed project incorporated.

As shown in Figure 4.1-17, following project construction, the existing trees and vegetation in the foreground would be retained as open space; however, similar to View 4, the proposed single-family residences would be a noticeable addition to an otherwise primarily undeveloped landscape. Furthermore, as illustrated in Figure 4.1-17, nine single-family residences visible from this viewpoint would be located within the 350-foot setback of the SH Overlay Zone. Thus, while the project site was planned for development, the new single-family residences would alter the views of the site from primarily undeveloped to residential uses and would encroach on existing public views of the Northern Sacramento Valley located south of the project site. However, pursuant to Section 24-42 C of the County's Code of Ordinances, development of single-family residences within the SH Overlay Zone does not require approval of a Minor Use Permit.

Nonetheless, based on the above, the existing visual character and quality of public views of the project site and its surroundings from Skyway looking southwest would be considered to be substantially degraded by the proposed project.

Conclusion

Based on the above, although development of the proposed project would result in minimal intrusion to the existing public views from Skyway looking southwest and southeast, the project would change existing public viewsheds of the site from a predominantly undeveloped landscape to single-family residences and commercial development. Consequently, the proposed project would result in new or more impacts related to scenic vistas and visual character from what has already been anticipated and analyzed for the site in the 2030 Butte County General Plan EIR and would substantially degrade the existing visual character or quality of public views of the site and its surroundings. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would help to further screen public views of the project site, but would not sufficiently reduce the impact to a less-than-significant level, as development of the proposed project would still substantially degrade the existing visual character or quality of public views of the site and its surroundings. Therefore, even with implementation of the following mitigation measure, the impact would remain *significant and unavoidable*.

Figure 4.1-17
View 5: Existing Versus Post-Project Conditions

4.1-2 *In conjunction with submittal of improvement plans, the project applicant shall submit a Landscape Plan, prepared by a licensed landscape contractor, landscape architect, landscape designer, or horticulturist, for review and approval by the Butte County Department of Development Services. The Landscape Plan shall include the information identified in Section 24-114 of the Butte County Code of Ordinances, as well as the following additional requirements:*

- *Installation of vegetation screening along the proposed development areas closest to Skyway, which could be combined with earthen berms, walls with earth tones, or a combination of both.*
    - *The vegetation screening shall be in the form of native tree plantings and may be satisfied with the replacement plantings required as part of Mitigation Measure 4.3-9(c) set forth within this EIR. Any plantings used for screening purposes shall be a minimum of one gallon and include larger stock to the extent available.*
    - *The applicant shall consider the co-benefit of noise barriers required pursuant to conditions of approval to support this requirement.*
- *All development on lots closest to Skyway shall maintain a consistent material and color theme.*
- *All screening trees within the 350-foot setback from Skyway shall be native and drought-tolerant.*

4.1-3 Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As noted previously, the project site is primarily characterized by an undeveloped, unlit landscape. Thus, development of the project site with residential and commercial uses would introduce additional sources of light and/or glare to a site where minimal sources currently exist.

Individual homes within the project site would introduce new sources of night lighting in the form of exterior light sources such as porch and patio lights, architectural accent lighting, motion-activated security lighting, driveway lighting, landscape lighting, and interior lighting visible through windows. Commercial uses would introduce new sources of lighting, such as architectural accent lighting, motion-activated security lighting, parking lot lighting, landscape lighting, and interior lighting visible through windows. Lighting could also be interspersed along the proposed multi-use trails and sidewalks for safety purposes. The residential portion of the project would be subject to compliance with the applicable sections of Chapter 24, Article III, Division 4 Outdoor Lighting of the County's Code of Ordinances related to light pollution, including, but not limited to, shielding of fixtures such that direct rays do not pass property lines or into the public right-of-way.

Because the types of lighting and the specific locations have not yet been determined, the proposed project could increase the amount of light and glare generated on-site, which could be visible from the surrounding residential development and roadways in the project vicinity, including contributions to nighttime sky glow that deteriorate the "dark sky" setting of the project site and surround environs. Therefore, the proposed project could be considered to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.1-3 *Prior to Improvement Plan approval, the project applicant shall submit a lighting plan for the project to Butte County Community Development Department for review and approval, demonstrating that proposed lighting is Dark-Sky compliant as specified by the International Dark-Sky Association. The lighting plan shall include, but not necessarily be limited to, the following provisions:*

- *Shield or screen lighting fixtures to direct the light downward and prevent light spill on adjacent properties;*
- *Place and shield or screen area lighting needed for construction activities and/or security so as not to disturb residential areas;*
- *For public lighting, prohibit the use of light fixtures that are of unusually high intensity or brightness (e.g., harsh mercury vapor, low-pressure sodium, or fluorescent bulbs) or that blink or flash; and*
- *Use appropriate building materials (such as low-glare glass, low-glare building glaze or finish, neutral, earth-toned colored paint and roofing materials), and appropriate signage to prevent light and glare from adversely affecting adjacent properties.*

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

Some types of impacts to aesthetic resources are localized and not cumulative in nature. For example, the creation of glare or shadows at one location is not worsened by glare or shadows created at another location. Rather these effects are independent, and the determination as to whether they are adverse is specific to the project and location where they are created. Projects that block a view or affect the visual quality of a site also have localized aesthetic impacts. The impact occurs specific to a site or area and remains independent from another project elsewhere that may block a view or degrade the visual environment of a specific site.

Two types of aesthetic impacts may be additive in nature and thus cumulative, including night sky lighting and overall changes in the visual environment as the result of increasing urbanization of large areas. As development in one area increases and possibly expands over time and meets or connects with development in an adjoining exurban area, the effect of night sky lighting experienced outside of the region may increase in the form of larger and/or more intense nighttime glow in the viewshed.

Similarly, as development in one area changes from rural to urban, and this pattern continues to occur throughout the undeveloped areas of a jurisdiction, the changes in visual character may become additive and cumulatively considerable. The proposed project's incremental contribution to night sky lighting and changes in visual character are addressed below.

The following discussion of impacts is based on the implementation of the proposed project in combination with other proposed and pending projects in the region. Other proposed and pending projects in the region under the cumulative context would generally include buildout of the project site in conjunction with the cumulative development within the same viewshed. For more details regarding the cumulative setting, refer to Chapter 6, Statutorily Required Sections, of this EIR.

4.1-4 Long-term changes in visual character associated with development of the proposed project in combination with future development viewable from Skyway. Based on the analysis below, even with implementation of mitigation, the project's incremental contribution to the significant cumulative impact is *significant and unavoidable*.

The geographic setting for analysis of long-term cumulative changes in visual character associated with the proposed project is cumulative buildout of the project site in conjunction with all other development within the same viewshed. Cumulative development could change the existing visual character of the viewshed from predominantly vacant or minimally developed land to more intensively developed areas.

The land to the south of the project site is designated Agriculture (AG) in the 2030 General Plan and zoned Agriculture (AG) with a minimum parcel size of 40 acres and a maximum of one unit per parcel (AG-40). The land across Skyway, north of the project site, is undeveloped and is designated as Foothill Residential (FR) and zoned Foothill Residential with a maximum of one unit per 20-acre parcel (FR-20). The area designated FR is separated from the project site by an approximately 2,700-foot distance and a 434-foot decline in elevation. The Rocky Bluffs subdivision, located approximately 4,100 feet to the southwest of the project site and north of Skyway, is designated and zoned Medium Density Residential (MDR), which allows for a maximum density of six dwelling units per acre. The land north of the Rocky Bluffs subdivision is undeveloped and is designated as FR and zoned FR-20. However, based on the land use and zoning designations for the area surrounding the proposed project on the southern side of Skyway, future development in the vicinity of the proposed project is generally not anticipated. Although future residential development is anticipated north of Skyway, changes to visual character and quality as a result of such development has been anticipated.

The 2030 General Plan EIR evaluated potential impacts that could occur to the existing visual character of the planning area through development facilitated by the buildout of the 2030 General Plan, noting that development of a significant amount of currently undeveloped land could result in a significant change to the visual character and quality of the County. However, similar to the proposed project, all future development would be subject to a range of goals and policies in the 2030 General Plan that seek to direct growth into already urbanized areas, support the visual quality and character of the County, and achieve a balance between allowing new development and preserving the County's valued open spaces and scenic resources.

The proposed project and all future development would be designed and constructed in accordance with applicable 2030 General Plan policies and sections of the Code of Ordinances, including design guidelines. Chapter 20, Article VI Design Standards of the County's Code of Ordinances provides instruction on the design direction to be implemented with the construction of new subdivisions, which includes setbacks, lot shapes and configurations, street pattern design, and bicycle paths and pedestrian walkways. Such standards serve to reduce impacts on visual character and help to maintain general consistency with the project surroundings. In addition, following approval of the Planned Development Rezone, the proposed project would be required to comply with the adopted Final Development Plan of the Planned Development District for the project site, which would include development standards for development features such as landscaping; building materials; fences, walls, and screenings; and open space.

While cumulative buildout in the geographic area could result in a substantial change in visual character of the project region, the 2030 General Plan EIR determined that compliance with the 2030 General Plan's goals, policies, and actions, combined with other State and local regulations, would reduce project-level aesthetic impacts to a less-than-significant level. However, as discussed under Impact 4.1-2, the proposed project would result in new or more impacts related to scenic vistas and visual character from what has already been anticipated and analyzed for the site in the 2030 General Plan EIR and would be considered to substantially degrade the existing visual character or quality of public views of the site and its surroundings. Therefore, the project would result in a ***significant*** cumulative impact.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above significant impact, but not to a less-than-significant level. While the mitigation measure would help to further screen public views of the project site, development of the proposed project would still alter the existing visual character of the project site. Therefore, even with implementation of the following mitigation measure, the cumulative impact would remain *significant and unavoidable*.

4.1-4 Implement Mitigation Measure 4.1-2.

4.1-5 Creation of new sources of light or glare associated with development of the proposed project in combination with future development viewable from Skyway. Based on the analysis below and with implementation of mitigation, the project's incremental contribution to the significant cumulative impact is *less than cumulatively considerable*.

Cumulative effects of lighting are visible over a wide area, due to the potential for lighting from a number of projects to create sky glow. Cumulative development throughout the 2030 General Plan planning area, particularly conversion of rural or currently vacant sites to urban uses, would increase the sources of light and glare, which would have the potential to contribute to sky glow in the area and result in a significant cumulative impact. Such sources of light would be typical of existing residential development in the greater project vicinity, such as the residential uses to the north of the project site, across Skyway.

However, cumulative development within the 2030 General Plan planning area, including the proposed project and future projects with the same viewshed, would be subject to existing regulations and guidelines related to light and glare. For example, Section 24-64 of the County Code of Ordinances, requires that all residential outdoor lighting in new development is consistent with the lighting standards contained in Section 24 Outdoor Lighting. As described in Impact 4.1-3 above, the proposed project in particular would be required to submit a lighting plan for the project to the Butte County Community Development Department for review and approval prior to Improvement Plan approval (see Mitigation Measure 4.1-3). Mitigation Measure 4.1-3 requires the project's lighting to be Dark-Sky compliant as specified by the International Dark-Sky Association.

The 2030 General Plan EIR determined that the County may be adversely affected by light pollution from development within the unincorporated areas and sky glow associated with the ongoing urbanization of cities within the County. However, future development throughout the County would be subject to the California Building Code standards, which would prevent potential impacts associated with light and glare.

Based upon the above analysis, cumulative development of the project site in conjunction with all other future projects with the same viewshed would be subject to all applicable requirements of Section 24 Outdoor Lighting of the County Code of Ordinances, and prior to project implementation, a lighting plan would be submitted showing that each respective proposed project would avoid contribution to sky glow through Dark-Sky design compliance. However, without compliance with Mitigation Measure 4.1-3, which requires submittal and implementation of a lighting plan, the proposed project, in combination with cumulative development in the vicinity of the project site, could result in a significant cumulative impact related to light and glare, and the project's incremental contribution to the significant cumulative impact could be ***cumulatively considerable***.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less than cumulatively considerable* level.

4.1-5 Implement Mitigation Measure 4.1-3.

4.2. Air Quality, Greenhouse Gas Emissions, and Energy

4.2. AIR QUALITY, GREENHOUSE GAS EMISSIONS, AND ENERGY

4.2.1 INTRODUCTION

The Air Quality, Greenhouse Gas Emissions, and Energy chapter of the EIR describes the potential impacts of the proposed project on local and regional air quality emissions, potential impacts related to greenhouse gas (GHG) emissions and climate change, and potential impacts related to energy. The chapter includes a discussion of the existing air quality, GHG, and energy setting, the existing regulatory setting, as well as potential local and regional air quality, GHG, and energy impacts resulting from construction and operation of the project. In addition, the chapter includes mitigation measures warranted to reduce or eliminate any identified significant impacts. This chapter is based on the 2030 Butte County General Plan,[1] the 2030 Butte County General Plan EIR,[2] and the 2030 Butte County General Plan Supplemental EIR (SEIR),[3] as well as the Butte County Air Quality Management District's (BCAQMD's) CEQA Air Quality Handbook,[4] the Butte County Climate Action Plan (CAP),[5] and the technical analysis performed by Raney Planning and Management, Inc (see Appendix C).

4.2.2 EXISTING ENVIRONMENTAL SETTING

The following information provides an overview of the existing environmental setting in relation to air quality within the proposed project area. Air basin characteristics, ambient air quality standards (AAQS), attainment status and regional air quality plans, local air quality monitoring, odors, and sensitive receptors are discussed. In addition to the information pertaining to air quality, information related to climate change and GHGs, as well as energy, is provided.

Air Basin Characteristics

The project site is located in central Butte County, which falls within the Sacramento Valley Air Basin (SVAB), within the jurisdictional boundaries of the BCAQMD. Air flows into the SVAB through the Carquinez Strait, moves across the Delta and carries pollutants from the heavily populated San Francisco Bay Area into the SVAB. The climate is characterized by hot, dry summers and cool, rainy winters. Characteristic of SVAB winter weather are periods of dense and persistent low-level fog, which are most prevalent between storms. From May to October, the region's intense heat and sunlight lead to high ozone concentrations. Prevailing winds are from the south and southwest, and as a result of prevailing winds coming generally from south to southwest, air quality in the area is heavily influenced by mobile and stationary sources of air pollution located upwind in the Sacramento Metropolitan Area.

Most precipitation in the SVAB results from air masses moving in from the Pacific Ocean during the winter months. Storms usually move through the area from the west or northwest. During the winter rainy season (November through February) over half the total annual precipitation

1 Butte County. *Butte County General Plan 2030.* November 6, 2012.
2 Butte County. *Butte County General Plan 2030 Draft EIR*. April 8, 2010.
3 Butte County. *Butte County GPA & Zoning Ordinance Update Draft Supplemental EIR*. May 31, 2012.
4 Butte County Air Quality Control District. *CEQA Air Quality Handbook*. October 23, 2014.
5 Butte County. *2021 Climate Action Plan.* December 14, 2021.

falls while the average winter temperature is a moderate 49 degrees Fahrenheit. During the summer, daytime temperatures can exceed 100 degrees Fahrenheit. Dense fog occurs mostly in mid-winter and rarely in the summer. Daytime temperatures from April through October average between 60- and 80-degrees Fahrenheit with low humidity. The inland location and surrounding mountains shelter the valley from much of the ocean breeze that keeps the coastal regions moderate in temperature. The only breech in the mountain barrier is the Carquinez Strait, which exposes the midsection of the valley to the coastal air mass.

In Butte County, winters are generally mild, with daytime average temperatures in the low 50s and nighttime temperatures in the upper 30s. Temperatures range from an average January low of approximately 36 degrees Fahrenheit to an average July high of approximately 96 degrees Fahrenheit, although periodic lower and higher temperatures are common. Rainfall between October and May averages approximately 26 inches, but varies considerably year to year. Heavy snowfall often occurs in the northeastern mountainous portion of Butte County. Periodic rainstorms contrast with occasional stagnant weather and thick ground, or "tule," fog in the moister, flatter parts of the valley. Winter winds generally come from the south, although north winds also occur.

Diminished air quality within Butte County largely results from local air pollution sources, transport of pollutants into the area from the south, the Northern Sacramento Valley Air Basin topography, prevailing wind patterns, and certain inversion conditions that differ with the season. During summer, sinking air forms a "lid" over the region, confining pollution within a shallow layer near the ground that leads to photochemical smog and visibility problems. During winter nights, air near the ground cools, while the air above remains relatively warm, resulting in little air movement and localized pollution "hot spots" near emission sources. Carbon monoxide (CO), nitrogen oxides (NO_X), particulate matter (PM), and lead particulate concentrations tend to elevate during winter inversion conditions, when little air movement may persist for weeks.

Air quality in the project vicinity is influenced by both local and distant emission sources. Air pollutant sources in the immediate project vicinity include emissions primarily from vehicle traffic on nearby roadways (i.e., Skyway). Other sources of air pollutants in the greater area include activities associated primarily with commercial and industrial land uses; however, the nearest commercial and industrial land uses are located approximately five miles from the site, within the cities of Chico and Paradise.

Ambient Air Quality Standards

Both the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established AAQS for common pollutants. The federal standards are divided into primary standards, which are designed to protect the public health, and secondary standards, which are designed to protect the public welfare. The AAQS for each contaminant represent safe levels that avoid specific adverse health effects. Pollutants for which AAQS have been established are called "criteria" pollutants. Table 4.2-1 identifies the major pollutants, characteristics, health effects and typical sources. The national and California AAQS (NAAQS and CAAQS, respectively) are summarized in Table 4.2-2. The NAAQS and CAAQS were developed independently with differing purposes and methods. As a result, the federal and State standards differ in some cases. In general, the State of California standards are more stringent than the federal standards, particularly for ozone and PM.

A description of each criteria pollutant and its potential health effects is provided in the following section.

Table 4.2-1
Summary of Criteria Pollutants

Pollutant	Characteristics	Health Effects	Major Sources
Ozone	A highly reactive gas produced by the photochemical process involving a chemical reaction between the sun's energy and other pollutant emissions. Often called photochemical smog.	• Eye irritation • Wheezing, chest pain, dry throat, headache, or nausea • Aggravated respiratory disease such as emphysema, bronchitis, and asthma	Combustion sources such as factories, automobiles, and evaporation of solvents and fuels.
Carbon Monoxide	An odorless, colorless, highly toxic gas that is formed by the incomplete combustion of fuels.	• Impairment of oxygen transport in the bloodstream • Impaired vision, reduced alertness, chest pain, and headaches • Can be fatal in the case of very high concentrations	Automobile exhaust, combustion of fuels, and combustion of wood in woodstoves and fireplaces.
Nitrogen Dioxide	A reddish-brown gas that discolors the air and is formed during combustion of fossil fuels under high temperature and pressure.	• Lung irrigation and damage • Increased risk of acute and chronic respiratory disease	Automobile and diesel truck exhaust, industrial processes, and fossil-fueled power plants.
Sulfur Dioxide	A colorless, irritating gas with a rotten egg odor formed by combustion of sulfur-containing fossil fuels.	• Aggravation of chronic obstruction lung disease • Increased risk of acute and chronic respiratory disease	Diesel vehicle exhaust, oil-powered power plants, and industrial processes.
Particulate Matter (PM_{10} and $PM_{2.5}$)	A complex mixture of extremely small particles and liquid droplets that can easily pass through the throat and nose and enter the lungs.	• Aggravation of chronic respiratory disease • Heart and lung disease • Coughing • Bronchitis • Chronic respiratory disease in children • Irregular heartbeat • Nonfatal heart attacks	Combustion sources such as automobiles, power generation, industrial processes, and wood burning. Also from unpaved roads, farming activities, and fugitive windblown dust.
Lead	A metal found naturally in the environment as well as in manufactured products.	• Loss of appetite, weakness, apathy, and miscarriage • Lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract	Industrial sources and combustion of leaded aviation gasoline.

Sources:

- ***California Air Resources Board. California Ambient Air Quality Standards (CAAQS). Available at: https://ww2.arb.ca.gov/resources/california-ambient-air-quality-standards. Accessed October 2022.***
- ***Sacramento Metropolitan, El Dorado, Feather River, Placer, and Yolo-Solano Air Districts, Spare the Air website. Air Quality Information for the Sacramento Region. Available at: sparetheair.com. Accessed October 2022.***
- ***California Air Resources Board. Glossary of Air Pollution Terms. Available at: https://ww2.arb.ca.gov/glossary. Accessed October 2022.***

Table 4.2-2
Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	NAAQS	
			Primary	Secondary
Ozone	1 Hour	0.09 ppm	-	Same as primary
	8 Hour	0.070 ppm	0.070 ppm	
Carbon Monoxide	8 Hour	9 ppm	9 ppm	-
	1 Hour	20 ppm	35 ppm	
Nitrogen Dioxide	Annual Mean	0.030 ppm	53 ppb	Same as primary
	1 Hour	0.18 ppm	100 ppb	-
Sulfur Dioxide	24 Hour	0.04 ppm	-	-
	3 Hour	-	-	0.5 ppm
	1 Hour	0.25 ppm	75 ppb	-
Respirable Particulate Matter (PM_{10})	Annual Mean	20 ug/m^3	-	Same as primary
	24 Hour	50 ug/m^3	150 ug/m^3	
Fine Particulate Matter ($PM_{2.5}$)	Annual Mean	12 ug/m^3	12 ug/m^3	15 ug/m^3
	24 Hour	-	35 ug/m^3	Same as primary
Lead	30 Day Average	1.5 ug/m^3	-	-
	Calendar Quarter	-	1.5 ug/m^3	Same as primary
Sulfates	24 Hour	25 ug/m^3	-	-
Hydrogen Sulfide	1 Hour	0.03 ppm	-	-
Vinyl Chloride	24 Hour	0.010 ppm	-	-
Visibility Reducing Particles	8 Hour	see note below	-	-

ppm = parts per million
ppb = parts per billion
µg/m^3 = micrograms per cubic meter

Note: Statewide Visibility Reducing Particle Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Source: California Air Resources Board. Ambient Air Quality Standards. May 4, 2016. Available at: https://ww2.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf. Accessed October 2022.

Ozone

Ozone is a reactive gas consisting of three oxygen atoms. In the troposphere, ozone is a product of the photochemical process involving the sun's energy, and is a secondary pollutant formed as a result of a complex chemical reaction between reactive organic gases (ROG) and NO_X emissions in the presence of sunlight. As such, unlike other pollutants, ozone is not released directly into the atmosphere from any sources. In the stratosphere, ozone exists naturally and shields Earth from harmful incoming ultraviolet radiation. The primary source of ozone precursors is mobile sources, including cars, trucks, buses, construction equipment, and agricultural equipment.

Ground-level ozone reaches the highest level during the afternoon and early evening hours. High levels occur most often during the summer months. Ground-level ozone is a strong irritant that could cause constriction of the airways, forcing the respiratory system to work harder in order to provide oxygen. Ozone at the Earth's surface causes numerous adverse health effects

and is a major component of smog. High concentrations of ground level ozone can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments.

Reactive Organic Gas

ROG refers to several reactive chemical gases composed of hydrocarbon compounds typically found in paints and solvents that contribute to the formation of smog and ozone by involvement in atmospheric chemical reactions. A separate health standard does not exist for ROG. However, some compounds that make up ROG are toxic, such as the carcinogen benzene.

Oxides of Nitrogen

NO_X are a family of gaseous nitrogen compounds and are precursors to the formation of ozone and particulate matter. The major component of NO_X, nitrogen dioxide (NO_2), is a reddish-brown gas that discolors the air and is toxic at high concentrations. NO_X results primarily from the combustion of fossil fuels under high temperature and pressure. On-road and off-road motor vehicles and fuel combustion are the major sources of NO_X. NO_X reacts with ROG to form smog, which could result in adverse impacts to human health, damage the environment, and cause poor visibility. Additionally, NO_X emissions are a major component of acid rain. Health effects related to NO_X include lung irritation and lung damage and can cause increased risk of acute and chronic respiratory disease.

Nitrogen Dioxide

A particular oxide of nitrogen that is of concern to human health is NO_2. NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO), which is a colorless, odorless gas.

A large body of health science literature indicates that exposure to NO_2 can induce adverse health effects. The strongest health evidence, and the health basis for the AAQS for NO_2, results from controlled human exposure studies that show that NO_2 exposure can intensify responses to allergens in allergic asthmatics. In addition, several epidemiological studies have demonstrated associations between NO_2 exposure and premature death, cardiopulmonary effects, decreased lung function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses. Infants and children are particularly at risk because they have disproportionately higher exposure to NO_2 than adults due to their greater breathing rate for their body weight and their typically greater outdoor exposure duration. Several studies have shown that long-term NO_2 exposure during childhood, the period of rapid lung growth, can lead to smaller lungs at maturity in children with higher compared to lower levels of exposure. In addition, children with asthma have a greater degree of airway responsiveness compared with adult asthmatics. In adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease.

Carbon Monoxide

CO is a colorless, odorless, poisonous gas produced by incomplete burning of carbon-based fuels such as gasoline, oil, and wood. When CO enters the body, the CO combines with chemicals in the body, which prevents blood from carrying oxygen to cells, tissues, and organs. Symptoms of exposure to CO can include problems with vision, reduced alertness, and general reduction in mental and physical functions. Exposure to CO can result in chest pain, headaches, reduced mental alertness, and death at high concentrations.

Sulfur Dioxide

Sulfur dioxide (SO_2) is a colorless, irritating gas with a rotten egg odor formed primarily by the combustion of sulfur-containing fossil fuels from mobile sources, such as locomotives, ships, and off-road diesel equipment. SO_2 is also emitted from several industrial processes, such as petroleum refining and metal processing. Similar to airborne NO_X, suspended sulfur oxide particles contribute to poor visibility. The sulfur oxide particles are also a component of PM_{10}.

Particulate Matter

Particulate matter, also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health impacts. The USEPA is concerned about particles that are 10 micrometers in diameter or smaller (PM_{10}) because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, the particles could affect the heart and lungs and cause serious health effects. USEPA groups particle pollution into three categories based on their size and where they are deposited:

- "Inhalable coarse particles ($PM_{2.5-10}$)," which are found near roadways and dusty industries, are between 2.5 and 10 micrometers in diameter. $PM_{2.5-10}$ is deposited in the thoracic region of the lungs.
- "Fine particles ($PM_{2.5}$)," which are found in smoke and haze, are 2.5 micrometers in diameter and smaller. $PM_{2.5}$ particles could be directly emitted from sources such as forest fires, or could form when gases emitted from power plants, industries, and automobiles react in the air. They penetrate deeply into the thoracic and alveolar regions of the lungs.
- “Ultrafine particles (UFP),” are very, very small particles (less than 0.1 micrometers in diameter) largely resulting from the combustion of fossil fuels, meat, wood, and other hydrocarbons. While UFP mass is a small portion of $PM_{2.5}$, their high surface area, deep lung penetration, and transfer into the bloodstream could result in disproportionate health impacts relative to their mass. UFP is not currently regulated separately, but is analyzed as part of $PM_{2.5}$.

PM_{10}, $PM_{2.5}$, and UFP include primary pollutants, which are emitted directly to the atmosphere and secondary pollutants, which are formed in the atmosphere by chemical reactions among precursors. Generally speaking, $PM_{2.5}$ and UFP are emitted by combustion sources like vehicles, power generation, industrial processes, and wood burning, while PM_{10} sources include the same sources plus roads and farming activities. Fugitive windblown dust and other area sources also represent a source of airborne dust. Long-term PM pollution, especially fine particles, could result in significant health problems including, but not limited to, the following: increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing; decreased lung function; aggravated asthma; development of chronic respiratory disease in children; development of chronic bronchitis or obstructive lung disease; irregular heartbeat; heart attacks; and increased blood pressure.

Lead

Lead is a relatively soft and chemically resistant metal that is a natural constituent of air, water, and the biosphere. Lead forms compounds with both organic and inorganic substances. As an air pollutant, lead is present in small particles. Sources of lead emissions in California include a

variety of industrial activities. Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. The use of leaded fuel has been mostly phased out, with the result that ambient concentrations of lead have dropped dramatically. However, because lead was emitted in large amounts from vehicles when leaded gasoline was used, lead is present in many soils (especially urban soils) as a result of airborne dispersion and could become re-suspended into the air.

Because lead is slowly excreted by the human body, exposures to small amounts of lead from a variety of sources could accumulate to harmful levels. Effects from inhalation of lead above the level of the AAQS may include impaired blood formation and nerve conduction. Lead can adversely affect the nervous, reproductive, digestive, immune, and blood-forming systems. Symptoms could include fatigue, anxiety, short-term memory loss, depression, weakness in the extremities, and learning disabilities in children. Lead also causes cancer.

Sulfates

Sulfates are the fully oxidized ionic form of sulfur and are colorless gases. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. The sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

The sulfates standard established by CARB is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, because they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide

Hydrogen sulfide (H_2S) is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. Hydrogen sulfide is extremely hazardous in high concentrations, especially in enclosed spaces (800 ppm can cause death).

Vinyl Chloride

Vinyl chloride (C_2H_3Cl, also known as VCM) is a colorless gas that does not occur naturally, but is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloro-ethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC) which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

Visibility Reducing Particles

Visibility reducing particles are a mixture of suspended particulate matter consisting of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. The standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are also a category of environmental concern. TACs are present in many types of emissions with varying degrees of toxicity. Public exposure to TACs can result from emissions from normal operations, as well as accidental releases. Common stationary sources of TACs include gasoline stations, dry cleaners, and diesel backup generators, which are subject to BCAQMD stationary source permit requirements. The other, often more significant, common source type is on-road motor vehicles, such as cars and trucks, on freeways and roads, and off-road sources such as construction equipment, ships, and trains.

Fossil fueled combustion engines, including those used in cars, trucks, and some pieces of construction equipment, release at least 40 different TACs. In terms of health risks, the most volatile contaminants are diesel particulate matter (DPM), benzene, formaldehyde, 1,3-butadiene, toluene, xylenes, and acetaldehyde. Gasoline vapors contain several TACs, including benzene, toluene, and xylenes. Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust, DPM, is composed of carbon particles and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of such chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. Diesel exhaust also contains gaseous pollutants, including ROG and NO_X. Due to the published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects, the CARB has identified DPM from diesel-fueled engines as a TAC. Although a variety of TACs are emitted by fossil fueled combustion engines, the cancer risk due to DPM exposure represents a more significant risk than the other TACs discussed above.[6]

More than 90 percent of DPM is less than one micrometer in diameter, and, thus, DPM is a subset of $PM_{2.5}$. As a California statewide average, DPM comprises about eight percent of $PM_{2.5}$ in outdoor air, although DPM levels vary regionally due to the non-uniform distribution of sources throughout the State. Most major sources of diesel emissions, such as ships, trains, and trucks, operate in and around ports, rail yards, and heavily-traveled roadways. Such areas are often located near highly populated areas. Thus, elevated DPM levels are mainly an urban problem, with large numbers of people exposed to higher DPM concentrations, resulting in greater health consequences compared to rural areas.

Due to the high levels of diesel activity, high volume freeways, stationary diesel engines, rail yards and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Construction-related activities also have the potential to generate concentrations of DPM from on-road haul trucks and off-road equipment exhaust emissions.

The size of diesel particulates that are of the greatest health concern are fine particles (i.e., $PM_{2.5}$) and UFPs. The small diameter of UFPs imparts the particulates with unique attributes, such as high surface areas and the ability to penetrate deeply into lungs. Once UFPs have been deposited in lungs, the small diameter allows the UFPs to be transferred to the bloodstream. The high surface area of the UFPs also allows for a greater adsorption of other chemicals, which are transported along with the UFPs into the bloodstream of the inhaler, where the

[6] California Air Resources Board. *Reducing Toxic Air Pollutants in California's Communities*. February 6, 2002.

chemicals can eventually reach critical organs.[7] The penetration capability of UFPs may contribute to adverse health effects related to heart, lung, and other organ health.[8] UFPs are a subset of DPM and activities that create large amounts of DPM, such as the operations involving heavy diesel-powered engines, also release UFPs. Considering that UFPs are a subset of DPM, and DPM represents a subset of $PM_{2.5}$, estimations of either concentrations or emissions of $PM_{2.5}$ or DPM include UFPs.

Health risks from TACs are a function of both the concentration of emissions and the duration of exposure, which typically are associated with long-term exposure and the associated risk of contracting cancer. Health effects of exposure to TACs other than cancer can include birth defects, neurological damage, and death. Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level. The identification, regulation, and monitoring of TACs is relatively new compared to criteria air pollutants that have established AAQS. TACs are regulated or evaluated on the basis of risk to human health rather than comparison to an AAQS or emission-based threshold.

Naturally Occurring Asbestos

Another concern related to air quality is naturally occurring asbestos (NOA). Asbestos is a term used for several types of naturally-occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. When rock containing asbestos is broken or crushed, asbestos fibers may be released and become airborne. Exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest and abdominal cavity), and asbestosis (a non-cancerous lung disease which causes scarring of the lungs). Because asbestos is a known carcinogen, NOA is considered a TAC. Sources of asbestos emissions include: unpaved roads or driveways surfaced with ultramafic rock; construction activities in ultramafic rock deposits; or rock quarrying activities where ultramafic rock is present.

NOA is typically associated with fault zones, and areas containing serpentinite or contacts between serpentinite and other types of rocks. According to BCAQMD, NOA is present in the foothill areas of Butte County; however, according to the Naturally Occurring Asbestos Areas Map prepared by BCAQMD, the project site is not located within an area that contains NOA.[9]

Attainment Status and Regional Air Quality Plans

The Federal Clean Air Act (FCAA) and the California Clean Air Act (CCAA) require all areas of California to be classified as attainment, nonattainment, or unclassified as to their status with regard to the NAAQS and/or CAAQS. The FCAA and CCAA require that the CARB, based on air quality monitoring data, designate portions of the State where the federal or State AAQS are not met as “nonattainment areas.” Because of the differences between the national and State standards, the designation of nonattainment areas is different under the federal and State legislation. The CCAA requires local air pollution control districts to prepare air quality attainment plans. These plans must provide for district-wide emission reductions of five percent per year averaged over consecutive three-year periods or, provide for adoption of “all feasible measures on an expeditious schedule.”

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7 Health Effects Institute. *Understanding the Health Effects of Ambient Ultrafine Particles*. January 2013.
8 South Coast Air Quality Management District. *Final 2012 Air Quality Management Plan*. December 2012.
9 Butte County Air Quality Management District. *Naturally Occurring Asbestos Areas*. Published December 2018.

As presented in Table 4.2-3, BCAQMD is designated non-attainment for the federal and State 8-hour ozone, the State 1-hour ozone, State 24-hour PM_{10} standard, and State annual $PM_{2.5}$. It should be noted that PM_{10} incorporates all fine particulate matter less than 10 microns in diameter and, as a result, $PM_{2.5}$ is accounted for within the BCAQMD PM_{10} standards, discussed below. Due to the nonattainment designations, the BCAQMD, along with the other air districts in the SVAB region, is required to develop plans to attain the federal and State standards for ozone and particulate matter. The air quality plans include emissions inventories to measure the sources of air pollutants to evaluate how well different control measures have worked, and show how air pollution would be reduced. In addition, the plans include the estimated future levels of pollution to ensure that the area would meet air quality goals. Each of the attainment plans currently in effect are discussed in further detail in the Regulatory Context section of this chapter.

Table 4.2-3
Butte County Attainment Status Designations

Pollutant	California Standards	Federal Standards
1-hour Ozone	**Nonattainment**	--
8-hour Ozone	**Nonattainment**	**Nonattainment**
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
24-hour Respirable Particulate Matter (PM_{10})	**Nonattainment**	Attainment
24-hour Fine Particulate Matter ($PM_{2.5}$)	**--**	Attainment
Annual PM_{10}	Attainment	--
Annual $PM_{2.5}$	**Nonattainment**	Attainment

Source: Butte County Air Quality Management District. Air Quality Standards & Air Pollutants. Available at: https://bcaqmd.org/planning/air-quality-standards-air-pollutants/. Accessed October 2022.

Local Air Quality Monitoring

Air quality is monitored by CARB at various locations to determine which air quality standards are being violated, and to direct emission reduction efforts, such as developing attainment plans and rules, incentive programs, etc. The nearest local air quality monitoring station to the project site is the Paradise Airport station, which is located approximately 4.8 miles east of the project site. Based on the data available from the applicable monitoring station, Table 4.2-4 presents the number of days that the NAAQS and CAAQS were exceeded for the three-year period from 2019 to 2021.

Odors

While offensive odors rarely cause physical harm, they can be unpleasant, leading to considerable annoyance and distress among the public and can generate citizen complaints to local governments and air districts. Adverse effects of odors on residential areas and other sensitive receptors warrant the closest scrutiny; but consideration is also be given to other land use types where people congregate, such as recreational facilities, worksites, and commercial areas. The potential for an odor impact is dependent on a number of variables including the nature of the odor source, distance between a receptor and an odor source, and local meteorological conditions.

Table 4.2-4
Air Quality Data Summary (2019-2021)

Pollutant	Standard	Days Standard Was Exceeded		
		2019	2020	2021
1-Hour Ozone	State	0	2	0
	Federal	0	0	0
8-Hour Ozone	State	0	11	10
	Federal	0	10	9
24-Hour $PM_{2.5}$*	Federal	0	33	13
24-Hour PM_{10}*	State	4	53	33
	Federal	0	8	0
1-Hour Nitrogen Dioxide*	State	0	0	0
	Federal	0	0	0

* Data from the Paradise Airport station was not available for the 24-Hour $PM_{2.5}$, 24-Hour PM_{10}, or 1-Hour Nitrogen Dioxide standards. As a result, data from the next nearest available monitoring station, the Chico East Avenue Station, was used.

Source: California Air Resources Board. Aerometric Data Analysis and Management (iADAM) System. Available at: http://www.arb.ca.gov/adam/welcome.html. Accessed January 2023.

One of the most important factors influencing the potential for an odor impact to occur is the distance between the odor source and receptors, also referred to as a buffer zone or setback. The greater the distance between an odor source and receptor, the less concentrated the odor emission would be when reaching the receptor.

Meteorological conditions also affect the dispersion of odor emissions, which determines the exposure concentration of odiferous compounds at receptors. The predominant wind direction in an area influences which receptors are exposed to the odiferous compounds generated by a nearby source. Receptors located upwind from a large odor source may not be affected due to the produced odiferous compounds being dispersed away from the receptors. Wind speed also influences the degree to which odor emissions are dispersed away from any area.

Odiferous compounds could be generated from a variety of source types including both construction and operational activities. Examples of common land use types that typically generate significant odor impacts include, but are not limited to, wastewater treatment plants, sanitary landfills, composting/green waste facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting/coating operations, rendering plants, and food packaging plants. The project site is not located near any of the aforementioned odor-generating uses.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities involved. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, day care centers, playgrounds, and medical facilities. The nearest sensitive receptors to the project site are the single-family residences located approximately 0.45-mile north of the project site, across Skyway and the Butte Creek Ecological Preserve.

Greenhouse Gas Emissions

GHGs are gases that absorb and emit radiation within the thermal infrared range, trapping heat in the Earth's atmosphere. Some GHGs occur naturally and are emitted into the atmosphere through both natural processes and human activities. Other GHGs are created and emitted solely through human activities. The principal GHGs that enter the atmosphere due to human activities are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated carbons. Other common GHGs include water vapor, ozone, and aerosols. The increase in atmospheric concentrations of GHG due to human activities has resulted in more heat being held within the atmosphere, which is the accepted explanation for global climate change.

The primary GHG emitted by human activities is CO_2, with the next largest components being CH_4 and N_2O. A wide variety of human activities result in the emission of CO_2. Some of the largest sources of CO_2 include the burning of fossil fuels for transportation and electricity, industrial processes including fertilizer production, agricultural processing, and cement production. The primary sources of CH_4 emissions include domestic livestock sources, decomposition of wastes in landfills, releases from natural gas systems, coal mine seepage, and manure management. The main human activities producing N_2O are agricultural soil management, fuel combustion in motor vehicles, nitric acid production, manure management, and stationary fuel combustion. Emissions of GHG by economic sector indicate that energy-related activities account for the majority of U.S. emissions. Electricity generation is the largest single-source of GHG emissions, and transportation is the second largest source, followed by industrial activities. The agricultural, commercial, and residential sectors account for the remainder of GHG emission sources.[10]

Emissions of GHG are partially offset by uptake of carbon and sequestration in trees, agricultural soils, landfilled yard trimmings and food scraps, and absorption of CO_2 by the Earth's oceans. Additional emission reduction measures for GHG could include, but are not limited to, compliance with local, State, or federal plans or strategies for GHG reductions, on-site and off-site mitigation, and project design features. Attainment concentration standards for GHGs have not been established by the federal or State government.

Global Warming Potential

Global warming potential (GWP) is one type of simplified index (based upon radiative properties) that can be used to estimate the potential future impacts of emissions of various gases. According to the USEPA, the GWP of a gas, or aerosol, to trap heat in the atmosphere is the "cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas." The reference gas for comparison is CO_2. GWP is based on a number of factors, including the heat-absorbing ability of each gas relative to that of CO_2, as well as the decay rate of each gas relative to that of CO_2. Each gas's GWP is determined by comparing the radiative forcing associated with emissions of that gas versus the radiative forcing associated with emissions of the same mass of CO_2, for which the GWP is set at one. Methane gas, for example, is estimated by the USEPA to have a comparative global warming potential 25 times greater than that of CO_2, as shown in Table 4.2-5.

[10] U.S. Environmental Protection Agency. *Sources of Greenhouse Gas Emissions*. Available at: https://19january2017snapshot.epa.gov/ghgemissions/sources-greenhouse-gas-emissions_.html. Accessed October 2022.

Table 4.2-5
GWPs and Atmospheric Lifetimes of Select GHGs

Gas	Atmospheric Lifetime (years)	GWP (100-year time horizon)
Carbon Dioxide (CO_2)	See footnote[1]	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoroethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

[1] For a given amount of CO_2 emitted, some fraction of the atmospheric increase in concentration is quickly absorbed by the oceans and terrestrial vegetation, some fraction of the atmospheric increase will only slowly decrease over a number of years, and a small portion of the increase will remain for many centuries or more.

Source: ***USEPA. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019 [Table 1-2]. April 14, 2021.***

As shown in the table, at the extreme end of the scale, sulfur hexafluoride is estimated to have a comparative GWP 22,800 times that of CO_2. The atmospheric lifetimes of such GHGs are estimated by the USEPA to vary from 50 to 200 years for CO_2, to 50,000 years for CF_4. Longer atmospheric lifetimes allow GHG to buildup in the atmosphere; therefore, longer lifetimes correlate with the GWP of a gas. The common indicator for GHG is expressed in terms of metric tons of CO_2 equivalents ($MTCO_2e$), which is calculated based on the GWP for each pollutant.

Effects of Global Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The Intergovernmental Panel on Climate Change's (IPCC) Climate Change 2021: The Physical Science Basis report indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia.[11] Signs that global climate change has occurred include:

- Warming of the atmosphere and ocean;
- Diminished amounts of snow and ice;
- Rising sea levels; and
- Ocean acidification.

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The Office of Environmental Health Hazard Assessment (OEHHA) identified various indicators of climate change in California, which are scientifically based measurements that track trends in various aspects of climate change. Many indicators reveal discernable evidence that climate

[11] Intergovernmental Panel on Climate Change. *Climate Change 2021: The Physical Science Basis Summary for Policymakers*. Available at: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf. Accessed October 2022.

change is occurring in California and is having significant, measurable impacts in the State. Changes in the State's climate have been observed, including:

- An increase in annual average air temperature with record warmth in recent years;
- More frequent extreme heat events;
- More extreme drought;
- A decline in winter chill; and
- An increase in variability of statewide precipitation.

Warming temperatures and changing precipitation patterns have altered California's physical systems—the ocean, lakes, rivers and snowpack—upon which the State depends. Winter snowpack and spring snowmelt runoff from the Sierra Nevada and southern Cascade Mountains provide approximately one-third of the State's annual water supply. Impacts of climate on physical systems have been observed, such as high variability of snow-water content (i.e., amount of water stored in snowpack), decrease in snowmelt runoff, glacier change (loss in area), rise in sea levels, increase in average lake water temperature and coastal ocean temperature, and a decrease in dissolved oxygen in coastal waters. Impacts of climate change on biological systems, including humans, wildlife, and vegetation, have also been observed, including climate change impacts on terrestrial, marine, and freshwater ecosystems. However, it should be noted that the effects of climate change are not fully understood. For example, due to a series of atmospheric rivers that occurred throughout the 2022-2023 winter season, California saw the most snow the State has seen since the record was set in the 1982-1983 winter season. The California Department of Water Resources (DWR) has noted that the snowpack in the Sierra was 205 percent of the average in February 2023,[12] 190 percent of the average for March 2023,[13] 237 percent of the average for April 2023,[14] and 254 percent of the average for May of 2023.[15]

Nonetheless, potential consequences of climate change for Butte County include more frequent and intense instances of several natural hazards, including, but not limited to, agricultural pests and diseases, drought, extreme heat, human health hazards, severe wind, severe storms, and wildfire. Climate change is currently affecting Butte County and is projected to lead to more severe conditions in the future. In recent years, Butte County has been affected by several significant natural disasters that are linked to climate change, such as the 2018 Camp Fire, 2020 North Complex Fire, and the 2021 Dixie Fire.[16]

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[12] California Department of Water Resources. *Second Snow Survey Reflects Boost from Atmospheric Rivers.* Available at: https://water.ca.gov/News/News-Releases/2023/Feb-23/Second-Snow-Survey-Reflects-Boost-from-Atmospheric-Rivers. Accessed June 2023.

[13] California Department of Water Resources. *California's Snowpack Shows Huge Gains from Recent Storms.* Available at: https://water.ca.gov/News/News-Releases/2023/March-23/March-2023-Snow-Survey. Accessed June 2023.

[14] California Department of Water Resources. *California's Snowpack is Now One of the Largest Ever, Bringing Drought Relief, Flooding Concerns.* Available at: https://water.ca.gov/News/News-Releases/2023/April-23/Snow-Survey-April-2023. Accessed June 2023.

[15] California Department of Water Resources. *DWR Conducts May 1 Snow Survey to Continue to Collect Data on Spring Runoff.* Available at: https://water.ca.gov/News/News-Releases/2023/May-2023/May-2023-Snow-Survey. Accessed June 2023.

[16] Butte County. *2021 Climate Action Plan* [pg. 9]. December 14, 2021.

Energy Use in California

California is one of the highest energy demanding states within the nation. In the year 2020, the entire State consumed approximately 279,510.01 gigawatt-hours (GWh) of electricity. Activities such as heating and cooling structures, lighting, the movement of goods, agricultural production, and other facets of daily life consume a variety of energy sources. However, despite California's high rate of energy use, the State has one of the lowest per capita energy consumption levels in the U.S.

Energy within the State is provided primarily to consumers through a mix of sources including natural gas, hydroelectric, non-hydroelectric renewable sources, nuclear, coal, and petroleum. California is the nation's top producer of electricity from solar, geothermal, and biomass energy. In 2019, the State was also the nation's second-largest producer of electricity from conventional hydroelectric power and the fifth largest from wind energy. Renewable resources, including hydropower and small-scale (less than 1-megawatt), customer-sited solar photovoltaic (PV) systems, supplied more than half of California's in-state electricity generation, and natural gas-fired power plants provided two-fifths.

Figure 4.2-1 presents the sources that are used to produce energy in the State. As presented therein, energy is mostly generated from natural gas combustion, followed by non-hydroelectric renewables (such as wind and solar) and hydroelectric. Figure 4.2-2 presents energy consumption within California for the most recent year for which data is available (2019). As shown in the figure, transportation-related activity consumes the largest single share of energy within the State. The second largest consumer is the industrial sector.

Local Energy Use

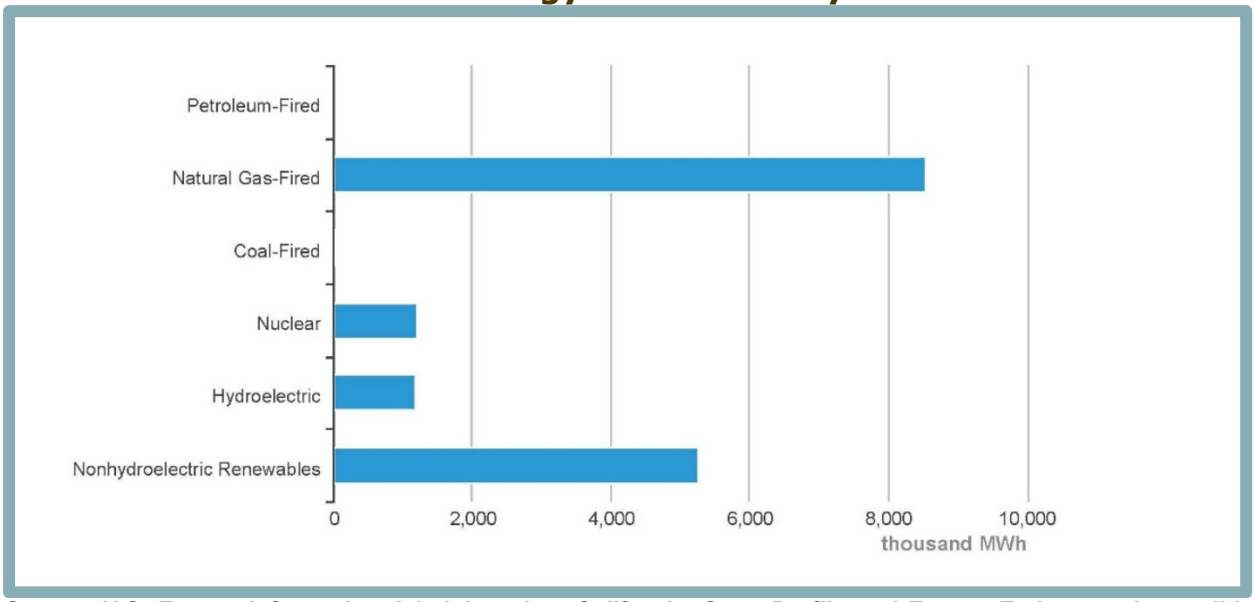
In the year 2020, Butte County consumed approximately 1,385.26 GWh, which constitutes approximately 0.5 percent of the total energy consumed within the State that year.[17]

In 2021, the Butte County Board of Supervisors adopted the Butte County 2021 CAP, which establishes goals and policies for energy efficiency.[18] As a result, the CAP is considered the local plan for renewable energy and efficiency. According to the CAP, from 2006 to 2019, residential electricity usage decreased by 21 percent and residential natural gas usage decreased by 13 percent; however, residential propane usage increased by seven percent. Similarly, nonresidential electricity usage decreased by 25 percent and nonresidential natural gas usage increased by 33 percent. Nonresidential propane usage was not disclosed.

The site is currently highly disturbed, with large graveled and/or paved areas devoid of vegetation, due to damage sustained immediately before, during, and after the 2018 Camp Fire. In mid-2018, prior to the Camp Fire, the site was used as a Pacific Gas and Electric Co. (PG&E) vegetation management camp. The site was subsequently burned during the wildfire, then leveled and graveled for use as a base camp and staging area by PG&E and ECC Constructors during the wildfire response. PG&E continued to use portions of the site as a base camp for debris removal until March 2020.

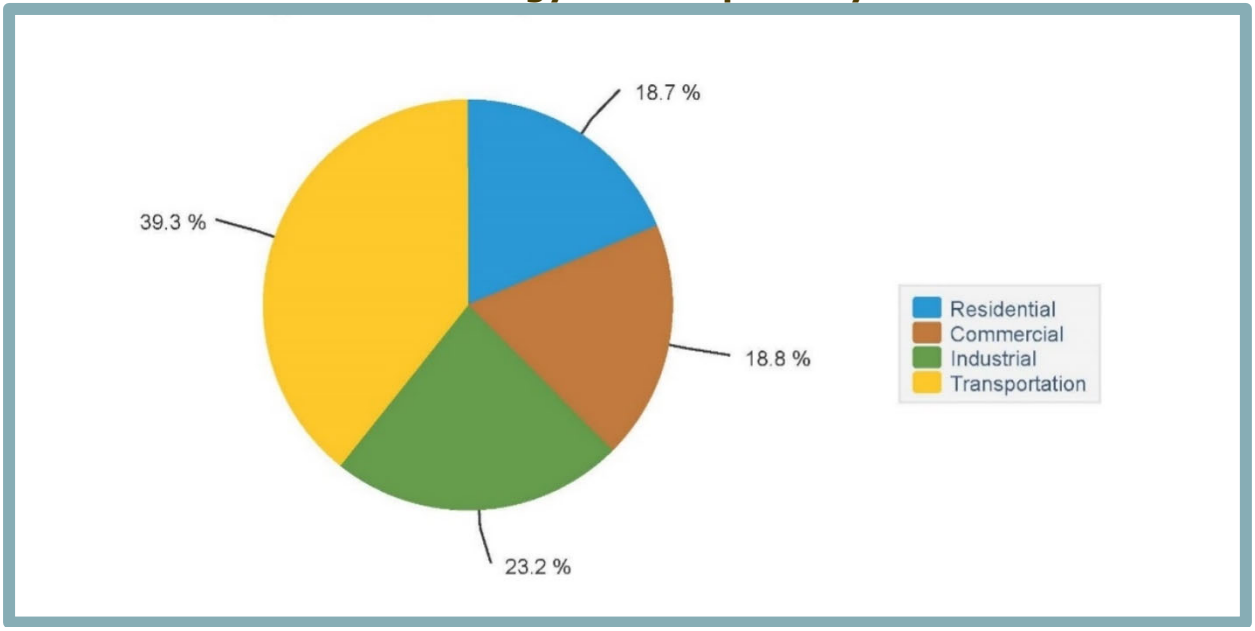
[17] California Energy Commission. *Electricity Consumption by County*. Available at: http://ecdms.energy.ca.gov/elecbycounty.aspx. Accessed October 2022.
[18] Butte County. *2021 Climate Action Plan.* December 14, 2021.

Figure 4.2-1
California Energy Generation by Source



Source: U.S. Energy Information Administration. California: State Profile and Energy Estimates. Accessible at: https://www.eia.gov/state/index.php?sid=CA. Accessed October 2022.

Figure 4.2-2
California Energy Consumption by Sector



Source: U.S. Energy Information Administration. California: State Profile and Energy Estimates. Accessible at: https://www.eia.gov/state/index.php?sid=CA. Accessed October 2022.

A small area of the site is currently being leased by Henkels & McCoy for materials storage and a portable administrative building. Vegetated areas of the project site currently consist of undeveloped sparse ruderal grasses, along with scattered oak and pine trees. In addition, a portion of the site is developed with three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Course, including a 2,440-square foot (sf) grill building, 1,830-sf clubhouse, and a Quonset hut, as well as on-site water and wastewater treatment systems. However, because the on-site structures are currently unused, and the site is no longer used as a PG&E base camp, under the current baseline condition, the project site results in very little energy demand.

Public Safety Power Shutoffs

In an effort to prevent fires, PG&E initiated public safety power shutoffs (PSPS) in 2019, which may continue in subsequent years until fire risks associated with power lines are decreased. PSPS events involve PG&E turning off electrical service during times when the weather is predicted to have a heightened fire risk from gusty winds and dry conditions. Dependent on the fire risks, the power outage events may occur in specific areas or for all PG&E customers across the County. Based on the project site's location, the site is not located within an area that is more likely to be affected by a PSPS event.[19]

4.2.3 REGULATORY CONTEXT

Air quality, GHG emissions, and energy consumption are monitored and regulated through the efforts of various international, federal, State, and local government agencies. Agencies work jointly and individually to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for regulating and improving the air quality within the project area and monitoring or reducing GHG emissions and energy consumption are discussed below.

Federal Regulations Related to Air Quality

The following discussion provides a summary of the federal regulations relevant to air quality, organized by pollutant type.

Criteria Pollutants

The FCAA, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The USEPA is responsible for implementing most aspects of the FCAA, including setting NAAQS for major air pollutants; setting hazardous air pollutant standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric ozone protection measures, and enforcement provisions. Under the FCAA, NAAQS are established for the following criteria pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for ozone, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than

[19] Pacific Gas & Electric Co. *Interactive PSPS Planning Map.* Available at: https://vizmap.ss.pge.com/?_ga=2.94997403.624386528.1664230975-1068345172.1664230975. Accessed October 2022.

once per year. NAAQS for ozone, NO_2, SO_2, PM_{10}, $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant. The FCAA requires the USEPA to reassess the NAAQS at least every five years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames.

Hazardous Air Pollutants/Toxic Air Contaminants

The 1977 FCAA amendments required the USEPA to identify national emission standards for hazardous air pollutants to protect public health and welfare. Hazardous air pollutants include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 FCAA Amendments, which expanded the control program for hazardous air pollutants, 189 substances and chemical families were identified as hazardous air pollutants.

Federal Regulations Related to GHG Emissions

The following are the federal regulations relevant to GHG emissions.

Federal Vehicle Standards

In 2010, President Obama issued a memorandum directing the Department of Transportation, Department of Energy, USEPA, and National Highway Traffic Safety Administration (NHTSA) to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the USEPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017 through 2025 light-duty vehicles. The proposed standards were projected to achieve emission rates as low as 163 grams of CO_2 per mile by model year 2025 on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if the foregoing emissions level was achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017 through 2021 (77 FR 62624–63200), and NHTSA intended to set standards for model years 2022 through 2025 in future rulemaking.

In August 2016, the USEPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program would have applied to vehicles with model years 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types of sizes of buses and work trucks. The final standards were expected to lower CO_2 emissions by approximately 1.1 billion MT, and reduce oil consumption by up to two billion barrels over the lifetime of the vehicles sold under the program.

In August 2018, the USEPA and NHTSA proposed to amend certain fuel economy and GHG standards for passenger cars and light trucks and establish new, less-stringent standards for model years 2021 through 2026. Compared to maintaining the post-2020 standards that were previously in place, the 2018 proposal would increase U.S. fuel consumption by approximately 0.5 million barrels per day, and would impact the global climate by 3/1000th of one degree Celsius by 2100. California and other states stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures, and committed to cooperating with other countries to implement global climate change initiatives.

On September 27, 2019, the USEPA and NHTSA published the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program (84 FR 51,310), which became effective November 26, 2019. The Part One Rule revokes California's authority to set its own GHG emissions standards and set zero-emission-vehicle mandates in California. On March 31, 2020, the USEPA and NHTSA issued the Part Two Rule, which sets CO_2 emissions standards and corporate average fuel economy standards for passenger vehicles and light-duty trucks for model years 2021 through 2026. On January 20, 2021, an Executive Order (EO) was issued on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, which includes review of the Part One Rule by April 2021 and review of the Part Two Rule by July 2021. In response to the Part One Rule, in December 2021, the U.S. Department of Transportation withdrew its portions of the "SAFE I" rule. As a result, states are now allowed to issue their own GHG emissions standards and zero-emissions vehicle mandates.[20] In addition, the Part Two Rule was adopted to revise the existing national GHG emission standards for passenger cars and light trucks through model year 2026. These standards are the strongest vehicle emissions standards ever established for the light-duty vehicle sector and will result in avoiding more than three billion tons of GHG emissions through 2050.[21]

Federal Regulations Related to Energy

The following are the federal regulations relevant to energy.

Energy Policy and Conservation Act

The Energy Policy and Conservation Act was originally enacted in 1975 with the intention of ensuring that all vehicles sold in the U.S. meet established fuel economy standards. Following congressional establishment of the original set of fuel economy standards the U.S. Department of Transportation was tasked with establishing additional on-road vehicle standards and making revisions to standards as necessary. Compliance with established standards is based on manufacturer fleet average fuel economy, which originally applied to both passenger cars and light trucks but did not apply to heavy-duty vehicles exceeding 8,500 pounds in gross vehicle weight. The fuel economy program implemented under the Energy Policy and Conservation Act is known as the Corporate Average Fuel Economy (CAFE) Standards. Updates to the CAFE standards since original implementation have increased fuel economy requirements and begun regulation of medium- and heavy-duty vehicles.

Energy Policy Act of 2005

The Energy Policy Act of 2005 addressed energy production in the U.S. from various sources. In particular, the Energy Policy Act of 2005 included tax credits, loans, and grants for the implementation of energy systems that would reduce GHG emissions related to energy production.

State Regulations Related to Air Quality

The following discussion summarizes applicable State regulations related to air quality, organized by pollutant type. Only the most prominent and applicable California air quality-

[20] National Highway Traffic Safety Administration. *In Removing Major Roadblock to State Action on Emissions Standards, U.S. Department of Transportation Advances Biden-Harris Administration's Climate and Jobs Goals.* Available at: https://www.nhtsa.gov/press-releases/cafe-preemption-final-rule. Accessed October 2022.

[21] U.S. Environmental Protection Agency. *Final Rule to Revise Existing National GHG Emissions Standards for Passenger Cars and Light Trucks Through Model Year 2026*. Available at: https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-revise-existing-national-ghg-emissions. Accessed October 2022.

related legislation is included below; however, an exhaustive list and extensive details of California air quality legislation can be found at the CARB website (http://www.arb.ca.gov/html/lawsregs.htm).

Criteria Air Pollutants

The FCAA delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the CCAA of 1988, responding to the FCAA, and regulating emissions from motor vehicles and consumer products.

CARB has established CAAQS, which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered "in attainment" if pollutant levels are continuously below the CAAQS and do not violate the standards more than once each year. The CAAQS for ozone, CO, SO_2 (one-hour and 24-hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 4.2-2.

Hazardous Air Pollutants/Toxic Air Contaminants

The State Air Toxics Program was established in 1983 under Assembly Bill (AB) 1807 (Tanner), and involved definition of a list of TACs. The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. The State list of TACs includes the federally-designated hazardous air pollutants. In 1987, the Legislature enacted the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hot spots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over five years. TAC emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment, and, if specific thresholds are exceeded, the facility operator is required to communicate the results to the public in the form of notices and public meetings.

CARB Air Quality and Land Use Handbook

CARB's Air Quality and Land Use Handbook: A Community Health Perspective (CARB Handbook) addresses the importance of considering health risk issues when siting sensitive land uses, including residential development, in the vicinity of intensive air pollutant emission sources including freeways or high-traffic roads, distribution centers, ports, petroleum refineries, chrome plating operations, dry cleaners, and gasoline dispensing facilities (GDFs).[22] The CARB Handbook draws upon studies evaluating the health effects of traffic traveling on major

[22] California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.

interstate highways in metropolitan California centers within Los Angeles (Interstate-405 and Interstate-710), the San Francisco Bay, and San Diego areas. The recommendations identified by CARB, including siting residential uses a minimum distance of 500 feet from freeways or other high-traffic roadways, are consistent with those adopted by the State of California for location of new schools. Specifically, the CARB Handbook recommends, "Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day".[23]

Importantly, the Introduction chapter of the CARB Handbook clarifies that the guidelines are strictly advisory, recognizing that: "[l]and use decisions are a local government responsibility. The Air Resources Board Handbook is advisory and these recommendations do not establish regulatory standards of any kind." CARB recognizes that there may be land use objectives as well as meteorological and other site-specific conditions that need to be considered by a governmental jurisdiction relative to the general recommended setbacks, specifically stating, "[t]hese recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues".[24]

Diesel Particulate Matter

In 2000, CARB approved a comprehensive diesel risk reduction plan to reduce diesel emissions, including DPM, from new and existing diesel-fueled vehicles and engines. The regulation was anticipated to result in an 80 percent decrease in statewide diesel health risk by 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. The aforementioned regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. Several Airborne Toxic Control Measures (ATCMs) exist that reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 California Code of Regulations [CCR] 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

Heavy-Duty Diesel Truck and Bus Regulation

CARB adopted the final Heavy-Duty Truck and Bus Regulation, Title 13, Division 3, Chapter 1, Section 2025, on December 31, 2014, to reduce DPM and NO_X emissions from heavy-duty diesel vehicles. The rule requires nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an ATCM to limit idling of diesel-fueled commercial vehicles on December 12, 2013. The rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than five minutes at any location (13 CCR 2485).

California Health and Safety Code Section 41700

Section 41700 of the Health and Safety Code states that a person must not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that

[23] California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.
[24] *Ibid.*

endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. Section 41700 also applies to sources of objectionable odors.

Heavy-Duty Vehicle Idling Emission Reduction Program

On October 20, 2005, CARB approved a regulatory measure to reduce emissions of toxics and criteria pollutants by limiting idling of new and in-use sleeper berth equipped diesel trucks.[25] The regulation established new engine and in-use truck requirements and emission performance requirements for technologies used as alternatives to idling the truck's main engine. For example, the regulation requires 2008 and newer model year heavy-duty diesel engines to be equipped with a non-programmable engine shutdown system that automatically shuts down the engine after five minutes of idling, or optionally meet a stringent NO_X emission standard. The regulation also requires operators of both in-state and out-of-state registered sleeper berth equipped trucks to manually shut down their engine when idling more than five minutes at any location within California. Emission producing alternative technologies such as diesel-fueled auxiliary power systems and fuel-fired heaters are also required to meet emission performance requirements that ensure emissions are not exceeding the emissions of a truck engine operating at idle.

In-Use Off-Road Diesel Vehicle Regulation

On July 26, 2007, CARB adopted a regulation to reduce DPM and NO_X emissions from in-use (existing), off-road, heavy-duty diesel vehicles in California.[26] Such vehicles are used in construction, mining, and industrial operations. The regulation is designed to reduce harmful emissions from vehicles by subjecting fleet owners to retrofit or accelerated replacement/repower requirements, imposing idling limitations on owners, operators, renters, or lessees of off-road diesel vehicles. The idling limits require operators of applicable off-road vehicles (self-propelled diesel-fueled vehicles 25 horsepower and up that were not designed to be driven on-road) to limit idling to less than five minutes. The idling requirements are specified in Title 13 of the CCR.

State Regulations Related to GHG Emissions

The statewide GHG emissions regulatory framework is summarized below. The following text describes EOs, legislation, regulations, and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues. The following discussion does not include an exhaustive list of applicable regulations; rather, only the most prominent and applicable California legislation related to GHG emissions and climate change is included below.

State Climate Change Targets

California has taken a number of actions to address climate change, including EOs, legislation, and CARB plans and requirements, which are summarized below.

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[25] California Air Resources Board. *Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling*. October 24, 2013. Available at: https://ww2.arb.ca.gov/our-work/programs/atcm-to-limit-vehicle-idling. Accessed Janaury 2023.

[26] California Air Resources Board. *In-Use Off-Road Diesel Vehicle Regulation*. December 10, 2014. Available at: http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm. Accessed Janaury 2023.

Executive Order S-3-05

EO S-3-05 (June 2005) established California's GHG emissions reduction targets and laid out responsibilities among the State agencies for implementing the EO and for reporting on progress toward the targets. The EO established the following targets:

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

EO S-3-05 also directed the California Environmental Protection Agency (CalEPA) to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Climate Action Team was formed, which subsequently issues yearly GHG reduction report cards to track the progress of emission reduction strategies. Each report card documents the effectiveness of measures to reduce GHG in California, presents GHG emissions from State agencies' operations, and shows reductions that have occurred in the two years prior to publication.

Assembly Bill 32

In furtherance of the goals established in EO S-3-05, the Legislature enacted AB 32 (Núñez and Pavley). The bill is referred to as the California Global Warming Solutions Act of 2006 (September 27, 2006). AB 32 provided initial direction on creating a comprehensive, multi-year program to limit California's GHG emissions at 1990 levels by 2020 and initiate the transformations required to achieve the State's long-range climate objectives. AB 32 also required that the CARB prepare a "scoping plan" for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020. The CARB's Scoping Plan is described in further detail below.

Executive Order B-30-15

EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under EO S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40 percent below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80 percent below 1990 levels by 2050 as set forth in EO S-3-05. To facilitate achieving this goal, EO B-30-15 called for an update to the CARB's Climate Change Scoping Plan: A Framework for Change (Scoping Plan) to express the 2030 target in terms of million metric tons (MMT) of CO_2e. The CARB's Scoping Plan is discussed in further detail below. The EO also called for State agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets.

Senate Bill 32 and Assembly Bill 197

Senate Bill (SB) 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40 percent below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, to provide ongoing oversight over implementation of the State's climate policies. AB 197 also added two members of the Legislature to the Board as non-voting members; requires CARB to make available and update (at least annually via the CARB's website) emissions data for GHGs, criteria air pollutants, and TACs from reporting

facilities; and requires CARB to identify specific information for GHG emissions reduction measures when updating the Scoping Plan.

CARB's Climate Change Scoping Plan

One specific requirement of AB 32 is for CARB to prepare a scoping plan for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (Health and Safety Code Section 38561[a]), and to update the Scoping Plan at least once every five years. In 2008, CARB approved the first Scoping Plan. The Scoping Plan included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the State's long-range climate objectives. The key elements of the Scoping Plan include the following:

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
2. Achieving a statewide renewable energy mix of 33 percent;
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions;
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
5. 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 (LCFS) (17 CCR, Section 95480 et seq.); and
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

The Scoping Plan also identified local governments as essential partners in achieving California's goals to reduce GHG emissions because they have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Specifically, the Scoping Plan encouraged local governments to adopt a reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15 percent from 2008 levels by 2020. Many local governments developed community-scale local GHG reduction plans based on this Scoping Plan recommendation.

In 2014, CARB approved the first update to the Scoping Plan. The First Update to the Climate Change Scoping Plan: Building on the Framework (First Update) defined the State's GHG emission reduction priorities for the next five years and laid the groundwork to start the transition to the post-2020 goals set forth in EO S-3-05 and EO B-16-2012. The First Update concluded that California is on track to meet the 2020 target but recommended a 2030 mid-term GHG reduction target be established to ensure a continuation of action to reduce emissions. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050, including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy

technologies. As part of the First Update, CARB recalculated the State's 1990 emissions level using more recent GWPs identified by the IPCC, from 427 MMT CO_2e to 431 MMT CO_2e.

In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030 target of 40 percent below 1990 levels by 2030 to keep California on a trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80 percent below 1990 levels by 2050, as set forth in EO S-3-05. In summer 2016, the Legislature affirmed the importance of addressing climate change through passage of SB 32 (Pavley, Chapter 249, Statutes of 2016).

In December 2017, the Scoping Plan was once again updated. The 2017 Scoping Plan built upon the successful framework established in the initial Scoping Plan and First Update, while identifying new, technologically feasible and cost-effective strategies that would serve as the framework to achieve the 2030 GHG target as established by SB 32 and define the State's climate change priorities to 2030 and beyond. For local governments, the 2017 Scoping Plan replaced the initial Scoping Plan's 15 percent reduction goal with a recommendation to aim for a communitywide goal of no more than six $MTCO_2e$ per capita by 2030, and no more than two $MTCO_2e$ per capita by 2050, which are consistent with the State's long-term goals. The 2017 Scoping Plan recognized the benefits of local government GHG planning (e.g., through Climate Action Plans [CAPs]) and provided more information regarding tools to support those efforts. The 2017 Scoping Plan also recognized the CEQA streamlining provisions for project-level review where a legally adequate CAP exists.

When discussing project-level GHG emissions reduction actions and thresholds in the context of CEQA, the 2017 Scoping Plan stated that "achieving no net additional increase in GHG emissions, resulting in no contribution to GHG impacts, is an appropriate overall objective for new development" for project-level CEQA analysis, but also recognized that such a standard may not be appropriate or feasible for every development project. The 2017 Scoping Plan further provided that "the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA."

The most recent update to the Scoping Plan, the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan Update) was adopted by the CARB in December 2022.[27] The 2022 Scoping Plan Update builds upon previous efforts to reduce GHG emissions and is designed to continue to shift the California economy away from dependence on fossil fuels. The 2022 Scoping Plan Update, the most comprehensive and far-reaching Scoping Plan developed to date, identifies a technologically feasible and cost-effective path to achieve carbon neutrality by 2045 while also assessing the progress California is making toward reducing its GHG emissions by at least 40 percent below 1990 levels by 2030, as called for in SB 32 and laid out in the 2017 Scoping Plan. The 2030 target is an interim but important stepping stone along the critical path to the broader goal of deep decarbonization by 2045. The relatively longer path assessed in the Scoping Plan incorporates, coordinates, and leverages many existing and ongoing efforts to reduce GHGs and air pollution, while identifying new clean technologies and energy. Given the focus on carbon neutrality, the Scoping Plan also includes discussion for the

[27] California Air Resources Board. *2022 Scoping Plan for Achieving Carbon Neutrality*. November 16, 2022. Available at: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents. Accessed December 2022.

first time of the Natural and Working Lands (NWL) sectors as both sources of emissions and carbon sinks.

The 2022 Scoping Plan Update lays out a path to achieve targets for carbon neutrality and reduce GHG emissions by 85 percent below 1990 levels by 2045, as directed by AB 1279. The actions and outcomes in the plan will achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on NWL to reduce emissions and sequester carbon, and the capture and storage of carbon.

CARB's Regulations for the Mandatory Reporting of GHG Emissions

CARB's Regulation for the Mandatory Reporting of GHG Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that the USEPA promulgated in its Final Rule on Mandatory Reporting of GHGs (40 Code of Federal Regulations [CFR] Part 98). In general, entities subject to the Mandatory Reporting Regulation that emit more than 10,000 $MTCO_2e$ per year are required to report annual GHGs through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 $MTCO_2e$ per year threshold are required to have their GHG emission report verified by a CARB-accredited third party.

Senate Bill 1383

SB 1383 establishes specific targets for the reduction of short-lived climate pollutants (SLCPs) (40 percent below 2013 levels by 2030 for CH_4 and HFCs, and 50 percent below 2013 levels by 2030 for anthropogenic black carbon), and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, CARB adopted its SLCP Reduction Strategy in March 2017. The SLCP Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, CH_4, and fluorinated gases.

Executive Order B-55-18/Assembly Bill 1279

EO B-55-18 (September 2018) establishes a statewide policy for California to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net-negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the State's GHG emissions. CARB intends to work with relevant State agencies to ensure that future scoping plan updates identify and recommend measures to achieve the carbon neutrality goal. On September 16, 2022, AB 1279, also known as the California Climate Crisis Act, codified the carbon neutrality goal established by EO B-55-18.

Mobile Sources

The following regulations relate to the control of GHG emissions from mobile sources. Mobile sources include both on-road vehicles and off-road equipment.

Assembly Bill 1493

AB 1493 (Pavley) (July 2002) was enacted in response to the transportation sector accounting for more than half of California's CO_2 emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the State board to be vehicles that are primarily used for non-commercial personal transportation in the State. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards would result in a

reduction of approximately 22 percent of GHG emissions compared to the emissions from the 2002 fleet, and the mid-term (2013–2016) standards would result in a reduction of approximately 30 percent.

Senate Bill 375

SB 375 (Steinberg) (September 2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035, and to update those targets every eight years. SB 375 requires the State's 18 regional metropolitan planning organizations to prepare a sustainable communities strategy as part of their Regional Transportation Plans that will achieve the GHG reduction targets set by CARB. If a metropolitan planning organization is unable to devise a sustainable communities strategy to achieve the GHG reduction target, the metropolitan planning organization must prepare an alternative planning strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Pursuant to California Government Code Section 65080(b)(2)(K), a sustainable communities strategy does not (1) regulate the use of land, (2) supersede the land use authority of cities and counties, or (3) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with the sustainable community strategy. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the State-mandated housing element process.

Advanced Clean Cars Program and Zero-Emissions Vehicle Program

The Advanced Clean Cars program (January 2012) is an emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars. To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. By 2025, implementation of the rule is anticipated to reduce emissions of smog-forming pollution from cars by 75 percent compared to the average new car sold in 2015. To reduce GHG emissions, CARB, in conjunction with the USEPA and NHTSA, adopted GHG standards for model year 2017 to 2025 vehicles; the standards were estimated to reduce GHG emissions by 34 percent by 2025. The zero-emissions vehicle program acts as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of zero-emissions vehicles and plug-in hybrid electric vehicles in the 2018 to 2025 model years.

Executive Order B-16-12

EO B-16-12 (March 2012) required that State entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. The order directed CARB, California Energy Commission (CEC), California Public Utilities Commission (CPUC), and other relevant agencies to work with the Plug-In Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050. EO B-16-12

did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.

Assembly Bill 1236

AB 1236 (October 2015) (Chiu) required a city, county, or city and county to approve an application for the installation of electric-vehicle charging stations, as defined, through the issuance of specified permits unless the city or county makes specified written findings based on substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and a feasible method to satisfactorily mitigate or avoid the specific, adverse impact does not exist. The bill provided for appeal of that decision to the planning commission, as specified. AB 1236 required electric-vehicle charging stations to meet specified standards. The bill required a city, county, or city and county with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that created an expedited and streamlined permitting process for electric-vehicle charging stations. The bill also required a city, county, or city and county with a population of less than 200,000 residents to adopt the ordinance by September 30, 2017.

Water

The following regulations relate to the conservation of water, which reduces GHG emissions related to electricity demands from the treatment and transportation of water.

Executive Order B-29-15

In response to a drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25 percent relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives subsequently became permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the State. In response to EO B-29-15, the California Department of Water Resources modified and adopted a revised version of the Model Water Efficient Landscape Ordinance (MWELO) that, among other changes, significantly increases the requirements for landscape water use efficiency, and broadens the applicability of the ordinance to include new development projects with smaller landscape areas.

Solid Waste

The following regulations relate to the generation of solid waste and means to reduce GHG emissions from solid waste produced within the State.

Assembly Bill 939 and Assembly Bill 341

In 1989, AB 939, known as the Integrated Waste Management Act (California Public Resources Code [PRC] Sections 40000 et seq.), was passed because of the observed increase in waste stream and the decrease in landfill capacity.

AB 341 (Chapter 476, Statutes of 2011 [Chesbro]) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that the policy goal of the State is that not less than 75 percent of solid waste generated be source-reduced, recycled, or composted by 2020, and annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and Recovery to develop strategies to achieve the State's policy goal.

Other State Actions

The following State regulations are broadly related to GHG emissions.

Senate Bill 97

SB 97 (Dutton) (August 2007) directed the Governor's Office of Planning and Research (OPR) to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, the Governor's OPR issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that the lead agency should identify and estimate a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities. The advisory further recommended that the lead agency determine the significance of the impacts and impose all mitigation measures necessary to reduce GHG emissions to a level that is less than significant. The California Natural Resource Agency (CNRA) adopted the CEQA Guidelines amendments in December 2009, and the amended CEQA Guidelines became effective in March 2010.

Under the amended CEQA Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis, or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4[a]). The CEQA Guidelines require a lead agency to consider 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 (14 CCR 15064.4[b]). The CEQA Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures. The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply the lead agency's own thresholds of significance or those developed by other agencies or experts. CNRA acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions.

With respect to GHG emissions, the CEQA Guidelines state that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions (14 CCR 15064.4[a]). The CEQA Guidelines note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance based standards" (14 CCR 15064.4[a]). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project 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 (14 CCR 15064.4[b]).

Executive Order S-13-08

EO S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs State agencies to take specified actions to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009, and an update, Safeguarding California: Reducing Climate Risk, followed in July 2014. To assess the State's vulnerability, the report summarizes key climate change impacts to the State for the following areas: agriculture,

biodiversity and habitat, emergency management, energy, forestry, ocean and coastal ecosystems and resources, public health, transportation, and water. Issuance of the Safeguarding California: Implementation Action Plans followed in March 2016. In January 2018, the CNRA released the Safeguarding California Plan: 2018 Update, which communicates current and needed actions that the State government should take to build climate change resiliency.

State Regulations Related to Energy

The primary State regulatory agencies governing energy consumption are the CEC and the CPUC.

The CEC, created by the Legislature in 1974, has seven major responsibilities: forecasting future energy needs; promoting energy efficiency and conservation by setting the State's appliance and building energy efficiency standards; supporting energy research that advances energy science and technology through research, development, and demonstration projects; developing renewable energy resources; advancing alternative and renewable transportation fuels and technologies; certifying thermal power plants 50-megawatt (MW) and larger; and planning for and directing State response to energy emergencies.[28]

The CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. The CPUC is responsible for ensuring that customers have safe, reliable utility service and infrastructure at reasonable rates, regulating utility services, stimulating innovation, and promoting competitive markets.[29]

The State has adopted various regulations aimed at reducing energy consumption, increasing energy efficiency, and mandating sourcing requirements for electricity production. The following regulations are applicable to the proposed project.

Building Energy

The following regulations relate to energy efficiency and energy use reductions in the built environment.

Title 24, Part 6

Title 24 of the CCR, which is known as the California Building Standards Code (CBSC), was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed periodically, and revised if necessary, by the Building Standards Commission and CEC (PRC Section 25402[b][1]). The regulations receive input from members of industry, as well as the public, with the goal of "reducing of wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (PRC Section 25402). The regulations are scrutinized and analyzed for technological and economic feasibility (PRC Section 25402[d]) and cost effectiveness (PRC Sections 25402[b][2] and [b][3]). As a result, the

[28] California Energy Commission. *About the California Energy Commission*. Available at: http://www.energy.ca.gov/about. Accessed October 2022.
[29] California Public Utilities Commission. *California Public Utilities Commission*. Available at: https://www.cpuc.ca.gov/about-cpuc. Accessed February 2023.

standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment.

The 2022 Title 24 standards are the currently applicable building energy efficiency standards and became effective on January 1, 2023. Compliance with the 2022 Title 24 Building Energy Efficiency Standards will reduce energy use and associated GHG emissions compared to structures built in compliance with the previous 2019 Title 24 standards.

Title 24, Part 11

In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as CALGreen, and establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential and State-owned buildings and schools and hospitals. The original CALGreen standards have been updated several times. The CALGreen 2022 standards, which are the current standards, improved upon the 2019 CALGreen standards, and went into effect on January 1, 2023. The 2022 CALGreen Code focuses on four key areas in newly constructed homes and businesses:[30]

- Encouraging electric heat pump technology for space and water heating, which consumes less energy and produces fewer emissions than gas-powered units.
- Establishing electric-ready requirements for single-family homes to position owners to use cleaner electric heating, cooking and electric vehicle (EV) charging options whenever they choose to adopt those technologies.
- Expanding solar PV system and battery storage standards to make clean energy available onsite and complement the state's progress toward a 100 percent clean electricity grid.
- Strengthening ventilation standards to improve indoor air quality.

The CALGreen standards also include voluntary efficiency measures that are provided at two tiers and implemented at the discretion of local agencies and applicants. According to Section A4.602 of Appendix A4 of the CALGreen Code, CALGreen's Tier 1 standards call for a 15 percent improvement in energy requirements, stricter water conservation, 65 percent diversion of construction and demolition waste, 10 percent recycled content in building materials, 20 percent permeable paving, 20 percent cement reduction, and cool/solar-reflective roofs. CALGreen's more rigorous Tier 2 standards call for a 30 percent improvement in energy requirements, stricter water conservation, 80 percent diversion of construction and demolition waste, 15 percent recycled content in building materials, 30 percent permeable paving, 25 percent cement reduction, and cool/solar-reflective roofs.

[30] California Energy Commission. *Energy Commission Adopts Updated Building Standards to Improve Efficiency, Reduce Emissions From Homes and Businesses.* Available at: https://www.energy.ca.gov/news/2021-08/energy-commission-adopts-updated-building-standards-improve-efficiency-reduce-0. Accessed December 2022.

Title 20

Title 20 of the CCR requires manufacturers of appliances to meet State and federal standards for energy and water efficiency. The CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low-voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations, and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and State standards for federally regulated appliances, State standards for federally regulated appliances, and State standards for non-federally regulated appliances.

Senate Bill 1

SB 1 (Murray) (August 2006) established a $3 billion rebate program to support the goal of the State to install rooftop solar energy systems with a generation capacity of 3,000 MW through 2016. SB 1 added sections to the PRC, including Chapter 8.8 (California Solar Initiative), that require building projects applying for ratepayer-funded incentives for PV systems to meet minimum energy efficiency levels and performance requirements. Section 25780 established that it is a goal of the State to establish a self-sufficient solar industry. The goals included establishing solar energy systems as a viable mainstream option for homes and businesses within 10 years of adoption, and placing solar energy systems on 50 percent of new homes within 13 years of adoption. SB 1, also termed "Go Solar California," was previously titled "Million Solar Roofs."

Assembly Bill 1109

Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general-purpose lighting to reduce electricity consumption by 50 percent for indoor residential lighting and by 25 percent for indoor commercial lighting.

Climate Change Scoping Plan

Expanding and strengthening existing energy efficiency programs as well as building and appliance standards is the key element of the Scoping Plan, as introduced above, related to building energy.

Transportation/Fuel Energy

The following regulations relate to fuel efficiency and energy use reductions in the transportation and motorized vehicle sector.

Assembly Bill 1493

In 2002 California adopted AB 1493, also known as the Pavley I standards, which required new passenger vehicles with model years 2009 to 2016 to meet more stringent fuel efficiency standards. Additional laws have extended these rules to cover vehicles from future model years.

Executive Order S-1-07

EO S-1-07, otherwise known as the LCFS, was adopted in 2009 and requires transportation fuels such as gasoline and diesel sold within the state to be less carbon intensive. These policies reduce emissions from on-road transportation and off-road equipment use in Butte County.

Executive Order B-16-12

EO B-16-12 (March 2012) required that State entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. The order directed CARB, CEC, CPUC, and other relevant agencies to work with the Plug-In Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050. EO B-16-12 did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.

Assembly Bill 1346

AB 1346 (October 2021) prohibits non-electric small off-road engines. Small off-road engines, which are used primarily in lawn and garden equipment, emit high levels of air pollutants and, in 2020, California daily criteria pollutant emissions from small off-road engines were higher than emissions from light-duty passenger cars. Thus, by January 1, 2024, regulations shall prohibit engine exhaust and evaporative emissions from new small off-road engines.

Senate Bill 500

SB 500 (September 2021) requires that, beginning January 1, 2030, to the extent allowed by federal law, any autonomous vehicle that is model year 2031 or later, has a gross vehicle weight rating of less than 8,501 pounds, and is equipped with Level 3, 4, or 5 automation (as defined by the International Society of Automotive Engineers) to be a zero-emission vehicle to be operated on California public roads.

Climate Change Scoping Plan

The key elements of the Scoping Plan, as introduced above, related to transportation energy include the following:

1. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets; and
2. Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the LCFS (17 CCR, Section 95480 et seq.).

Renewable Energy and Energy Procurement

The following regulation relates to the source of electricity provided to consumers within the State, as well as standards related to the generation of electricity within the State.

Renewable Portfolio Standard (RPS), Senate Bill 350, and Senate Bill 100

Established in 2002 under SB 1078, accelerated in 2006 under SB 107, and expanded in 2011 under SB 2, California's RPS is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, electric service providers, and

community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020.

Since the inception of the RPS program, the program has been extended and enhanced multiple times. In 2015, SB 350 extended the State's RPS program by requiring that publicly owned utilities procure 50 percent of their electricity from renewable energy sources by 2030. The requirements of SB 350 were expanded and intensified in 2018 through the adoption of SB 100, which mandated that all electricity generated within the State by publicly owned utilities be generated through carbon-free sources by 2045. In addition, SB 100 increased the previous renewable energy requirement for the year 2030 by 10 percent; thus, requiring that 60 percent of electricity generated by publicly owned utilities originate from renewable sources by the year 2030.

Local Regulations

The most prominent local regulations related to air quality, GHG emissions, and energy established by the BCAQMD and Butte County, are discussed in further detail below.

Butte County Air Quality Management District

The BCAQMD regulates many sources of pollutants in the ambient air, as well as GHG emissions, and is responsible for implementing certain programs and regulations for controlling air pollutant and GHG emissions to improve air quality in order to attain NAAQS and CAAQS and reduce GHG emissions in compliance with State goals.

Air Quality Attainment Plan

Due to the nonattainment designations, BCAQMD, along with the other air districts in the SVAB region, prepared the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (Ozone Attainment Plan) in December 2008. The CARB determined that the Ozone Attainment Plan met FCAA requirements and approved the Plan on March 26, 2009 as a revision to the State Implementation Plan (SIP). An update to the plan, the 2017 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2017 Ozone Attainment Plan), was prepared and adopted by CARB on November 16, 2017. An additional update to the plan was prepared and adopted by CARB on October 15, 2018, and known as the 2018 Updates to the California State Implementation Plan. In addition, the BCAQMD is also party to the Northern Sacramento Valley Planning Area 2015 Triennial Air Quality Attainment Plan, which was specifically developed to cover the Planning Areas of Shasta, Tehama, Glenn, Butte, Colusa, and Feather River. The air quality plans include emissions inventories to measure the sources of air pollutants, to evaluate how well different control measures have worked, and to show how air pollution would be reduced. In addition, the plans include the estimated future levels of pollution to ensure that the area would meet air quality goals.

BCAQMD Rules and Regulations

All projects under the jurisdiction of the BCAQMD are required to comply with all applicable BCAQMD rules and regulations. In addition, in Butte County, air permits are issued by the BCAQMD. Air quality permits are issued with specific requirements intended to minimize emissions. A BCAQMD permit authorizes the emission of air pollutants, only under certain conditions. Permit requirements apply to many commercial activities (e.g., print shops, drycleaners, gasoline stations), and other miscellaneous activities (e.g., demolition of buildings containing asbestos). The proposed project is required to comply with all applicable BCAQMD

rules and regulations, which shall be noted on County-approved construction plans. The BCAQMD regulations and rules include, but are not limited to, the following:

Regulation 2 – Prohibitions

Regulation 2 is comprised of prohibitory rules that are written to achieve emission reductions from specific source categories. The rules are applicable to existing sources as well as new sources. Examples of prohibitory rules include Nuisance (Rule 200), Visible Emissions (Rule 201), Particulate Matter Concentration (Rule 202), Fugitive Dust Emissions (Rule 205), Wood Burning Devices (Rule 207), and Architectural Coatings (Rule 230).

Regulation 4 – Permits

Regulation 4 is intended to provide an orderly procedure for the review of new sources, and modification and operation of existing sources, of air pollution through the issuance of permits. Regulation 4 primarily deals with permitting major emission sources and includes, but is not limited to, rules such as Permit Requirements (Rule 400), State New Source Review (Rule 430), Emission Reduction Credits (Rule 431), and Emissions Statements (Rule 434).

2030 Butte County General Plan

The following goals and policies related to air quality are from the 2030 Butte County General Plan:

Conservation and Open Space Element

Goal COS-1 Reduce greenhouse gas emissions to 1990 levels by 2020.

Policy COS-P1.2 New development projects shall mitigate greenhouse gas emissions on-site or as close to the site as possible.

Policy COS-P1.3 New development should use recycled-content construction materials.

Policy COS-P1.4 New development should provide above-ground and natural stormwater facilities and use building designs and materials that promote groundwater recharge.

Policy COS-P1.5 New developments should have street systems that support the use of Neighborhood Electric Vehicles (NEV).

Policy COS-P1.6 Recognize and promote the emerging market for agricultural producers to provide carbon sequestration services.

Policy COS-P1.7 New commercial and institutional development projects shall provide prioritized parking for electric vehicles, hybrid vehicles, alternative fuel vehicles and carpools.

Goal COS-2 Promote green building, planning and business.

Policy COS-P2.2 New development shall comply with Green Building Standards adopted by the California Building Standards

Commission at the time of building permit application, including requirements about low- or no-toxicity building materials.

Policy COS-P2.4 All new subdivisions and developments should meet green planning standards such as LEED for Neighborhood Design.

Goal COS-3 Promote a sustainable energy supply.

Policy COS-P3.4 Solar-oriented and renewable design and grid-neutral development shall be encouraged.

Policy COS-P3.5 Developers shall give homebuyers the option of having renewable heat and power incorporated into new homes.

Goal COS-4 Conserve energy and fuel resources by increasing energy efficiency.

Policy COS-P4.3 New development shall meet the guidelines of the California Energy Star New Homes Program, or equivalent, and demonstrate detailed energy conservation measures.

Policy COS-P4.4 Site and structure designs for new development projects shall maximize energy efficiency.

Goal COS-5 Minimize air pollutant emissions.

Policy COS-P5.2 Developers shall implement best available mitigation measures to reduce air pollutant emissions associated with the construction and operation of development projects.

Policy COS-P5.3 Only EPA Phase II certified wood burning or equivalent devices may be installed in any residential projects.

Policy COS-P5.5 Residential developments and other projects with sensitive receptors shall be located more than 500 feet from stationary air pollutant sources. Residential developments and other projects with sensitive receptors (e.g. housing, schools, child care centers, playgrounds, hospitals, and senior centers) that are located within 500 feet of a high-volume roadway that carries over 50,000 vehicles per day shall incorporate feasible mitigation measures to protect sensitive receptors from harmful concentrations of air pollutants, as recommended in the California Air Resources Board's (CARB's) Air Quality and Land Use Handbook.

Butte County Climate Action Plan

The Butte County CAP, adopted on December 14, 2021, is a long-term strategic document to reduce GHG emissions in Butte County. Reduction targets in the CAP call for a 42 percent reduction below baseline 2006 levels of GHG emissions by 2030. The Butte County CAP contains programs and actions that are designed to help the County sustain natural resources, grow efficiently, ensure long-term resiliency to a changing environmental and economic climate, and improve transportation. The CAP works towards reducing the local contribution of GHG emissions to the atmosphere by targeting both community-wide activities and County government operations. The Butte County CAP also serves as a Qualified GHG Reduction Strategy under Section 15183.5 of the CEQA Guidelines, simplifying development review for new projects that are consistent with the CAP.

The County completed a community-wide GHG emissions inventory, which was used in the CAP to set reduction targets and identify appropriate strategies. The CAP builds on existing efforts of County departments, businesses, and community groups to reduce GHG emissions and identify future efforts needed to be consistent with statewide targets identified in AB 32 and SB 32. The CAP also includes performance metrics and tracking tools to monitor future progress. The CAP includes a set of GHG reduction strategies organized into six sectors (energy, water and wastewater, transportation and land use, solid waste, agriculture, and government operations). Each strategy includes a description, the anticipated 2030 and 2050 GHG reductions achieved by the strategy at the projected performance level, and the recommended actions necessary to implement the strategy.

According to the CAP, a project-specific environmental document that relies on the 2021 CAP for its impact analysis must identify specific GHG reduction strategies applicable to the project and demonstrate the project's incorporation of the strategies. Project applicants and County staff shall identify specific strategies applicable to each project during project review. If the project is determined to meet the requirements of the GHG reduction strategies, then the project would result in less-than-significant impacts related to GHG emissions.

4.2.4 IMPACTS AND MITIGATION MEASURES

The standards of significance and methodology used to analyze and determine the proposed project's potential project-specific impacts related to air quality and GHG emissions are described below. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Based on Appendix G of the CEQA Guidelines, an impact related to air quality, GHG emissions, or energy is considered significant if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State AAQS;
- Expose sensitive receptors to substantial pollutant concentrations;
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people;
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment;

- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs;
- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources; or
- Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Pursuant to CEQA Guidelines Section 15064.4(b)(2), the lead agency is charged with determining a threshold of significance that is applicable to the project. Further, it should be noted that pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to cumulative GHG emissions may be determined to be less than significant if the project complies with the applicable measures in a "plan for the reduction of GHG emissions" (e.g., a CAP). Under these provisions, if a project can show consistency with applicable GHG reduction measures, the level of analysis for the project required under CEQA with respect to GHG emissions can be reduced considerably (i.e., a detailed analysis of project-level GHG emissions and potential climate change impacts is not needed).

For the analysis within this EIR, the County has elected to use the BCAQMD's thresholds of significance, as well as the Butte County CAP, which as discussed previously, meets the criteria to be a GHG reduction strategy under CEQA Guidelines Section 15183.5(b). The analysis in this EIR uses the thresholds for criteria pollutants, localized CO, TAC emissions, and GHG emissions, as discussed below.

Criteria Pollutant Emissions

In order to evaluate criteria air pollutant emissions from development projects, the BCAQMD has established significance thresholds for emissions of ROG, NO_X, and PM_{10}. The significance thresholds, expressed in pounds per day (lbs/day), serve as air quality standards in the evaluation of air quality impacts associated with proposed development projects. The BCAQMD's recommended thresholds of significance are listed in Table 4.2-6.

Therefore, if the proposed project's emissions exceed the BCAQMD's pollutant thresholds presented in Table 4.2-6, the project could have a significant effect on air quality, the attainment of NAAQS and CAAQS, and could conflict with or obstruct implementation of the applicable air quality plan or result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment.

Table 4.2-6
BCAQMD Thresholds of Significance

Pollutant	Construction Thresholds	Operational Thresholds
ROG	137 lbs/day 4.5 tons/yr	25 lbs/day
NO_X	137 lbs/day 4.5 tons/yr	25 lbs/day
PM_{10}	80 lbs/day	80 lbs/day

Source: Butte County Air Quality Management District. CEQA Air Quality Handbook. October 23, 2014.

The BCAQMD established thresholds of significance for CEQA purposes to achieve and maintain the NAAQS and CAAQS. Because an AAQS is based on maximum pollutant levels in outdoor air that would not harm the public's health, and air district thresholds pertain to attainment of the AAQS, a project that complies with the thresholds established by a local air

district, such as the BCAQMD, would not result in adverse effects to human health related to criteria pollutant emissions.

With regard to cumulative emissions of criteria air pollutants, according to the BCAQMD CEQA Air Quality Handbook, the BCAQMD significance thresholds are derived from BCAQMD Rule 430, which is based upon the CAAQS. Projects that do not exceed the BCAQMD significance thresholds may be assumed to have a less-than-significant impact in regard to a cumulatively considerable net increase of any criteria pollutant for which the region is non-attainment.[31] As a result, the cumulative-level emissions thresholds established by BCAQMD are assumed to be identical to the project-level emissions thresholds presented in Table 4.2-6, above.

TAC Emissions

For evaluating TAC emissions, if a project would introduce a new source of TAC or a new sensitive receptor near an existing source of TAC that would not meet the CARB's minimum recommended setback, a detailed health risk assessment may be required. Consistent with the thresholds used for AB 2588 risk assessment procedures, the BCAQMD considers an increase in cancer risk levels of more than 10 in one million persons or a non-cancer hazard index greater than 1.0 to be a significant impact related to TACs, as presented in Table 4.2-7.

Table 4.2-7
BCAQMD Thresholds of Significance for Health Risks

Risk Factor	Threshold
Cancer	Increased cancer risk of >10.0 cases per million persons
Non-Cancer	Increased non-cancer risk of >1.0 Hazard Index (Chronic or Acute)

Source: BCAQMD, 2014.

The foregoing cancer risk level and non-cancer hazard index are typically applied to individual stationary sources of TACs; however, the BCAQMD does note that the cancer risk and hazard index thresholds may also be applied to activities that are non-stationary, such as diesel delivery trucks and off-road construction equipment.

GHG Emissions

The BCAQMD does not have any adopted numerical thresholds of significance for GHG emissions. The BCAQMD, however, recommends that all projects subject to CEQA review be considered in the context of GHG emissions and climate change impacts, and that CEQA documents include a quantification of GHG emissions from all project sources, as well as including measures to minimize and mitigate GHG emissions as feasible. The project would generate GHG emissions through short-term construction activities, as well as long-term operations.

For the purposes of the analysis included herein, the proposed project is evaluated for impacts related to GHG emissions in accordance with the County's CAP. As discussed above, according to the CAP, a project-specific environmental document that relies on the 2021 CAP for its impact analysis must identify specific GHG reduction strategies applicable to the project and demonstrate the project's incorporation of the strategies. If the project is determined to meet the

[31] Butte County Air Quality Control District. *CEQA Air Quality Handbook*. October 23, 2014.

requirements of the GHG reduction strategies, then the project would result in a less-than-significant impact related to GHG emissions.

Method of Analysis

The analysis protocol and guidance provided by the BCAQMD's CEQA Air Quality Handbook, including screening criteria and pollutant thresholds of significance, as well as the Butte County CAP, was used to analyze the proposed project's air quality and GHG emissions impacts.

Construction Emissions

The proposed project's construction emissions have been estimated using the California Emissions Estimator Model (CalEEMod) Version 2020.4.0. CalEEMod is a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions from land use projects. The model applies inherent default values for various land uses, including trip generation rates based on the Institute of Transportation Engineers (ITE) Manual, vehicle mix, trip length, average speed, etc. However, where project-specific data was available, such data was input into the model. CalEEMod was used to estimate emissions associated with construction of all on-site structures, as well as on-site demolition, site preparation, and grading. Based on applicant-provided information, construction was assumed to commence in April 2024 and occur over an approximately three-year period. Construction activities were assumed to include demolition of the existing 1,830-sf clubhouse located on-site. Soil hauling (i.e., the import/export of soil to and from the project site) was not anticipated to occur as part of project construction activities.

The results of construction emissions modeling were compared to the standards of significance discussed above in order to determine the associated level of impact. All CalEEMod results are included in Appendix C to this EIR.

Operational Emissions

CalEEMod Version 2020.4.0 was used to estimate emissions generated from the operation of the proposed project. Based on applicant-provided information, the proposed project was assumed to be fully operational by the year 2027. Fehr & Peers provided project-specific trip generation rates and vehicle miles traveled (VMT), which were applied to the project modeling. In addition, the modeling assumed that fireplaces would not be installed in the proposed residences, and that the proposed project would be compliant with the MWELO, as well as BCAQMD Rule 230, which requires the use of low volatile organic compound (VOC) paints. The proposed sewer and water facilities would include emergency backup generators, the operation of such would be limited to infrequent maintenance and reliability testing, as well as operations in emergency conditions. Accordingly, the operational modeling for the proposed project included the limited operation of diesel-powered emergency generators during regular maintenance testing. Furthermore, the proposed project would be all-electric, and would not include natural gas infrastructure. The prohibition of natural gas, and associated increase in electricity use, were calculated off-model.

The results of operational emissions estimations were compared to the standards of significance discussed above in order to determine the associated level of impact. All CalEEMod results, as well as off-model calculations, are included in Appendix C to this EIR.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison with the standards of significance identified above. It should be noted that GHG emissions are inherently cumulative; thus, the discussion of GHG impacts is included under the Cumulative Impacts and Mitigation Measures section below.

4.2-1 Conflict with or obstruct implementation of the applicable air quality plan during project construction. Based on the analysis below, the impact is *less than significant*.

During construction of the project, various types of equipment and vehicles would temporarily operate on the project site. Construction-related emissions would be generated from construction equipment, vegetation clearing and earth movement activities, construction workers' commute, and construction material hauling for the entire construction period. The aforementioned activities would involve the use of diesel- and gasoline-powered equipment that would generate emissions of criteria pollutants. Project construction activities also represent sources of fugitive dust, which includes PM emissions. As construction of the proposed project would generate emissions of criteria air pollutants, including ROG, NO_X, and PM_{10}, intermittently within the site and in the vicinity of the site, until all construction has been completed, construction is a potential concern, as the proposed project is located in a nonattainment area for ozone and PM.

Estimated unmitigated construction-related emissions associated with the proposed project are presented in Table 4.2-8. As shown in the table, the project's total maximum construction-related emissions would be below the applicable BCAQMD thresholds of significance for ROG, NO_X, and PM_{10}.

Table 4.2-8
Maximum Unmitigated Construction Emissions

	ROG	NO_X	PM_{10}
Project Emissions	15.55 lbs/day 1.93 tons/yr	32.43 lbs/day 3.68 tons/yr	21.04 lbs/day
BCAQMD Significance Thresholds	**137 lbs/day 4.5 tons/yr**	**137 lbs/day 4.5 tons/yr**	**80 lbs/day**
Exceeds Thresholds?	**NO**	**NO**	**NO**

Sources: CalEEMod, May 2023 (see Appendix C).

It should be noted that construction activity related to implementation of the proposed project would be subject to all applicable BCAQMD rules and regulations including, but not limited to, Rule 200, Nuisance; Rule 201, Visible Emissions; Rule 202, Particulate Matter Concentration; and Rule 205, Fugitive Dust Emissions. Measures that would be required by BCAQMD Rules 200 and 205 to control emissions of fugitive dust include, but are not limited to, the following:

- Reduce the amount of the disturbed area where possible.
- Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. An adequate water supply source must be identified. Increased watering frequency would be required whenever wind

speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible.

- All dirt stockpile areas should be sprayed daily as needed, covered, or a District approved alternative method will be used.
- Permanent dust control measures identified in the approved project revegetation and landscape plans should be implemented as soon as possible following completion of any soil disturbing activities.
- Exposed ground areas that will be reworked at dates greater than one month after initial grading should be sown with a fast-germinating non-invasive grass seed and watered until vegetation is established.
- All disturbed soil areas not subject to re-vegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the District.
- All roadways, driveways, sidewalks, etc. to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.
- All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with local regulations.
- Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site.
- Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible.
- Post a sign in a prominent location visible to the public with the telephone numbers of the contractor and District for any questions or concerns about dust from the project.

The aforementioned requirements would result in additional reductions of emissions related to implementation of the proposed project from what has been estimated and presented above in Table 4.2-8. The County would enforce compliance with all applicable BCAQMD rules and regulations as a condition of approval of the proposed project.

Conclusion

Based on the above, emissions resulting from project construction activities are not anticipated to exceed the BCAQMD's applicable construction thresholds of significance. Thus, construction activities associated with development of the proposed project would not substantially contribute to the BCAQMD's nonattainment status for ozone or PM, and, as a result, would not conflict with or obstruct implementation of the applicable air quality plan. Accordingly, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.2-2 Conflict with or obstruct implementation of the applicable air quality plan during project operation. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As discussed above, due to the nonattainment designations of the area, the BCAQMD has developed plans to attain the State and federal standards for ozone and PM. The currently applicable air quality plan is the Northern Sacramento Valley Planning Area 2015 Triennial Air Quality Attainment Plan. Adopted BCAQMD rules and regulations, as well as the thresholds of significance, have been developed with the intent to ensure continued attainment of AAQS, or to work towards attainment of AAQS for which the area is currently designated nonattainment, consistent with the applicable air quality plan. Thus, if a project's operational emissions exceed the BCAQMD's mass emission thresholds, a project would be considered to conflict with or obstruct implementation of the BCAQMD's air quality planning efforts.

Emissions of ROG, NO_X, and PM_{10} would be generated during operations of the proposed project from both mobile and stationary sources. Emissions related to operation of the proposed project would include sources such as architectural coatings, landscape maintenance equipment exhaust, the emergency generators associated with the proposed on-site sewer and water systems, and consumer products (e.g., deodorants, detergents, hair spray, cleaning products, spray paint, insecticides, floor finishes, polishes, etc.). The most significant source of emissions related to the proposed project would be from mobile sources. As discussed in the Method of Analysis section above, to capture the potential emissions related to mobile sources from the proposed project, the project-specific trip generation rates and VMT estimates prepared by Fehr & Peers were applied to the project modeling.

The maximum unmitigated operational emissions for the proposed project are presented in Table 4.2-9 below.

Table 4.2-9
Maximum Unmitigated Operational Emissions (lbs/day)[1]

	ROG	NO_X	PM_{10}
Project Emissions	48.50	38.85	38.33
BCAQMD Significance Threshold	**25**	**25**	**80**
Exceeds Threshold?	**YES**	**YES**	**NO**

[1] As discussed previously, the proposed project would not include natural gas infrastructure. As such, criteria pollutant emissions associated with the use of natural gas, have been omitted from the project emissons presented in this table.

Source: CalEEMod, May 2023 (see Appendix C).

As shown in the table, the maximum unmitigated operational emissions associated with the proposed project would exceed the BCAQMD's thresholds of significance for ROG and NO_X. Therefore, the proposed project could conflict with or obstruct implementation of the applicable air quality plan, and a ***significant*** impact would occur.

Mitigation Measure(s)

BCAQMD recommends that projects which would exceed the BCAQMD's thresholds of significance either establish an Off-Site Mitigation Program within Butte County, coordinated through BCAQMD, or participate in an existing Off-Site Mitigation Program by paying the equivalent amount of money equal to the project's contribution of pollutants (ROG and NO_X) which exceed the BCAQMD's thresholds of significance.[32] Calculation of the payment is based on the Carl Moyer Program's most recent cost effectiveness level, which is currently set at $30,000 per weighted ton of emission reductions.[33]

To calculate the amount that the proposed project would be required to pay, project emissions above the lbs/day threshold were converted to tons per year and then divided by a daily-to-annual equity ratio of 5.5 to obtain an equivalent tons per year value. The excess tons per year emissions were then multiplied by 27 years (to represent the period of project operations that would result in emissions over the applicable BCAQMD thresholds),[34] based on direction from BCAQMD,[35] and the most current cost-effectiveness level per ton from the Carl Moyer Program. Based on additional direction from BCAQMD, and previous projects that have been prepared within the BCAQMD region, a 180-day ozone season should be used when calculating the emissions that are required to be reduced for ozone precursors.[36] As such, 180 days was used in place of 365 days to calculate the yearly amount.

Based on the current calculations,[37] the proposed project would be required to pay a one-time fee of up to $495,057.24 to the Off-Site Mitigation Program, which would be used by the BCAQMD for a variety of emission reduction programs located throughout the Air District.

Payment of the equivalent amount of money equal to the project contribution of pollutants (ROG and NO_X) which exceed the BCAQMD's thresholds of significance would ensure that the proposed project would not conflict with the BCAQMD's

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32 Mandly, Jason, Senior Air Quality Planner, Butte County Air Quality Management District. Personal Communication [email] with Jesse Fahrney, Associate/Air Quality Technician, Raney Planning & Management, Inc. January 31, 2023.

33 California Air Resources Board. *Carl Moyer On-Road Grant Calculator.* Available at: https://ww2.arb.ca.gov/our-work/programs/carl-moyer-program/on-road-grant-calculator. Accessed January 2023.

34 Additional modeling was conduced to determine the operational year that emissions would inherently be reduced to below the 25 lbs/day threshold due to more stringent State standards coming into effect over time. Based on the modeling, by the year 2050 (the latest operational year for which CalEEMod is capable of estimating emissions), the project would result in 29.46 lbs/day of ROG and 19.54 lbs/day of NOx. Because ROG was determined to still be over the 25 lbs/day threshold in 2050, an off-model linear regression calculation was performed in order to determine the year ROG would reduce to below the threshold. According to the off-model calculation, by the year 2054, both ROG and NO_X would be below the 25 lbs/day threshold. Therefore, a 27 year project lifetime was used to represent the amount of time before the proposed project's first operational year (2027) and the year that emissions would be below all applicable thresholds of significance (2054).

35 Mandly, Jason, Senior Air Quality Planner, Butte County Air Quality Management District. Personal Communication [email] with Jesse Fahrney, Associate/Air Quality Technician, Raney Planning & Management, Inc. April 13, 2023.

36 City of Chico. *Stonegate Vesting Tentative Subdivision Map and General Plan Amendment/Rezone Draft Environmental Impact Report (SCH # 2016062049).* [pg. IV.C-12] April 2018.

37 (48.50 - 25) + (38.85 - 25) = 37.35 lbs/day x 180/2,000 = 3.36 tons/year/5.5 = 0.61 x 27 x $30,000 = $495,057.24

adopted attainment plans or inhibit attainment of regional AAQS. Therefore, implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.2-2 The project applicant shall participate in an Off-site Mitigation Program coordinated through BCAQMD to offset the project's contribution of ROG and NO_X pollutants that exceed the BCAQMD thresholds of significance. The total payment for the proposed project is estimated to be up to $495,057.24, which would be sufficient to reduce the total ROG and NO_X emissions of the proposed project to below the BCAQMD applicable thresholds of significance. Prior to issuance of the first certificate of occupancy for each phase of development, the project applicant shall pay the fee amount proportionate to said phase to BCAQMD, or, if the project is not phased, the total payment for the project shall be made prior to issuance of the first certificate of occupancy. Proof of payment(s) shall be submitted to the Butte County Development Services Department. The final details of the Off-site Mitigation Program shall be determined in coordination with, and reviewed and approved by, the BCAQMD and Butte County Development Services Department.

4.2-3 Expose sensitive receptors to substantial pollutant concentrations. Based on the analysis below, the impact is *less than significant*.

The major pollutant concentrations of concern are localized CO emissions, TAC emissions, and criteria pollutant emissions, which are addressed below.

Localized CO Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Recent improvements to vehicle emissions controls and operating systems have generally reduced CO emissions from on-road vehicles. Nevertheless, projects contributing to adverse traffic impacts may result in the formation of CO hotspots. High levels of localized CO concentrations are only expected where background levels are high, and traffic volumes and congestion levels are high.

The BCAQMD is in attainment for CO emissions, and, thus, does not have an established threshold for CO emissions. In addition, a nearby air district, the Sacramento Metropolitan Air Quality Management District (SMAQMD), who has authority over a portion of the SVAB, has established that emissions of CO are generally of less concern than other criteria pollutants, as operational activities are not likely to generate substantial quantities of CO, and the SVAB has been in attainment for CO for multiple years.[38] Furthermore, the Placer County Air Pollution Control District (PCAPCD), who has authority over a portion of the SVAB, has a screening level threshold for localized CO impacts. According to the PCAPCD

38 Sacramento Metropolitan Air Quality Management District. *Guide to Air Quality Assessment, Chapter 4: Operational Criteria Air Pollutant and Precursor Emissions*. June 2020.

screening levels, a project could result in a significant impact if the project would result in CO emissions from vehicle operations in excess of 550 lbs/day. Maximum unmitigated daily construction and operational emissions of CO for the proposed project are provided in Table 4.2-10 below.

Table 4.2-10
Maximum Unmitigated Emissions of CO

Project Phase	CO Emissions (lbs/day)
Construction	42.44
Operations (Full Buildout)	236.28
Source: CalEEMod, May 2023 (see Appendix C).	

As shown in Table 4.2-10 CO emissions associated with the proposed project would be below the PCAPCD's 550 lbs/day screening level. Therefore, based on the nearby PCAPCD's screening level for localized CO impacts, the proposed project would not be expected to result in substantial localized CO concentrations, and, thus, the proposed project would not be considered to expose sensitive receptors to substantial concentrations of localized CO.

TAC Emissions

As stated above, if a project would introduce a new source of TACs, a detailed health risk assessment may be required. The BCAQMD considers an increase in cancer risk levels of more than 10 in one million persons or a non-cancer hazard index greater than 1.0 to be a significant impact related to TACs.

The nearest existing sensitive receptors to the project site are the single-family residences located approximately 0.45-mile north of the project site, across Skyway and the Butte Creek Ecological Preserve. Thus, activities related to the construction and operation of the proposed project are analyzed to determine whether the proposed project would expose nearby sensitive receptors to TAC emissions.

The CARB has identified DPM from diesel-fueled engines as a TAC; thus, high volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Health risks from TACs are a function of both the concentration of emissions and the duration of exposure. Health-related risks associated with DPM in particular are primarily associated with long-term exposure and associated risk of contracting cancer.

Construction-related activities have the potential to generate concentrations of TACs, specifically DPM, from on-road haul trucks and off-road equipment exhaust emissions. The construction period would be temporary and would occur over a relatively short duration in comparison to the operational lifetime of the proposed project. While methodologies for conducting health risk assessments are associated with long-term exposure periods (e.g., over a 30-year period or longer), construction activities associated with the proposed project were estimated to occur over an approximately three-year period. Only portions of the site would be disturbed at a time throughout the construction period, with operation of construction equipment

occurring intermittently throughout the course of a day rather than continuously at any one location on the project site.

All construction equipment and operation thereof would be regulated per the In-Use Off-Road Diesel Vehicle Regulation. The In-Use Off-Road Diesel Vehicle Regulation includes emissions reducing requirements such as limitations on vehicle idling, disclosure, reporting, and labeling requirements for existing vehicles, as well as standards relating to fleet average emissions and the use of Best Available Control Technologies. As discussed above, under Impact 4.2-1, construction activity related to implementation of the proposed project would be subject to all applicable BCAQMD rules and regulations, including, but not limited to, Rule 200, Nuisance; Rule 201, Visible Emissions; Rule 202, Particulate Matter Concentration; and Rule 205 Fugitive Dust Emissions. Thus, on-site emissions of PM would be reduced, which would result in a proportional reduction in DPM emissions and exposure of nearby residences to DPM.

Considering the intermittent nature of construction equipment operating within an influential distance to the nearest sensitive receptors, the duration of construction activities in comparison to the operational lifetime of the project, the typical long-term exposure periods associated with conducting health risk assessments, the highly dispersive nature of DPM, and compliance with regulations, the likelihood that any one nearby sensitive receptor would be exposed to high concentrations of DPM for any extended period of time would be low.

In addition, as discussed above, the proposed project's construction-related emissions would be below the applicable mass emissions thresholds of significance for PM_{10}, which includes $PM_{2.5}$, DPM, and fugitive dust related to construction. As noted previously, DPM comprises approximately eight percent of $PM_{2.5}$ in outdoor air, as 90 percent of DPM is less than one micrometer in diameter. Accordingly, DPM represents only a very small subset of PM_{10}. Considering that the proposed project's construction-related PM_{10} emissions, of which only a small fraction would be DPM, would be below the BCAQMD's thresholds of significance, construction of the proposed project would not be expected to generate substantial DPM emissions such that an increase in cancer risk levels of more than 10 in one million persons or a non-cancer hazard index greater than 1.0 would occur.

Based on the above, the proposed project would not expose sensitive receptors to substantial concentrations of DPM during construction.

Operational-related emissions of TACs are typically associated with stationary diesel engines or land uses that involve heavy truck traffic or idling. As discussed previously, the CARB Handbook provides recommended setback distances for sensitive land uses from major sources of TACs, including, but not limited to, freeways and high traffic roads, distribution centers, rail yards, and GDFs. Gasoline includes multiple TACs, which are released through various processes during the operation of GDFs. Such TACs include benzene, ethyl benzene, toluene, and xylene, among others.

The proposed project is anticipated to include an approximately 3,600-sf gas station/convenience store with up to 16 fuel dispensers, which would be considered

a source of TACs. According to the CARB Handbook, projects should avoid siting sensitive land uses within 300 feet of a large GDF (defined as a facility with a throughput of 3.6 million gallons per year or greater), and a 50-foot separation is recommended for typical gas dispensing facilities. The throughput of the proposed gas station is currently unknown. Given that the nearest existing sensitive receptors are located approximately 0.45-mile north of the project site, across Skyway and the Butte Creek Ecological Preserve, the proposed project would not expose existing sensitive receptors to substantial TAC concentrations.

While an analysis of a project's impact on itself is not required under CEQA, it should be noted that based on the land use plan prepared for the proposed project, the nearest proposed residences would be sited approximately 100 feet from the proposed GDF. Therefore, if the proposed GDF is determined to have a throughput of 3.6 million gallons per year or greater, the proposed project has the potential to expose the new sensitive receptors to substantial TAC concentrations. As such, the County will require the following condition of approval for the proposed project:

> Prior to approval of improvement plans for the proposed gas station, the project applicant shall confirm whether the proposed gasoline dispensing facility (GDF) is determined to have a throughput of 3.6 million gallons per year or greater, in which case the proposed project shall avoid siting sensitive land uses within 300 feet of the proposed GDF. Conformance with the foregoing requirement shall be confirmed through review and approval of improvement plans by the Butte County Development Services Department.

Compliance with the above condition of approval would ensure the proposed project would not expose new sensitive receptors to substantial TAC concentrations related to the proposed GDF.

Naturally Occurring Asbestos

As stated previously, according to BCAQMD, NOA is present in the foothill areas of Butte County; however, according to the NOA Areas Map prepared by BCAQMD, the project site is not located within an area that contains NOA.[39] Consequently, NOA is not anticipated to be present on the project site.

Criteria Pollutants

Exposure to criteria air pollutants can result in adverse health effects. The AAQS presented in Table 4.2-2 are health-based standards designed to ensure safe levels of criteria pollutants that avoid specific adverse health effects. Because the SVAB is designated as nonattainment for State and federal eight-hour ozone and State PM_{10} standards, the BCAQMD, along with other air districts in the SVAB region, has adopted federal and state attainment plans to demonstrate progress towards attainment of the AAQS. Full implementation of the attainment plans would ensure that the AAQS are attained and sensitive receptors within the SVAB are not exposed to excess concentrations of criteria pollutants. The BCAQMD's thresholds of significance were established with consideration given to the health-based air quality standards established by the AAQS, and are designed to aid the district in

[39] Butte County Air Quality Management District. *Naturally Occurring Asbestos Areas.* Published December 2018.

implementing the applicable attainment plans to achieve attainment of the AAQS. Thus, if a project's criteria pollutant emissions exceed the BCAQMD's mass emission thresholds of significance, a project would be considered to conflict with or obstruct implementation of the BCAQMD's air quality planning efforts, thereby delaying attainment of the AAQS. Because the AAQSs are representative of safe levels that avoid specific adverse health effects, a project's hinderance of attainment of the AAQS could be considered to contribute towards regional health effects associated with the existing nonattainment status of ozone and PM_{10} standards.

As discussed in Impacts 4.2-1 and 4.2-2, and following implementation of Mitigation Measure 4.2-2, the proposed project would not result in emissions that exceed the BCAQMD's thresholds of significance. Consequently, implementation of the proposed project is not anticipated to conflict with the BCAQMD's adopted attainment plans nor would the proposed project inhibit attainment of regional AAQS. Therefore, implementation of the proposed project would not contribute towards regional health effects associated with the existing nonattainment status of ozone and PM_{10} standards.

Conclusion

Based on the above analysis, the proposed project would not be anticipated to result in the production of substantial concentrations of localized CO, TACs or criteria pollutants. In addition, NOA is not anticipated to be present on the project site. As a result, the proposed project would not result in the exposure of sensitive receptors to substantial pollutant concentrations, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.2-4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Based on the analysis below, the impact is *less than significant*.

Emissions of pollutants have the potential to adversely affect sensitive receptors within the project area. Pollutants of principal concern include emissions leading to odors, visible emissions (including dust), or emissions considered to constitute air pollutants. Air pollutants have been discussed in Impacts 4.2-1 through 4.2-3 above. Therefore, the following discussion focuses on emissions of odors and visible emissions.

Odors

Odors are generally regarded as an annoyance rather than a health hazard. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative methodologies to determine the presence of a significant odor impact are difficult. Certain land uses such as wastewater treatment and conveyance facilities, landfills, confined animal facilities, composting operations, food manufacturing plants, refineries, and chemical plants have the potential to generate considerable odors.

The proposed project would include commercial uses such as restaurants and a gas station, as well as a sewage dump station associated with the proposed RV storage facility, and an on-site wastewater treatment system, all of which have the potential to result in odorous emissions. In addition, diesel fumes from construction equipment are often found to be objectionable. The following includes a discussion of the potential odors associated with construction and operations of the proposed project.

Construction Odors

As discussed above, diesel fumes from construction equipment are often found to be objectionable. However, construction is temporary, and operation of equipment is regulated by federal, State, and local standards, including BCAQMD rules and regulations. Buildout of the proposed project would involve construction activities in different areas of the site throughout the construction period. Therefore, construction equipment would operate at varying distances from existing sensitive receptors, located approximately 0.45-mile north of the project site, and potential odors from such equipment would not expose any single receptor to odors for a substantial period of time. Furthermore, construction activity would be restricted to certain hours of the day pursuant to the Butte County Code, Section 41A-9, which would limit the times of day during which construction related odors would potentially be emitted. Development of the proposed project would be required to comply with all applicable BCAQMD rules and regulations, which would help to control construction-related odorous emissions. Due to the temporary duration of construction and the regulated nature of construction equipment, project-related construction activity would not be anticipated to result in the creation of substantial odors.

Considering the above, construction of the proposed project is unlikely to result in emissions (such as those leading to odors) adversely affecting a substantial number of people.

Operational Odors

The potential operation of restaurants on-site would have the potential to result in emissions of odors related to food preparation and disposal. However, the design of commercial cooking areas would be required to comply with all State and local regulations associated with cooking equipment and controls, such as grease filtration and removal systems, exhaust hood systems, and blowers to move air into the hood systems and through air cleaning equipment. Such equipment would ensure that pollutants or odors associated with smoke and exhaust from cooking surfaces would be captured and filtered, allowing only filtered air to be released into the atmosphere. The disposal of solid waste, including putrescible waste, such as food waste, is regulated under Chapter 31 of the Butte County Code. Chapter 31 prohibits waste storage practices that would create unpleasant odors, and requires putrescible waste to be kept within properly designed and maintained containers that include lids to control odiferous emissions. Installation of cooking area ventilation and exhaust, as well as storage of food waste in compliance with Chapter 31 of Butte County's Code of Ordinances, would reduce the potential for the proposed project to result in substantial odiferous emissions.

With regard to the proposed gas station, gas pumps are required to include vapor-recovery systems, which limit the release of gasoline vapors during vehicle refueling

and underground tank refilling. In addition, as discussed above, the County would require, as a condition of project approval, that the proposed gas station be buffered from the proposed residences based on the throughput of the gas station in accordance with CARB recommendations, as necessary. Furthermore, the nearest existing receptors are located approximately 0.45-mile from the project site. Therefore, the gas station would not result in emissions of odors that would adversely affect the nearest receptors.

While the proposed project would include an on-site dump station, the station is primarily intended to serve future patrons of the mini storage use, particularly by providing a convenient location for dumping sewage waste from RVs and boats stored on-site. The sanitary waste disposal station would include an adjacent 20,000-gallon septic tank, which would connect to the on-site wastewater treatment system. Both the septic tank and on-site wastewater treatment system would be located entirely underground. As such, a significant amount of sewage is not anticipated to be collected by the on-site dump station, and, as a result, significant odors are not anticipated to be generated from such. The nearest sensitive receptors to the project site are located approximately 0.45-mile from the site, and any adverse odors associated with the proposed dump station would substantially dissipate prior to reaching the receptors. In addition, the proposed residences are anticipated to be located approximately 325 feet west of the proposed dump station. Prevailing winds within the project area are primarily from the south and southwest. Therefore, any odorous emissions from the proposed dump station would be blown towards the north or northeast, away from the proposed residences.

The on-site wastewater treatment system would include a network of eight- and 10-inch sewer laterals and mains located within the internal roadways, which would connect to two new 20,000-gallon equalization tanks located near the existing wastewater treatment system in the southwestern portion of the project site. From the equalization tanks, wastewater would be pumped through a new headworks/bar screen before being processed through the existing wastewater treatment system (e.g., septic tanks, Presby modules, and UV disinfection). Effluent from the wastewater treatment system would continue to be disposed of through the existing evaporative ponds, as well as pumped through a new three-inch effluent force main to proposed spray dispersal fields to be located within the open space area adjacent to Skyway. Considering that with the exception of the existing evaporative ponds and disposal fields, the wastewater treatment system would be located underground, operations of such would not result in emissions of odors. In addition, as discussed within the Report of Waste Discharge prepared for the on-site wastewater system, prior testing of the equalization tanks has been conducted and offensive odors were not detected.[40] Furthermore, the on-site wastewater system is required to undergo regular maintenance, including monthly odor checks.

It is also noted that emission of odors are regulated through California Health and Safety Code Section 41700, which mandates that no person shall discharge from any source whatsoever such quantities of air contaminants or other material which

[40] NexGen Engineering and Consulting. *Report of Waste Discharge for Tuscan Ridge Wastewater Treatment Facility.* August 30, 2022.

cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. Furthermore, the BCAQMD accepts air pollution complaints, including odor complaints, on their website, and at the main District Office. Should nearby receptors notify BCAQMD of foul odors, the BCAQMD would be required to address such concerns.

Considering the above, operation of the proposed project is unlikely to result in emissions (such as those leading to odors) adversely affecting a substantial number of people.

Visible Emissions

Visible emissions are typically assumed to be smoke, dust, or any other substance that obscures an observer's view based on standardized scales of opacity. Visible emissions may result from the use of internal combustion engines, such as smoke from diesel-fueled equipment, the burning of vegetation, or the upset and release of soil as dust.

BCAQMD Rule 201, Visible Emissions, specifically prohibits any person from discharging visible emissions of any air contaminant for a period or periods aggregating to more than three minutes in any one-hour time. Operation of the proposed land uses would not be anticipated to result in any visible emissions that would have the potential of violating Rule 201, as the proposed land uses would not involve any operations that could result in a substantial number of visible emissions. Construction equipment on-site would be required to meet the visible emissions standards of Rule 201, and, considering the regulated nature of construction equipment, as well as the temporary use of such equipment on-site, would not be anticipated to result in substantial visible emissions.

Additionally, BCAQMD Rule 205, Fugitive Dust Emissions, requires implementation of dust control measures, such as minimizing track-out on to paved public roadways, limiting vehicle travel on unpaved surfaces to 15 miles per hour, and stabilization of storage piles and disturbed areas. Following project construction, vehicles operating within the project site would be limited to paved areas of the site, which would not have the potential to create substantial dust emissions.

Considering the above, implementation of the proposed project would not be anticipated to result in visible emissions during project construction or operations that would adversely affect a substantial number of people.

Conclusion

For the aforementioned reasons, project construction and operations would not result in emissions of other pollutants (such as those leading to odors) that could adversely affect a substantial number of people. Accordingly, implementation of the proposed project would result in a ***less-than-significant*** impact.

Mitigation Measure(s)

None required.

4.2-5 Result in the inefficient or wasteful use of energy, or conflict with a State or local plan for renewable energy or energy efficiency. Based on the analysis below, the impact is *less than significant*.

The proposed project would include development of both commercial and residential uses. Energy use associated with operation of the proposed project would be typical of such uses, requiring electricity for interior and exterior building lighting, heating, ventilation, and air conditioning (HVAC) systems, electronic equipment, machinery, refrigeration, appliances, security systems, and more. Maintenance activities during operations, such as landscape maintenance, would involve the use of electric or gas-powered equipment. In addition to on-site energy use, the proposed project would result in transportation energy use associated with vehicle trips generated by residents, visitors, and employees travelling to and from the project site. Energy use associated with construction of the proposed project, as well as building energy use and transportation energy use are discussed separately below.

Construction Energy Use

Construction of the proposed project would involve increased energy demand and consumption related to use of oil in the form of gasoline and diesel fuel for construction worker vehicle trips, hauling and materials delivery truck trips, and operation of off-road construction equipment. In addition, diesel-fueled portable generators may be necessary to provide additional electricity demands for temporary lighting, welding, and for supplying energy to areas of the site where energy supply cannot be met through a hookup to the existing electricity grid; however, grid power would be used as opposed to diesel generators, where feasible.

Typically, at construction sites, electricity from the existing grid is used to power portable and temporary lights or office trailers. Because grid electricity would be used primarily for steady sources such as lighting, not sudden, intermittent sources such as welding or other hand-held tools, the increase in electricity usage at the site during construction would not be expected to cause any substantial peaks in demand. Construction of the proposed project, which would result in temporary increases in electricity demand, would not cause a permanent or substantial increase in demand that would exceed PG&E's demand projections or exceed the ability of PG&E's existing infrastructure to handle such an increase. Therefore, project construction would not result in any significant impacts on local or regional electricity supplies, the need for additional capacity, or on peak or base period electricity demands. In addition, standards or regulations specific to construction-related electricity usage do not currently exist.

Even during the most intense period of construction, due to the different types of construction activities (e.g., site preparation, grading, building construction), only portions of the project site would be disturbed at a time, with operation of construction equipment occurring at different locations on the project site, rather than a single location. In addition, all construction equipment and operation thereof would be regulated pursuant to the CARB In-Use Off-Road Diesel Vehicle Regulation. The In-Use Off-Road Diesel Vehicle Regulation is intended to reduce emissions from in-use, off-road, heavy-duty diesel vehicles in California by imposing a five-minute limit

on idling, requiring all vehicles to be reported to CARB, restricting the addition of older vehicles into fleets, and requiring fleets to reduce emissions by retiring, replacing, or repowering older engines, or installing exhaust retrofits. Furthermore, as a means of reducing emissions, construction vehicles are required to become cleaner through the use of renewable energy resources. Engine tiers are used to describe the emissions intensity and efficiency of an engine. Construction equipment with Tier 0 or Tier 1 engines are the least efficient, and Tier 4 is the most efficient. In November 2021, the CARB began developing standards for Tier 5 engines. As of 2015, vehicles with Tier 0 and Tier 1 engines are prohibited from being added to equipment fleets. Fleets with a total horsepower over 2,501, excluding non-profit training centers, may not add any Tier 2 engines and, starting January 1, 2023, all engines must be Tier 3 or higher.[41] The In-Use Off-Road Diesel Vehicle Regulation would, therefore, help to improve fuel efficiency for equipment used in construction of the proposed project.

The CARB enforces off-road equipment regulations through their reporting system, Diesel Off-road Online Reporting System (DOORS). Each construction fleet is required to update their DOORS account within 30 days of buying or selling a vehicle, and DOORS automatically calculates the fleet average index for each fleet. The fleet average index is an indicator of a fleet's overall emission rate, and is based on each vehicle's engine horsepower and model year, and whether it is equipped with a Verified Diesel Emission Control Strategy (VDECS). If a fleet cannot, or does not want to, meet the fleet average target in a given year, the fleet may instead choose to comply with the Best Available Control Technology (BACT) requirements. A fleet may meet the BACT requirements each year by turning over or installing VDECS on a certain percentage of its total fleet horsepower. 'Turnover' means retiring a vehicle, designating a vehicle as permanent low-use (a vehicle used less than 200 hours per year), repowering a vehicle with a higher tier engine, or rebuilding the engine to a more stringent emission standard. By each compliance date (annually on January 1st), the fleet must either show that its fleet average index was less than or equal to the calculated fleet average target rate, or that the fleet has met the BACT requirements.[42] The project would be required to comply with such regulations, which would ensure that construction equipment meets all State efficiency requirements.

Technological innovations and more stringent standards are being researched, such as multi-function equipment, hybrid equipment, or other design changes, which could help to further reduce demand on oil and limit emissions associated with construction. Over time, as technology progresses and more stringent emissions standards are put in place, construction equipment engines become increasingly efficient. Project construction would also be required to comply with all applicable BCAQMD rules and regulations, which are indirectly related to energy efficiency, which would help to further reduce energy use associated with the proposed project.

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41 California Air Resources Board. *In-Use Off Road Diesel-Fueled Fleets Regulation Overview*, *Revised October 2016*. 2016.

42 California Air Resources Board. *Frequently Asked Questions, Regulation for In-Use Off-Road Diesel-Fueled Fleets (Off-Road Regulation)*. August 2014.

Based on the above, the temporary increase in energy use occurring during construction of the proposed project would not result in a significant increase in peak or base demands or require additional capacity from local or regional energy supplies. In addition, the proposed project would be required to comply with all applicable regulations related to energy conservation and fuel efficiency, which would help to reduce the temporary increase in demand.

Building Energy Demand

The proposed project is required to comply with all applicable standards and regulations regarding energy conservation and fuel efficiency, including the CBSC and CARB standards, which would ensure that the future uses would be designed to be energy efficient to the maximum extent practicable. Adherence to the most recent CALGreen Code and the Building Energy Efficiency Standards would ensure that the proposed development on-site would consume energy efficiently through the incorporation of such features as efficient water heating systems, high performance attics and walls, and high efficacy lighting. In addition, the 2022 CBSC has begun phasing in the provision of zero net energy by requiring residential projects to meet 100 percent of their electricity needs through rooftop solar. Therefore, residential development associated with the proposed project would include rooftop solar to meet 100 percent of each project's electricity demand. The 2022 Building Energy Efficiency Standards also requires that newly constructed non-residential buildings, including grocery stores, offices, financial institutions, unleased tenant space, retail space, schools, warehouses, auditoriums, convention centers, hotel/motels, libraries, medical office building/clinics, and theaters, be developed to include a solar PV system. Therefore, a portion of the electricity demand associated with the non-residential development of the proposed project would be met by on-site renewable energy. Furthermore, State regulations promote the generation of renewable energy and encourage energy efficiency through requirements placed on utility providers and strict development standards. For instance, the RPS require utilities, including the PG&E, to procure an increasing proportion of electricity from renewable sources. Ultimately the RPS requirements mandate that all electricity produced within the State be renewably sourced by the year 2045.

Based on the air quality modeling prepared for the proposed project, as well as the off-model adjustment to account for natural gas not being used at the proposed project, the proposed project is anticipated to result in increased electricity consumption of approximately 5.08 GWh annually during operations. It is noted that, compared to the electricity consumption for all of Butte County, the proposed project's contribution would represent a 0.37 percent increase in electricity demand. Although the project would increase electricity demand in the project area, the increased demand is not anticipated to conflict with the PG&E's ability to meet the RPS requirements, or exceed the PG&E's capacity such that the proposed project's energy demands would not be met.

Increased energy does not necessarily mean that a project would have an impact related to energy resources. Based on Appendix F of the CEQA Guidelines, a proposed project would result in an impact related to energy resources if a project would result in the inefficient use or waste of energy. As stated above, the proposed project would be required to comply with the efficiency standards set forth in the

CBSC, CALGreen Code, Building Energy Efficiency Standards, and by CARB, and the proposed project would not conflict or obstruct with any State or local plans related to renewable energy.

With regard to landscaping and maintenance equipment, AB 1346 would require that all small off-road engines are all-electric by the time that the proposed project is operational. Given that electricity from PG&E is partially generated from renewable sources, the use of electric maintenance equipment would be considered more energy efficient than diesel- or gas-powered maintenance equipment.

Transportation Energy Demand

The average fuel economy for the U.S. passenger vehicle fleet was 25.3 miles per gallon (mpg) in 2020, the most recent year such data is available.[43] An average of 25.3 mpg and an annual VMT of approximately 17,917,485[44] for the project would result in the consumption of approximately 16,861 barrels of gasoline a year. California is estimated to consume approximately 662 million barrels of petroleum per year.[45] Based on the annual consumption within the State, vehicle trips generated by the proposed project would result in a 0.0025 percent increase in the State's current consumption of gasoline.

The calculation above is likely an overestimate, as the estimate does not account for the increasing ownership of electric vehicles. California leads the nation in registered alternatively-fueled and hybrid vehicles. In fact, under SB 500, the State has required that, starting in the year 2030, all cars sold shall be zero-emission/electric vehicles. In addition, State-specific regulations encourage fuel efficiency and reduction of dependence on oil. Improvements in vehicle efficiency and fuel economy standards help to reduce consumption of gasoline and reduce the State's dependence on petroleum products. The 2022 CBSC also requires new developments to include the necessary electrical infrastructure for EV charging stations. Based on the above, the actual consumption of gasoline associated with the proposed project is anticipated to be even lower than the 0.0025 percent statewide contribution noted above.

The proposed project would be required to comply with all applicable regulations associated with vehicle efficiency and fuel economy. In addition, buildout of the proposed project would involve the provision of sidewalks throughout the project site, as well as multi-use trails to allow for passive recreation, such as walking, jogging, and bicycling. Mitigation Measure 4.11-2 of this EIR would also require that the project frontage along Skyway develop deceleration and acceleration lanes, as well as designated locations for a bus turnouts within the development near the primary project entrance. The aforementioned improvements would provide pedestrian and

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43 U.S. Energy Information Administration. *Total Energy, Table 1.8 Motor Vehicle Mileage, Fuel Consumption, and Fuel Economy*. Accessible at: https://www.eia.gov/totalenergy/data/browser/?tbl=T01.08#/?f=A&start=200001. Accessed January 2023.

44 The annual VMT estimate presented herein is based on the Transportation Impact Analysis prepared for the proposed project by Fehr & Peers.

45 U.S. Energy Information Administration. *California: State Profile and Energy Estimates*. Accessible at: https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_fuel/html/fuel_use_pa.html&sid=US&sid=CA. Accessed January 2023.

bicycle connectivity within the project site, thereby helping to discourage driving and reduce vehicle trips and associated transportation energy demand.

Conclusion

Based on the above, the proposed project would not be considered to result in a wasteful, inefficient, or unnecessary use of energy, and the proposed project is not anticipated to conflict with a State or local plan for renewable energy or energy efficiency. Thus, impacts would be considered ***less than significant***.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

A project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development projects. The geographic context for the cumulative air quality analysis includes Butte County and surrounding areas within the portion of the SVAB that is designated nonattainment for ozone and PM_{10}.

As mentioned above, global climate change is, by nature, a cumulative impact. Emissions of GHG contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change (e.g., sea level rise, impacts to water supply and water quality, public health impacts, impacts to ecosystems, impacts to agriculture, and other environmental impacts). A single project could not generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from a project in combination with other past, present, and future projects could contribute substantially to the world-wide phenomenon of global climate change and the associated environmental impacts. Although the geographical context for global climate change is the Earth, for analysis purposes under CEQA, and due to the regulatory context pertaining to GHG emissions and global climate change applicable to the proposed project, the geographical context for global climate change in this EIR is limited to the State of California.

4.2-6 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors). Based on the analysis below, and with the implementation of mitigation, the project's incremental contribution to this significant cumulative impact is *less than cumulatively considerable*.

The proposed project is within a nonattainment area for ozone and PM_{10}. By nature, air pollution is largely a cumulative impact. The population growth and vehicle usage within the nonattainment area from the proposed project, in combination with other past, present, and reasonably foreseeable projects within Butte County and surrounding areas, contributes to the region's adverse air quality impacts on a cumulative basis, and could either delay attainment of AAQS or require the adoption of additional controls on existing and future air pollution sources to offset emission increases. Thus, the project's emissions of criteria air pollutants would contribute to cumulative regional air quality effects.

As noted in the Standards of Significance section above, the BCAQMD directs lead agencies to use the region's existing attainment plans as a basis for analysis of cumulative emissions. A project's interference with such plans may be determined through the use of the BCAQMD's recommended thresholds of significance for ozone precursors and PM_{10}. The BCAQMD's recommended cumulative thresholds are identical to the operational thresholds, both of which are presented in Table 4.2-6. Accordingly, if the proposed project would result in an increase of ROG, NO_X or PM_{10} in excess of BCAQMD's operational phase cumulative-level emissions threshold, which are identical to BCAQMD's project-level operational emissions thresholds, the project could potentially result in a significant incremental contribution towards cumulative air quality impacts.

As discussed in Impacts 4.2-1 and 4.2-2, and following implementation of Mitigation Measure 4.2-2, the proposed project would not result in emissions that exceed the BCAQMD's thresholds of significance. Consequently, implementation of the proposed project is not anticipated to conflict with the BCAQMD's adopted attainment plans nor would the proposed project inhibit attainment of regional AAQS. However, without implementation of the required mitigation measure, the proposed project's incremental contribution to the significant cumulative effect could be considered ***cumulatively considerable*** and ***significant***.

Mitigation Measure(s)

Implementation of Mitigation Measure 4.2-2 is sufficient to reduce all project-specific impacts to a less-than-significant level. Thus, with implementation of the following mitigation measure, the project's incremental contribution to the significant cumulative impact would be reduced to a *less than cumulatively considerable* level.

4.2-6 Implement Mitigation Measure 4.2-2.

4.2-7 Generation of GHG emissions that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. Based on the analysis below and with implementation of mitigation, the project's incremental contribution to this significant cumulative impact is *cumulatively considerable* and *significant and unavoidable*.

An individual project's GHG emissions are at a micro-scale level relative to global emissions and effects to global climate change; however, an individual project could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact. As such, impacts related to GHG emissions are inherently considered cumulative impacts.

Implementation of the proposed project would cumulatively contribute to increases of GHG emissions that are associated with global climate change. Estimated GHG emissions attributable to future development would be primarily associated with increases of CO_2 and, to a lesser extent, other GHG pollutants, such as CH_4 and N_2O. Sources of GHG emissions include area sources, mobile sources or vehicles, utilities (electricity and natural gas), water usage, wastewater generation, and the generation of solid waste. Based on the modeling conducted for the proposed project, construction of the project was estimated to generate maximum unmitigated GHG emissions of 1,582.60 $MTCO_2e$/yr. The total unmitigated annual operational GHG emissions for the first year of project operation (assumed to be 2027) were estimated as presented in Table 4.2-11.

Table 4.2-11
Unmitigated Project Operational GHG Emissions

Source	Annual GHG Emissions ($MTCO_2e$/yr)
Area	2.06
Energy[1]	474.26
Mobile	6,315.57
Stationary	0.69
Waste	150.64
Water	56.47
Total Annual Operational GHG Emissions	**6,999.69**

[1] As discussed previously, the proposed project would not include natural gas infrastructure. As such, GHG emissions associated with the use of natural gas have been omitted from the project GHG emissons presented in this table.

Source: CalEEMod, May 2023 (see Appendix C).

As noted previously, BCAQMD has not adopted numerical thresholds of significance for GHG emissions that would apply to the project. Therefore, based on direction provided by the BCAQMD, the analysis of impacts related to GHG emissions is based on the proposed project's consistency with the sustainability checklist adopted as part of the County's CAP.

Butte County CAP Consistency

The Butte County CAP, adopted on December 14, 2021, is intended to support the goals of AB 32 and SB 32. Reduction targets in the CAP call for a 42 percent reduction below baseline 2006 levels of GHG emissions by 2030. In order to meet such reductions, the County has outlined programs and actions to reduce per capita GHG emissions. For new development projects constructed in Butte County, the CAP requires the development projects to achieve GHG emissions reductions by implementing specific reduction strategies. Projects showing consistency with the CAP reduction strategies are considered to have a less-than-significant GHG

emissions impact. The proposed project's consistency with the reduction strategy actions in the CAP is assessed in Table 4.2-12 below.

Table 4.2-12
Butte County CAP Consistency

CAP Actions	Consistency Discussion
Action 4f: Require on-site solar PV systems and/or energy storage for non-residential buildings 10,000 square feet or greater.	According to the 2022 Building Energy Efficiency Standards, newly constructed non-residential buildings, including grocery stores, offices, financial institutions, unleased tenant space, retail space, schools, warehouses, auditoriums, convention centers, hotel/motels, libraries, medical office building/clinics, and theaters, shall be developed to include a solar PV system installed. The proposed project would be required to comply with the measures of the 2022 Building Energy Efficiency Standards. Therefore, the proposed project would be consistent with Action 4f.
Action 4g: Encourage all new discretionary multifamily, mixed-use, and residential projects to achieve zero net energy using on-site renewable energy and high-efficiency construction.	As discussed above, the proposed project would include the installation of PV solar for the non-residential components of the proposed project, as required by the 2022 Building Energy Efficiency Standards. In addition, as required by the CBSC, each residential unit proposed as part of the project would be required to include a solar PV system sufficient to meet 100 percent of the unit's electricity demand. Therefore, the proposed project would be consistent with Action 4g.
Action 5c: Require new development projects to exceed minimum state water-efficiency requirements, when available, for new water fixtures.	The County regulates water-efficiency requirements in accordance with the CBSC for internal water usage. The current technology used for water-efficiency is designed to meet the current standards. Technology is not currently available for the proposed project to exceed minimum state water-efficiency requirements for new water fixtures. In addition, the proposed project would be required to comply with the County's MWELO, as required by Section 24-112 of the Butte County Code, which would help to further reduce on-site water usage. Therefore, the proposed project would generally be consistent with Action 5c.
Action 5d: Work with local jurisdictions and water providers to explore the feasibility of grey water and recycled water systems in urban areas within the county and explore opportunities to design and incorporate rainwater catchment and grey water systems	The project site is not within an urban area of the County, and, therefore, Action 5d does not apply to the proposed project. However, it should be noted that the proposed project would not connect to the County's existing water and wastewater

(Continued on next page)

Table 4.2-12
Butte County CAP Consistency

CAP Actions	Consistency Discussion
and the use of grey water for outdoor irrigation in existing and new development.	infrastructure, and instead, would be serviced by on-site water and wastewater systems. Effluent from the wastewater treatment system would continue to be disposed of through the existing evaporative ponds, as well as pumped through a new three-inch effluent force main to proposed spray dispersal fields to be located within the open space area adjacent to Skyway. As such, the proposed project would include the use of grey water for outdoor irrigation, and would generally comply with Action 5d.
Action 5f: Develop a native, drought-tolerant, and fire-resistant landscaping list and require new development or redevelopment to use this list in landscaping plans.	In compliance with Section 24-115 of the Butte County Code, and as discussed in the Project Description chapter of this EIR, landscaping on the project site would reflect the native vegetation in the area. In addition, the proposed project would include the revegetation of any disturbed areas with native vegetation, consistent with the surrounding area. Furthermore, as discussed in Chapter 4.13, Wildfire, of this EIR, Section 24-116(A) of the Butte County Code of Ordinances requires the development of water-efficient irrigation systems, which would ensure the proposed vegetation is sufficiently watered to not result in excessively dry fuel sources. As such, the proposed project would be consistent with Action 5f.
Action 5g: Encourage all properties to adopt water-efficient landscaping strategies, including more efficient irrigation systems and fire-wise, native, and/or drought-tolerant plants with lower water needs.	As discussed in the consistency discussion for Action 5f, above, landscaping on the project site would reflect the native vegetation in the area. In addition, the proposed project would be required to comply with the County's MWELO, as required by Section 24-112 of the Butte County Code. Furthermore, the proposed project would be required to prepare and implement a Vegetation Management Plan, as discussed in Chapter 4.13, Wildfire, of this EIR, which would reduce wildfire risk associated with landscaping and other vegetation within the project site. Therefore, the proposed project would be consistent with Action 5g.
Action 6f: Encourage new development to provide a mix of land uses and infill development, and to be located contiguous to existing developed areas and infrastructure to support connectivity and to	The proposed project is a mixed-use project, and would develop a total of 165 residential units, 76,000 sf of commercial space, a 3,600-sf gas station/convenience store, and a 53,000-sf space for storage units, as well

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Table 4.2-12
Butte County CAP Consistency

CAP Actions	Consistency Discussion
reduce trip lengths.	as recreation areas and open space. Therefore, the proposed project would provide a mix of land uses. However, the nearest developed area to the project site are the residential land uses located approximately 0.45-mile north of the project site, across Skyway and the Butte Creek Ecological Preserve. The nearest commercial and industrial land uses are located further from the site, within the cities of Chico and Paradise. Accordingly, the proposed project would not be considered infill development and the project site is not contiguous to existing developed areas where infrastructure exists that would support connectivity. As discussed in Chapter 4.11, Transportation, of this EIR, the proposed project would generate home-based work VMT per employee below the unincorporated County baseline average. Therefore, the proposed project would not result in a significant impact related to VMT associated with the proposed non-residential uses. However, the proposed project would generate home-based VMT per resident above the unincorporated county baseline average. Compliance with Mitigation Measure 4.11-3 would reduce project-generated VMT per resident by instituting a Transportation Demand Management (TDM) program to reduce external vehicle trips generated by the proposed project. However, the effectiveness of TDM strategies is uncertain over time. In addition, even with TDM strategy implementation, the project's home-based VMT per resident is expected to still exceed the unincorporated County baseline average. Therefore, due to uncertainties regarding the ability of Mitigation Measure 4.11-3 to reduce VMT by at least 70 percent, which would be required to reduce the impact to a less-than-significant level, VMT impacts associated with the proposed project are considered significant and unavoidable. Given that the proposed project would result in a significant and unavoidable VMT impact, the proposed project would not be considered to reduce trip lengths.

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Table 4.2-12
Butte County CAP Consistency

CAP Actions	Consistency Discussion
	Based on the above, the proposed project would not be considered consistent with Action 6f.
Action 8d: Require the installation of EV charging stations in new commercial, industrial, and large residential development, including multi-family development.	The 2022 CALGreen Code requires all single-family homes be EV capable (i.e., each dwelling unit must have a listed raceway to accommodate a dedicated 208/40-volt branch circuit), which would be suitable for EV charging. In addition, the 2022 CALGreen Code requires that non-residential development provide a proportion of on-site EV capable spaces based on the total number of spaces provided, and requires that a portion of the EV capable spaces include EV service equipment (EVSE), which are installed charging receptacles or permanently installed chargers. The proposed non-residential uses are anticipated to include a total of 172 on-site parking spaces. Based on the 2022 CBSC, for non-residential projects with between 151 and 200 total parking spaces, 35 spaces are required to be EV capable, and nine of the EV capable spaces are required to include EVSE. The proposed project would be required to comply with the EV parking standards included within the 2022 CALGreen Code, and, as a result, would include a minimum of nine EV charging stations on-site. Therefore, the proposed project would be consistent with Action 8d.
Action 8f: Facilitate the installation of public EV charging stations at existing and new residential and non-residential uses, including EV parking areas for parks and open spaces.	As discussed in the consistency discussion for Action 8d, above, the proposed project would include both residential and non-residential EV charging stations, consistent with the 2022 CALGreen Code. Therefore, the proposed project would be consistent with Action 8f.
Action 10h: Require, as feasible, that new development use sustainable materials to prevent destruction from wildfires, thereby reducing waste sent to landfills from wildfire related destruction and demolition.	The project site is located within a wildland-urban interface (WUI) zone, which is defined by the CBC as a geographical area identified by the State as a "Fire Hazard Severity Zone (FHSZ)" in accordance with the PRC Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires.

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Table 4.2-12
Butte County CAP Consistency

CAP Actions	Consistency Discussion
	As discussed in Chapter 4.13, Wildfire, of this EIR, Chapter 7A of the California Building Code (CBC) (Title 24 CCR, Part 2) includes definitions and standards for building materials, systems, and/or assemblies to be used for the exterior design and construction of new buildings located within a WUI zone. Chapter 7A of the CBC is intended to establish minimum standards for the protection of life and property by increasing the ability of a building located in any FHSZ within State Responsibility Areas (SRAs) or any WUI zone to resist the intrusion of flames or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses. All new buildings to be located in a FHSZ or WUI zone designated by the enforcing agency for which an application for a building permit is submitted on or after July 1, 2008 are required to comply with Chapter 7A of the CBC. Examples of the Chapter 7A standards include, but are not limited to, use of ignition-resistant materials, fire-intrusion design of roofing and vents, and use of glazed exterior windows and doors. Given that the proposed project would be located within a WUI zone, the standards set forth by CBC Chapter 7A related to development in such areas would apply to the proposed project. Based on the above, the proposed project would be consistent with Action 10h.
Source: Butte County, 2021.	

Conclusion

As noted previously, the County's CAP was established to ensure the County's compliance with the statewide GHG reduction goals required by AB 32 and SB 32. As demonstrated in the table above, the proposed project would be consistent with the majority of the applicable County CAP Actions. However, because the proposed project would not be considered infill development, be located contiguous to existing developed areas where infrastructure exists to support connectivity, or reduce trip lengths, as the proposed project would result in a significant and unavoidable impact related to VMT, the project would not be considered consistent with Action 6f of the County's CAP. As such, the proposed project would be considered to generate GHG emissions, either directly or indirectly, that would 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 GHGs. Consequently, the project would result in a ***cumulatively considerable*** incremental contribution to significant impacts related to GHG emissions or climate change.

Mitigation Measure(s)

As discussed further in Chapter 4.11, Transportation, of this EIR, implementation of Mitigation Measure 4.11-3 would reduce project-generated VMT per resident by instituting a TDM program to reduce external vehicle trips generated by the proposed project. However, the effectiveness of TDM strategies is uncertain over time. In addition, even with TDM strategy implementation, the project's home-based VMT per resident is expected to still exceed the unincorporated County baseline average. Therefore, due to uncertainties regarding the ability of Mitigation Measure 4.11-3 to reduce VMT by at least 70 percent, which would be required to reduce the impact to a less-than-significant level, VMT impacts associated with the proposed project are considered significant and unavoidable. Consequently, even with implementation of the following mitigation measure, the proposed project would still be considered inconsistent with Action 6f of the County's CAP, and the proposed project's incremental contribution to the cumulatively significant effects of GHG emissions and global climate change would remain *cumulatively considerable* and *significant and unavoidable*.

4.2-7 Implement Mitigation Measure 4.11-3.

4.3. Biological Resources

4.3. BIOLOGICAL RESOURCES

4.3.1 INTRODUCTION

The Biological Resources chapter of the EIR evaluates the biological resources known to occur or potentially occur within the proposed project site. The Biological Resources chapter describes potential impacts to those resources and identifies measures to eliminate or substantially reduce those impacts to a less-than-significant level. Existing plant communities, wetlands, wildlife habitats, and potential for special-status species and sensitive communities are discussed for the project region. The information contained in the analysis is primarily based on the Biological Evaluation (see Appendix D)[1] prepared by Live Oak Associates, Inc. Further information was sourced from the 2030 Butte County General Plan,[2] the 2030 Butte County General Plan EIR,[3] and the 2030 Butte County General Plan Supplemental EIR (SEIR).[4]

4.3.2 EXISTING ENVIRONMENTAL SETTING

The following sections describe the existing environmental setting and biological resources occurring in the proposed project region.

Regional Setting

The proposed project site is located on the west-facing foothills of the Cascade Mountains in Butte County, California. Butte County is located in the northeastern part of the Sacramento Valley and extends into the northern Sierra Nevada Mountain range, with an elevational range from approximately 50 feet to more than 8,000 feet above sea level. The County is defined by natural features, such as mountains, hills, rivers, and agricultural fields. Such fields include nut and fruit orchards and inundated wetlands with rice growing within. In addition, Butte County is comprised of multiple biological communities, including conifer forest, oak and riparian woodland, chaparral, annual grasslands, open water, and wetlands.

Project Setting

The study area for the proposed project encompasses the entirety of the 163-acre Tuscan Ridge Planned Development site located on the southeast side of Skyway between Chico and Paradise, California. In 2001, the site was developed into the Tuscan Ridge Golf Course, which included a clubhouse and bistro restaurant, and which was in operation through 2017. In mid-2018, a portion of the site was used as a vegetation management camp for Pacific Gas & Electric (PG&E). After that, the site was burned during the 2018 Camp Fire. The site was subsequently leveled and graded to be used as a base camp for wildfire response and a post-fire housing and staging area by PG&E and debris removal contractors. This usage was completed in mid-2020, and a small footprint of the site is currently used as a staging area for a construction firm. Surrounding land uses are open space and rangelands.

The project site itself consists of expansive graded and gravel-covered areas, three remnant

1 Live Oak Associates, Inc. *Tuscan Ridge Planned Development Biological Assessment*. February 17, 2024.
2 Butte County. *Butte County General Plan 2030.* November 6, 2012.
3 Butte County. *Butte County General Plan 2030 Draft EIR*. April 8, 2010.
4 Butte County. *Butte County GPA & Zoning Ordinance Update Draft Supplemental EIR*. May 31, 2012.

buildings from the golf course operation period, the construction company staging area, and natural lands. Natural lands within the site include grasslands, including prior golf course turf areas that are transitioning into grasslands, blue oak woodlands, and an ephemeral channel within a slight ravine.

Like much of California, the project site experiences a Mediterranean climate with dry, hot summers and cool, wet winters. Annual precipitation in the general vicinity of the site is highly variable. Average annual rainfall is approximately 25 inches, most of which occurs from October to May.

The site's topography is flat to gently sloping to strongly sloping in some areas. Site elevations range from 550 feet above mean sea level (amsl) in the southwestern portions of the site to 925 feet amsl within the eastern portions of the site.

According to Figures LU-4 and COS-4 from the 2030 General Plan, the project site is located within the western edge of the winter deer herd migration area. As part of informing policies for the 2030 General Plan, in 2013 and 2015, the California Department of Fish and Wildlife (CDFW) conducted a study of the Eastern Tehama deer herd. During the study, 28 female black-tailed deer (*Odocolieus hemionus columbianus*) were radio-collared. Spatial patterns of deer migration between winter and summer ranges were documented. Based on the study, the mean elevation of winter sites was documented to be approximately 1,500 feet, well above the elevations of the project site which range from approximately 650 feet above mean sea level (amsl) in the west to approximately 925 feet amsl in the east. While the study area included the project site, the closest radio-collared deer from the study was several miles north of the project site and several miles east of Corning. As such, the study provides little direct evidence of deer migration patterns within the proximity of the project site, but provides some limited inference based on site conditions (e.g., available habitat) and elevations. According to the Biological Evaluation prepared for the proposed project, due to the elevations on the site, the proximity of Skyway, a busy highway, and the disturbed nature of the site, deer use of the site is marginal at best. Only the on-site blue oak woodland habitat, discussed in further detail below, which comprises less than 10 percent of the site and has been adversely affected by the Camp Fire, could provide marginal habitat for deer.

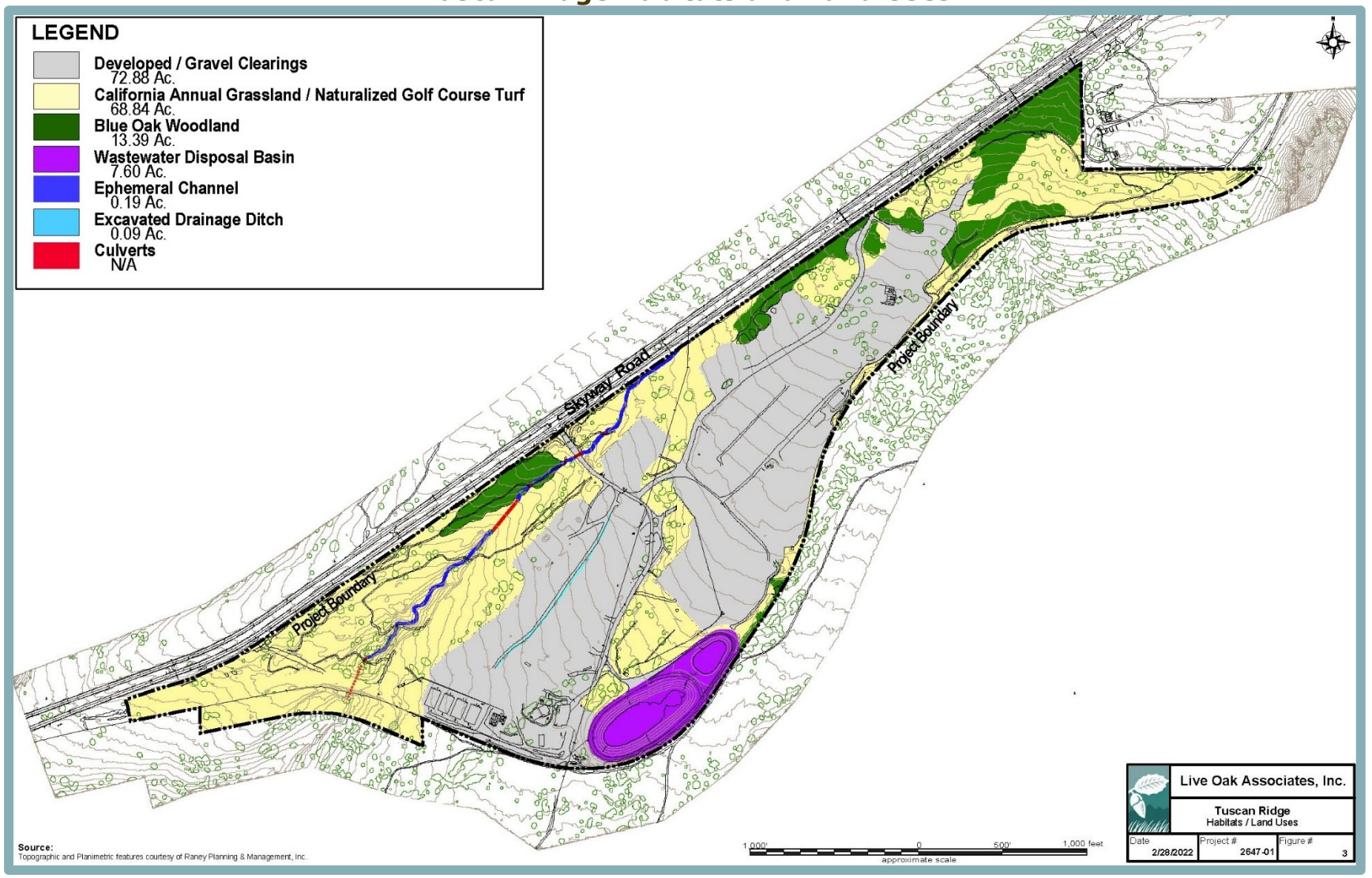
Land Uses and Biotic Habitats

Within the Biological Evaluation's analysis, two land uses and three biotic habitats were identified on the project site (see Figure 4.3-1). The land uses are developed/gravel clearings, excavated drainage ditch, and wastewater disposal basins. The biotic habitats are blue oak woodland, California annual grassland/naturalized golf course turf, and an ephemeral channel. Such habitats and land uses are described in more detail below.

Developed/Gravel Clearings

Approximately 72.9 acres of the project site constitute development or areas that have been cleared and covered with gravel. Such land areas include the facilities from the former golf course, including a clubhouse building, a former restaurant, a large Quonset hut, and areas housing vehicles, storage containers, and other equipment. Also included in the land use designation are leveled and gravel-covered areas that provided camp housing for PG&E and fire-related contractors. The area also includes gravel roads connecting the gravel areas, a large area with sewer treatment leach fields and tanks, and a drainage ditch located in the center of the site.

Figure 4.3-1
Tuscan Ridge Habitats and Land Uses



The graveled and developed portions of the site are sparsely vegetated with some minor remnant landscaping around the golf course buildings, but very little vegetation within the large gravel areas. Species observed include typical non-native ruderal field species including shepherd's purse (*Capsella bursa-pastoris*), Medusa head (*Elymus caput-medusae*), filarees (*Erodium* spp.), stinkwort (*Dittrichia graveolens*), California burclover (*Medicago polymorpha*), wild radish (*Raphanus sativus*), and Russian thistle (*Salsola tragus*). Some remnant blue oak (*Quercus douglasii*) trees occur around the buildings and along pathways that are mapped as part of the developed and gravel clearing areas of the site.

The developed portion of the project site has limited potential to support a diversity of wildlife due to the reduction in vegetation within these areas and impacts to soil structure and composition. The only evidence of animal use were a few scattered small mammal burrows within the margins of these areas, the presence of a killdeer (*Charadrius vociferus*), and other bird species flying over the developed and gravel covered areas to more suitable foraging habitat (e.g., annual grasslands and woodlands). The buildings could serve as cover habitat for some species such as mice, rats and/or bats, and bird species may build nests within suitable areas of these developed lands. In fact, killdeer often choose gravel clearing areas to build non-descript nests.

Wastewater Disposal Basin

The site contains two wastewater disposal basins in the southern portion of the site that were constructed within the last four years. The basins are hydrologically connected by an overflow pipe, and both are composed of engineered slopes covered with black plastic. The basins are surrounded by a chain link fence and gravel-covered levee roads. Both had a small amount of water in the bottom. At the time of the field survey conducted by Live Oak Associates, Inc., one pair of killdeer and a mallard (*Anas platyrhynchos*) were observed in the bottom of one of the basins. Plants were extremely sparse within the levee road areas but included stinkwort, which was likely brought to the site by seed in the imported gravel.

Because the wastewater disposal basins are lined with a stable plastic liner, they are unlikely to support aquatic species, other than birds, because the basins are lacking in suitable forage. In general, the wastewater disposal basins have limited potential to support habitat for wildlife.

Blue Oak Woodland

Approximately 13.4 acres of the site consist of blue oak woodland, which primarily occur between Skyway and the former golf course play areas, as well as between some of the course areas. In addition, a small portion of blue oak woodland occurs on the site's southern boundary.

Based on a review of aerial imagery from the 1990s, the blue oak woodland that currently occurs on-site are fragmented portions of what was once a larger and more contiguous habitat area, especially toward the northern portion of the site. The woodlands of the site have undergone losses during development of the golf course, during the 2018 Camp Fire, and again during clearing of portions of the site for the fire response camp operation between 2018 and 2020. Severe drought experienced in California may have also played a role in blue oak die-off in recent decades. Many of the trees that were burned during the Camp Fire have continued to die-off over the subsequent years. Arborist reporting for the whole site (not just blue oak woodlands) makes clear that the trees that are listed as alive may not persist due to fire damage. The remaining living blue oak trees within the site represent a cohort of individual trees that have undergone significant threats.

Blue oak trees are dominant, with subdominant trees within the canopy including California foothill pine (*Pinus sabiniana*). A few interior live oaks (*Quercus wislizenii*) were also present. A small stand of mostly California foothill pines is present in the northeastern part of the site. For the most part, the blue oak woodland understory is comprised of many of the same plants found within the California annual grassland habitat type, which is discussed below. However, a few additional shrubs and forbs were noted, especially within the southernmost thin margin of blue oak woodland within the site. The understory of the blue oak woodland includes some shrubs such as buckbrush (*Ceanothus cuneatus* ssp. *cuneatus*), coffeeberry (*Frangula californica*), Spanish broom (*Spartium junceum*), snowberry (*Symphoricarpos albus*), and poison oak (*Toxicodendron diversilobum*). In general, shrubs were not abundant, possibly due to the 2018 Camp Fire and competitive exclusion from annual plants. Other understory plants include Miner's lettuce (*Claytonia* sp.), stinkwort, panicled willow-herb (*Epilobium brachycarpum*), common St. John's-wort (*Hypericum perforatum*), and common mullein (*Verbascum thapsus*).

California Annual Grassland/Naturalized Golf Course Turf

Approximately 68.8 acres of the project site are comprised of California annual grassland, much of which consists of former golf course turf and reclaimed course features such as sand bunkers. A former golf cart pathway meanders through portions of the habitat. Due to the 2018 Camp Fire, some of the grasslands have increased after most of the trees of the site were fatally burned, reducing the previous extent of blue oak woodlands within the site. A few scattered blue oaks and California foothill pine trees persist within the grasslands, though their canopies are not sufficiently dominant to constitute being an extension of the blue oak woodland habitat. Several rocky outcrops and patches of exposed bedrock were also noted.

The dominant plant forms within the habitat are grasses, many of which were too lacking in growth to identify during the January and February 2022 site visits. It is likely much of the grass consists of remnant perennial turf grasses that have persisted in areas of the site following discontinuation of the golf course. Plant species that were identified include fire weed (*Amsinckia* sp.), yellow carpet (*Blennosperma nanum*), ripgut brome (*Bromus diandrus*), buckbrush, yellow star thistle (*Centaurea solstitialis*), Bermuda grass (*Cynodon dactylon*), blue dicks (*Dipterostemon capitatus*), Medusa head, fillarees, shield-bracted mimulus (*Erythranthe glaucescens*), California poppy (*Eschscholzia californica*), common St. John's-wort, white horehound (*Marrubium vulgare*), wild radish, common groundsel (*Senecio vulgaris*), milk thistle (*Silybum marianum*), fringepods (*Thysanocarpus radians*), and butter-and-eggs (*Triphysaria eriantha eriantha*). A few species were noted in association with the rocky outcrops including soap plant (*Chlorogalum* sp.), yerba santa (*Eriodictyon californicum*), buckwheat (*Eriogonum* sp.), and bird's foot cliffbrake (*Pellaea mucronata*).

Many of the same suite of species described within the blue oak woodlands would also be present within the grasslands of the site, although the habitat usage and forage options would slightly differ. Animal species that were specifically observed within the California annual grasslands included the Anna's hummingbird, meadowlark, house finch (*Haemorhous mexicanus*), horned larks (*Eremophila alpestris*), and black-tailed jackrabbit. Evidence of Botta's pocket gopher was also present.

Ephemeral Channel

An ephemeral channel occurs in the northwestern portion of the site, just south of Skyway. The channel conveys water southwest through grassland, blue oak woodland, and then through an on-site ravine. The channel flows through several culverts and along the extant golf course

pathway for a portion of its length. At the downstream end of the channel, flows enter a large culvert beneath a berm that directs the channel offsite. At the top of the ravine, the channel passes over a cave-like rock formation in the form of a short waterfall. Portions of the channel contained shallow, stagnant to very slow-moving water. Other portions of the channel, including the upstream reaches of the channel, were dry during the 2022 site visit conducted by Live Oak Associates, Inc.

In general, the channel was fairly rocky. Vegetation in association with the channel contained many of the same species observed within the oak woodland and grassland areas of the site. Scattered blue oaks, buckbrush, and poison oak provided much of the limited tree and shrub layer of the channel banks. Dead cottonwood trees (*Populus fremontii*) were also observed near the channel. The dominant plants of the habitat area included unidentified grasses and forbs such as poison hemlock (*Conium maculatum*), summer mustard (*Hirschfeldia incana*), milk thistle, monkey flower, and a spurge (*Euphorbia* sp.).

While well-developed channel systems typically exhibit structural complexity, the on-site channel appears to be highly ephemeral in nature and tends to have a limited riparian influence. It is likely that the ravine in which the channel occurs was carved down by water, but the hydrology of the channel does not appear to support moisture much beyond storm events except for a few shallow pools that persist for a short period after such events. Wildlife that occurs elsewhere in the region are likely drawn to the water source of the channel when water is available.

Tree Resources

In 2019 and 2020, California Tree and Landscape Consulting, Inc. (CalTLC) conducted an evaluation of trees on the site following the 2018 Camp Fire. CalTLC documented 843 trees on the project site. Approximately 89 percent of the trees on the site are native blue oak trees. California foothill pine trees make up approximately nine percent of on-site trees. The remaining approximately two percent of trees include interior live oak, Fremont cottonwood, willows, one fig tree (*Ficus carica*), and Italian stone pines (*Pinus pinea*). Trees occur primarily within the woodlands of the site, as well as in large numbers throughout the remaining habitats and land use areas. Approximately 99.6 percent of the trees documented on-site are considered native to the site (i.e., all trees except the fig and Italian stone pines), meaning such species would have likely been found on-site, occurring naturally, prior to disturbance. The arborist report recommended many of the trees be removed based on potential hazards posed by the trees. Recommendations are largely related to damage sustained during the 2018 Camp Fire, which may have been exacerbated by severe drought in California in the years preceding the fire. Of the 468 trees that are not recommended for removal, 426 are blue oak trees.

Given the relatively recent occurrence of the fire and the potential time lag of tree death that may occur after drought and fire impacts, it is possible that additional trees have died since the arborist study.

Special-Status Species

Special-status species are species that have been listed as “threatened” or “endangered” under the Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), or are of special concern to federal resource agencies, the State, or private conservation organizations. A species may be considered special-status due to declining populations, vulnerability to habitat change, or restricted distributions. A description of the criteria and laws pertaining to special-status classifications is described below.

Special-status plant species may meet one or more of the following criteria:

- Plants listed or proposed for listing as threatened or endangered under the FESA (50 CFR 17.12 for listed plants and various notices in the Federal Register for proposed species);
- Plants that are candidates for possible future listing as threatened or endangered under the FESA (64 FR 205, October 25, 1999; 57533-57547);
- Plants listed or proposed for listing by the State of California as threatened or endangered under the CESA (14 California Code of Regulations [CCR] 670.5);
- Plants that meet the definitions of rare or endangered species under the California Environmental Quality Act (CEQA) (CEQA Guidelines, Section 15380); or
- Plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered" in California (Lists 1A, 1B, 2A, 2B, and 3 species in CNPS [2001]).

Special-status wildlife species may meet one or more of the following criteria:

- Wildlife listed as threatened or endangered, or proposed as candidates for listing by the United States Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS) under the FESA (50 CFR 17.11 for listed wildlife and various notices in the Federal Register for proposed species);
- Wildlife listed or proposed for listing by the State of California as threatened or endangered under the CESA (14 CCR 670.5);
- Wildlife that meet the definitions of rare or endangered species under the California Environmental Quality Act (CEQA Guidelines, Section 15380);
- Wildlife identified as Medium or High priority species by the Western Bat Working Group (WBWG);
- Wildlife species of special concern (SSC) to the California Department of Fish and Wildlife (CDFW) (Remsen [1978] for birds; Williams [1986] for mammals); and/or
- Wildlife species that are fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

Several species of plants and animals within the State of California have low populations, limited distributions, or both. Such species may be considered "rare" and are vulnerable to extirpation as the State's human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described below, State and federal laws have provided the CDFW and the USFWS with a mechanism for conserving and protecting the diversity of plant and animal species native to the State. A number of native plants and animals have been formally designated as threatened or endangered under State and federal endangered species legislation. Others have been designated as "candidates" for such listing. Still others have been designated as "species of special concern" by the CDFW. In addition, the CNPS has developed a set of lists of native plants considered rare, threatened, or endangered. Collectively, these plants and animals are referred to as "special-status species."

To determine potentially occurring special-status species, the standard databases from the USFWS, CDFW (the California Natural Diversity Database [CNDDB]), and the CNPS were queried and reviewed. The searches provided a comprehensive list of regionally-occurring special-status species and were used to determine which species have some potential to occur within or near the project site. In addition to the database searches, pedestrian field surveys were conducted of the project site by Live Oak Associates, Inc.

The following table provides a list of special-status species that were evaluated, including their listing status, habitat associations, and their potential to occur in the Project Area, which is defined as the project site and the immediate vicinity (see Table 4.3-1).

Potential for occurrence within the project site was assigned according to the following categories:

- ***Present***: Species occurs on the site based on CNDDB records, and/or was observed on the site during field surveys.
- ***Likely***: Species was not observed on the project site, but may reasonably be expected to occur on-site on a regular basis.
- ***Possible***: Species was not observed on the project site, but could occur on-site from time to time.
- ***Unlikely***: Species was not observed on the project site, and would not be expected to occur on-site except, perhaps, as a transient.
- ***Absent:*** Species was not observed on the project site and is precluded from occurring on-site due to habitat requirements not being met.

Table 4.3-1
Special-Status Species with Potential to Occur within the Project Area

Scientific Name (Common Name)	Federal Status	State Status	Habitat	Potential for Occurrence
Plants				
Butte County meadowfoam *Limnanthes floccose* ssp. *californica*	--	FE, CE, CRPR 1B	Habitat: Valley and foothill grassland and vernal pools. Elevation: 46-930 meters. Blooms: March—May. Life form: Annual herb.	**Absent.** This species primarily occurs in association with vernal pool complexes in moist soils. Vernal pools are absent from the site. The nearest documented occurrence of this species is 2.5 miles from the site, across Butte Creek Canyon.
Big-scale balsamroot *Balsamorhiza macrolepis*	--	CRPR 1B	Habitat: Chaparral, cismontane woodland, and valley and foothill grasslands. Often associated with serpentine soils. Elevation:45-1555 meters. Blooms: March—June. Life form: Perennial herb.	**Unlikely.** While potentially suitable habitats are present onsite, the nearest documented occurrence of the species is from more than six miles to the west and seven miles to the south of the site. Serpentine soils are lacking from the site.
Brandegee's clarkia *Clarkia biloba* ssp. *brandegeeae*	--	CRPR 1B	Habitat: Chaparral, cismontane woodland, or lower montane coniferous forest, and is often found on roadsides. Elevation: 75-915 meters. Blooms: May—July. Life form: Annual herb.	**Absent.** The species is not known to occur near the site, or within 14 miles of the site.
White-stemmed clarkia *Clarkia gracilis* ssp. *albicaulis*	--	CRPR 4	Habitat: Chaparral, cismontane woodland, or lower montane coniferous forest, and is sometimes on serpentinite. Elevation: 30-840 meters. Blooms: May—July. Life form: Annual herb.	**Unlikely.** While potentially suitable habitat is present in the form of the blue oak woodlands, serpentine soils are absent from the site and this species has not been documented within six miles of the site.
Mildred's clarkia *Clarkia mildrediae* ssp. *mildrediae*	--	CRPR 1B	Habitat: Cismontane woodland, lower montane coniferous forest within sandy soils, and is usually found on granitic soils. Elevation: 245-1710 meters. Blooms: May—August. Life form: Annual herb.	**Absent.** The site is at the lower end of the elevation range for this species, and this species is more commonly found within yellow pine forests than woodlands. The nearest documented occurrence of this species is more than

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Table 4.3-1
Special-Status Species with Potential to Occur within the Project Area

Scientific Name (Common Name)	Federal Status	State Status	Habitat	Potential for Occurrence
				10 miles from the site.
Mosquin's clarkia *Clarkia mosquinii*	--	CRPR 1B	Habitat: Cismontane woodland and lower montane coniferous forests in rocky soils along roadsides. Elevation: 185-1490 meters. Blooms: May—July (rarely through September) Life Form: Annual herb.	**Absent.** While potentially suitable habitat is present on the site, the nearest documented occurrences of this species are more than nine miles from the site, and these occurrences are within openings of coniferous forests.
Butte County fritillary *Fritillaria eastwoodiae*	--	CRPR 3	Habitat: Chaparral, cismontane woodland, Lower montane coniferous forest; sometimes on serpentinite. Elevation: 50-1500 meters. Blooms: March—June. Life form: Perennial bulbiferous herb.	**Unlikely.** This species has been documented less than one mile from the site, at the bottom of Butte Creek Canyon, near the Honey Run Bridge that once spanned Butte Creek. This species often occurs within serpentinite soils that are absent from the site, and it occurs more typically in coniferous forests or opening of such forests, which are lacking from the site.
Red Bluff dwarf rush *Juncus leiospermus* var. *leiospermus*	--	CRPR 4	Habitat: Chaparral, cismontane woodland, meadows and seeps, valley and foothills grassland, vernal pools; within vernally mesic soils. Elevation: 35-1250 meters. Blooms: March—June. Life form: Annual herb.	**Absent.** Vernally mesic soils are absent from the site. In addition, the nearest documented occurrence of this species is more than six miles to the east of the site.
Woolly meadowfoam *Limnanthes floccose* ssp. *floccosa*	--	CRPR 4	Habitat: Chaparral, cismontane woodland, valley and foothill grassland, and vernal pools; within vernally mesic soils. Elevation: 60-1335 meters. Blooms: March—May (rarely through June). Life form: Annual herb.	**Absent.** This species primarily occurs in association with vernal pool complexes in moist soils. Vernal pools are absent from the site. The nearest documented occurrence of this species is more than six miles from the site.

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Table 4.3-1
Special-Status Species with Potential to Occur within the Project Area

Scientific Name (Common Name)	Federal Status	State Status	Habitat	Potential for Occurrence
Veiny monardella *Monardella venosa*	--	CRPR 1B	Habitat: Cismontane woodland and valley and foothill grasslands; on clay soils. Elevation: 60-410 meters. Blooms: May—July. Life form: Annual herb.	**Possible.** This species is documented as occurring just over two miles from the site, and potentially suitable habitats are present within the site. This species was once thought to be extinct, so known populations are well-studied. However, soils of the site may not be suitable.
Lewis Rose's ragwort *Packera eurycephala* var. *lewisrosei*	--	CRPR 1B	Habitat: Chaparral, cismontane woodland, Lower montane coniferous forest; typically on serpentine soils. Elevation: 274-1890 meters. Blooms: March—June (rarely in August and September). Life form: Perennial herb.	**Absent.** This species typically occurs on serpentine soils, which are absent from the site. The nearest documented occurrence of this species is more than eight miles from the site.
Ahart's paronychia *Paronychia ahartii*	--	CRPR 1B	Habitat: Cismontane woodland, valley and foothill grassland, and vernal pools. Elevation: 50-510 meters. Blooms: February—June. Life form: Annual herb.	**Absent.** The nearest documented occurrence is more than 7.5 miles northwest of the site, and vernal pools are absent from the site. Also, the grasslands of the site have been largely damaged through conversion to the golf course and other impacts.
Butte County Checkerbloom *Sidalcea robusta*	--	CRPR 1B	Habitat: Chaparral and cismontane woodland. Elevation: 90-1600 meters. Blooms: April—June. Life form: Annual herb.	**Likely.** This species occurs in woodlands typical of the site, and it has been identified in multiple locations surrounding the site including from one location within or immediately adjacent to the site.
Butte County golden clover *Trifolium jokerstii*	--	CRPR 1B	Habitat: Valley and foothill grassland and vernal pools. Elevation: 50-480 meters. Blooms: March—May. Life form: Annual herb.	**Absent.** Suitable habitat is generally lacking from the site, and this rare plant is only known from the North Table Mountain Preserve, more than ten miles to the southeast from the site.

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Table 4.3-1
Special-Status Species with Potential to Occur within the Project Area

Scientific Name (Common Name)	Federal Status	State Status	Habitat	Potential for Occurrence
Invertebrates				
Bombus crotchii Crotch's bumble bee	--	CC	Occurs in open grasslands and scrub habitats, primarily in California including the Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of southwestern California. The species was historically common in the Central Valley of California, but now appears to be absent from most of the valley, especially in the center of the historic range.	**Unlikely.** The vast majority of all sightings (historic and current) are around San Francisco to the Central Valley and south to San Diego. Very few historic sightings are reported north of Sacramento and only one current sighting is slightly north of Sacramento. The historic range shows three sightings along the Interstate 5 Corridor (Willows to Corning) and one west of Corning. The furthest north the current ranges show any occurrences is just slightly north of Sacramento. Based on the current information, and the fact that the site is highly disturbed, the species is very unlikely to occur on the project site.
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	--	Vernal pools of California's Central Valley.	**Absent.** Vernal pools are absent from the site. The nearest documented occurrences of this species are more than eight miles south of the site.
Vernal pool tadpole shrimp *Lepidurus packardi*	FE	--	Occurs in vernal pools containing clear to highly turbid water in unplowed grasslands of the Central Valley.	**Absent.** Vernal pools are absent from the site. The nearest documented occurrences of this species are more than four miles west of the site.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	--	Dependent upon elderberry *(Sambucus* species) shrubs as primary host species. Larvae burrow into stems upon hatching and can persist for several years within the stem of the shrub before exiting.	**Absent.** Elderberry shrubs are absent from the site; however, one was observed just offsite to the south within oak woodland habitat. This tree will not be impacted by project activities.

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Table 4.3-1
Special-Status Species with Potential to Occur within the Project Area

Scientific Name (Common Name)	Federal Status	State Status	Habitat	Potential for Occurrence
Amphibians				
Foothill yellow-legged frog *Rana boylii*	FE	CSC	Occurs in swiftly flowing streams and rivers with rocky substrate with open, sunny banks in forest, chaparral, and woodland habitats, and can sometimes be found in isolated pools and ponds.	**Absent.** Suitable habitat is completely lacking.
Reptiles				
Giant garter snake *Thamnophis gigas*	FT	CT	Considered a fairly aquatic snake, this species prefers freshwater marsh and low gradient streams. It has adapted to drainage canals and irrigation ditches. The species can also occur within adjacent habitats.	**Absent.** Suitable aquatic habitat is lacking from the site; the channel of the site is highly ephemeral and is not considered sufficient to support this species. Also, this snake has not been documented within ten miles of the site.
Western pond turtle *Emys marmorata*	--	CSC	Intermittent and permanent waterways that are either still or slow-moving including streams, marshes, rivers, ponds, and lakes throughout much of California. Needs rocks/logs for basking and sandy banks or grassy open fields for egg laying.	**Absent.** Suitable habitat is completely lacking.
Coast horned lizard *Phrynosoma blainvillii*	--	CSC	Grasslands, scrublands, oak woodlands, etc. of central California. Common in sandy washes with scattered scrubs.	**Possible.** Potentially suitable habitat is present within the site, and this species is known to occur within 11 miles of the site. The nearest record is from 1933 and has a locational error of several miles.
Birds				
California black rail *Laterallus jamaicensis coturniculus*	FP	CT	Inhabits freshwater marshes, wet meadows, and shallow margins of saltwater marshes bordering larger bays.	**Absent.** Suitable habitat is completely lacking.

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Table 4.3-1
Special-Status Species with Potential to Occur within the Project Area

Scientific Name (Common Name)	Federal Status	State Status	Habitat	Potential for Occurrence
Swainson's hawk *Buteo swainsoni*	--	CT	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	**Possible.** While an individual may forage within the site from time to time, breeding within the site would be very unlikely. Swainson's hawks typically nest in trees or tall structures adjacent to open farmland, grassland, or prairie. The site is fairly impacted by historical uses, and it would not be considered important foraging habitat given the amount of development and gravel surfacing. Nesting has been documented approximately six miles from the site to the west.
Bald eagle *Haliaeetus leucocephalus*	FP	CT	Primarily known to occur near water bodies, especially within or near heavily forested areas. Fish constitutes the primary food, so they occur near suitable aquatic habitat for foraging and breeding.	**Unlikely.** Suitable nesting and breeding habitat are absent from the site. A bald eagle may fly over the site from time to time, and one may perch temporarily within a tree of the site; however, the site does not offer important habitat resources for this species.
Least Bell's vireo *Vireo bellii pusillus*	FE	CE	Occurs primarily within dense riparian habitat, especially willow riparian forests.	**Absent.** Suitable willow riparian habitat is lacking for this species.
Western spadefoot *Spea hammondii*	--	CSC	Primarily occurs in grasslands, but also occurs in valley and foothill hardwood woodlands. Requires vernal pools or other temporary wetlands for breeding.	**Absent.** Vernal pools required for breeding are absent from the project site.

(Continued on next page)

Table 4.3-1
Special-Status Species with Potential to Occur within the Project Area

Scientific Name (Common Name)	Federal Status	State Status	Habitat	Potential for Occurrence
White-tailed kite *Elanus leucurus*	--	CP	Open grasslands and agricultural areas throughout central California.	**Possible.** Potentially suitable foraging and nesting habitat is present onsite and abundant within the region.
Northern harrier *Circus cyaneus*	--	CSC	Frequents meadows, grasslands, open rangelands, freshwater emergent wetlands; uncommon in wooded habitats.	**Unlikely.** Marginal foraging habitat is present onsite, but nesting habitat is absent. This species would most likely fly over the site from time-to-time en-route to a more typical habitat.
American Peregrine Falcon (nesting) *Falco peregrinus anatum*	--	CP	Individuals breed on cliffs on the Sierra or in coastal habitats; occurs in many habitats of the state during migration and winter.	**Possible.** Breeding habitat for this species is absent; however, potential breeding habitat occurs in the rocky cliffs near the site. An individual may reasonably be expected to fly over the site from time to time during foraging or en-route to more suitable habitats, but suitable nesting areas are absent.
Burrowing owl *Athene cunicularia*	--	CSC	Frequents open, dry annual or perennial grasslands, deserts, scrublands, and ruderal areas characterized by low growing vegetation. Dependent upon burrowing mammals, most notably the California ground squirrel, for nest burrows.	**Absent.** Suitable burrows were not observed during the 2022 site visit. Furthermore, burrowing owls do not burrow or forage within wooded areas. While grasslands are present on-site, they are studded with trees, and they are part of a mosaic within oak woodlands. This species has been document as occurring approximately nine miles from the site.
California yellow warbler *Dendroica petechia brewsteri*	--	CSC	Nests in riparian thickets, especially in alders, willows, and cottonwoods. May also utilize chaparral/scrubland.	**Absent.** Suitable habitat is completely lacking.

(Continued on next page)

Table 4.3-1
Special-Status Species with Potential to Occur within the Project Area

Scientific Name (Common Name)	Federal Status	State Status	Habitat	Potential for Occurrence
Tricolored blackbird *Agelaius tricolor*	--	CSC	Breeds near fresh water, primarily emergent wetlands, with tall thickets, typically of cattails or bulrushes. Forages in nearby grassland and cropland habitats.	**Absent.** Suitable habitat is completely lacking.
Mammals				
Pallid bat *Antrozous pallidus*	--	CSC	Typically occurs in deserts, but can also occur in grasslands, chaparral, woodlands, and forests; most common in dry rocky open areas providing roosting opportunities. Roost sites include caves, mines, rock crevices, and large cavities of trees.	**Unlikely.** At best, the site provides marginal foraging habitat for this species, but it is unlikely to occur within the site because the site is not the typical habitat for this species. Only one occurrence from 1992 with limited information has been documented regionally.
Townsend's big-eared bat *Corynorhinus townsendii*	--	CSC	Primarily a cave-dwelling bat that may also roost in buildings, bridges, rock crevices, and hollow trees. Occurs primarily in deserts and conifer forest habitats.	**Possible.** Potential foraging habitat is present on the site. Tree hollows and unused buildings of the site may provide, at best, marginal roosting habitat.
Western red bat *Lasiurus blossevillii*	--	CSC	Roosts primarily in trees, typically mature riparian species or fruit and nut trees. They can occasionally use caves. Prefers habitat edges and mosaics with trees.	**Possible.** Roosting habitat for this species is absent from the site. A foraging individual may pass through the site from time to time.
Western mastiff bat *Eumops perotis californicus*	--	CSC	Frequents open, semi-arid to arid habitats, including conifer, and deciduous woodlands, coastal scrub, grasslands, palm oasis, chaparral and urban. Requires tall locations for roosting in cliff faces, high buildings, trees, and tunnels.	**Unlikely.** This species typically roosts in cavities within cliff faces, which are absent from the site. Also, foraging is often high above the ground. An individual may fly over the site from time to time.
American badger *Taxidea taxus*	--	CSC	Drier open stages of most shrub, forest and herbaceous habitats with friable soils, specifically grassland environments. Natal dens occur on slopes.	**Unlikely.** This species has not been documented within 12 miles of the site, and it appears to be rare in the region. Also, soils of the site are shallow and generally unsuitable for badger habitat.

Table 4.3-1
Special-Status Species with Potential to Occur within the Project Area

Scientific Name (Common Name)	Federal Status	State Status	Habitat	Potential for Occurrence
Ringtail *Bassariscus asutus*	--	CSC	Occurs in riparian habitats, forested habitats, and mature woodlands, within rocky areas, or forests. They utilize caves, tree hollows, mine shafts, and abandoned burrows of other animals as denning habitat.	**Possible.** Ringtails are known to occur regionally, but the woodlands of the site have been fragmented, and some areas have been highly disturbed over the last 20 years. Still, ringtails could forage within or pass through the site from time to time. Given the site disturbances, it is somewhat unlikely they would utilize the site for extended periods. However, there is still a chance that they could utilize hollows of trees from the site, rock crevices, or attic spaces of buildings for roosting or as breeding habitat.

Occurrence Designations
Present: Species occurs on the site based on CNDDB records, and/or was observed on the site during field surveys.
Likely: Species was not observed on the project site, but may reasonably be expected to occur on-site on a regular basis.
Possible: Species was not observed on the project site, but could occur on-site from time to time.
Unlikely: Species was not observed on the project site, and would not be expected to occur on-site except, perhaps, as a transient.
Absent: Species was not observed on the project site and is precluded from occurring on-site due to habitat requirements not being met.

Status Codes:
CC - CDFW Candidate for Listing; **CSC** - CDFW Species of Concern; **FE** - Federally Endangered; **CE** - CDFW Endangered; **CT** - CDFW Threatened; **FT** – Federally Threatened; **CFP** - CDFW Fully Protected; **FC** - Candidate for Federal Listing; **CRPR** - California Rare Plant Rank; **FD** - Federally Delisted.

Source: Live Oak Associates, Inc., May 2023.

The following sections provide a discussion of all special-status species with potential to occur within the Project Area.

Special Status Plant Species

As shown in Table 4.3-1, of the 14 special-status plants that occur regionally, within habitats present on-site, and/or at elevations consistent the project site, one species, the Butte County Checkerbloom, was determined to be likely to occur on-site, and another species, the veiny monardella, was considered possible to occur within the site. Three additional plant species were considered unlikely to occur, including the big-scale balsamroot, white stemmed clarkia, and Butte County fritillary. The remaining nine plants are considered absent from the site. The two special-status plant species with the potential to occur on-site are discussed in further detail below.

Butte County Checkerbloom

Butte County Checkerbloom (*Sidalcea robusta*) is not federally or State listed. However, the species is a CRPR List 1B plant. Butte County Checkerbloom is an annual herb that blooms between April and June and occurs in chaparral and cismontane woodland at elevations between 90 and 1,600 meters. Because the appropriate habitat for the species is present on-site, Live Oak Associates, Inc. determined that Butte County Checkerbloom is likely to occur on-site. Furthermore, the species has been identified in multiple locations surrounding the project site.

Veiny monardella

Veiny monardella (*Monardella venosa*) is not federally or State listed. However, the species is a CRPR List 1B plant. Veiny monardella is an annual herb that blooms between May and July and occurs in cismontane woodland, valley and foothill grasslands, and on clay soils at elevations between 60 and 410 meters. Although on-site soils may not be suitable for the species, because occurrences of veiny monardella have been documented approximately two miles from the project site and potentially suitable habitat is present on-site, Live Oak Associates, Inc. determined that veiny monardella has the potential to occur on-site.

Listed and Special-Status Wildlife

The queries of the CNDDB and USFWS species lists show that three invertebrates, one amphibian, three reptiles, 11 birds, and six special-status mammal species have the potential to occur in the Project Area. As shown in Table 4.3-1, of the 24 species with the potential to occur in the vicinity of the Project Area, Live Oak Associates, Inc. considers only seven species to have the potential to occur within the Project Area. In addition, other protected migratory birds have the potential to occur on-site. The seven species are discussed in further detail below.

Coast horned lizard

The coast horned lizard occurs in open sandy areas, scattered low bushes, chaparral, manzanita, and oak woodland habitats. The coast horned lizard is found in the Sierra Nevada foothills from Butte County to Kern County and throughout the central and southern California coasts. Coast horned lizards forage on the ground in open areas, usually between shrubs and often near ant nests. The species relies on camouflage for protection. Predators and extreme heat are avoided by burrowing into loose soil. Periods of inactivity and winter hibernation are spent burrowed in the soil under surface objects such as logs or rocks, in mammal burrows, or in crevices. They inhabit mostly open country, especially sandy areas, washes, flood plains and wind-blown deposits in a wide variety of habitats and can be found at elevations up to 8,000 feet (2,438 meters). Potentially suitable habitat for the coast horned lizard is present on-site; and the nearest known occurrence of the species is within 11 miles of the project site.

Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is a raptor species that is not federally listed but is listed as threatened by CDFW. Breeding pairs typically nest in tall trees associated with riparian corridors, and forage in grassland, irrigated pasture, and cropland with a high density of rodents. The Central Valley populations breed and nest in the late spring through early summer before migrating to Central and South America for the winter.

While an individual may forage within the site from time to time, breeding within the site would be very unlikely. The nearest documented Swainson's hawk nest classified as extant is located approximately six miles west of the Project Area.

White-tailed Kite

White-tailed kite (*Elanus leucurus*) is not federally or state listed but is a CDFW fully protected species. The species is a yearlong resident in the Central Valley and is primarily found in or near foraging areas such as open grasslands, meadows, farmlands, savannahs, and emergent wetlands. White-tailed kites typically nest from March through June in trees within riparian, oak woodland, and savannah habitats of the Central Valley and Coast Range. The Project Area represents suitable foraging habitat for white-tailed kite, and the trees within the Project Area provide suitable nesting habitat.

American Peregrine Falcon

The American peregrine falcon (*Falco peregrinus anatum*) occurs as a generally uncommon resident, as well as a winter visitor and migrant throughout much of California. Occupied habitat (both breeding and non-breeding) is highly variable, but the species is typically associated with open areas and/or bodies of water. Nesting typically occurs on the ledges of steep cliffs, or on man-made structures with ledges above sheer faces, such as bridges and the tops of buildings. The peregrine falcon preys on a wide variety of animals, mostly birds, and in particular on the Pacific Coast, water birds (e.g., waterfowl, shorebirds and seabirds). The species forages over wide areas, even during the breeding season. The species is a CDFW Fully Protected Species with moderate potential to occur on-site.

Townsend's Big-Eared Bat

Townsend's big-eared bat (*Corynorhinus townsendii*) is not federally listed; however, the species is a candidate for State listing and classified by the WBWG as a High priority species. Townsend's big-eared bat roosts primarily in caves and cave-like roosting habitat, including abandoned mines. The species' habit of roosting on open surfaces while resembling a pendant makes the bat readily detectable, and the species can be most readily observed when present (commonly in low numbers) in caves and abandoned mines throughout the bat's range. Townsend's big-eared bat has also been reported to utilize buildings, bridges, rock crevices, and hollow trees as roost sites. The bat forages in edge habitats along streams and adjacent to and within a variety of wooded habitats.

Potential foraging habitat is present on the project site. In addition, tree hollows and unused buildings on the site may provide marginal roosting habitat.

Western Red Bat

Western red bat (*Lasiurus blossevillii*) is not federally or state listed, but is considered a CDFW species of special concern, and is classified by the WBWG as a High priority species. Western red bat is typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are

commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. The species may have an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores). Roosting habitat is not present on the project site, but a foraging individual may pass through the Project Area.

Ringtail

Between early spring through mid-summer, ringtail dens may function as natal dens wherein recently born ringtail pups are cared for by parents until they are old enough to forage outside of the den with their mother. Ringtail could utilize tree hollows, suitable crevices in rocky outcrops, or remnant buildings of the site for denning habitat. While it is unlikely for a ringtail to den within the site, if one were to be denning during tree removal or partial building demolition, the individual(s) could be killed, which would constitute a significant impact of project development under CEQA.

4.3.3 REGULATORY CONTEXT

A number of Federal, State, and local policies provide the regulatory framework that guides the protection of biological resources. The following discussion summarizes those laws that are most relevant to biological resources in the vicinity of the project site.

Federal Regulations

The following are the Federal environmental laws and policies relevant to biological resources.

Federal Endangered Species Act

Under the FESA, the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered (16 USC § 1533(c)). Two federal agencies oversee the FESA: the USFWS has jurisdiction over plants, wildlife, and resident fish, while the NMFS has jurisdiction over anadromous fish and marine fish and mammals. Section 7 of the FESA mandates that federal agencies consult with the USFWS and NMFS to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species.

Section 10 requires the issuance of an “incidental take” permit before any public or private action may be taken that could take an endangered or threatened species. The permit requires preparation and implementation of a habitat conservation plan (HCP) that would offset the take of individuals that may occur, incidental to implementation of a proposed project, by providing for the protection of the affected species.

Pursuant to the requirements of the FESA, a federal agency reviewing a project within the jurisdiction of the agency must determine whether any federally listed threatened or endangered species may be present in the project area and whether the proposed project will have a potentially significant impact on such species. In addition, the agency is required to determine whether the proposed action is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC § 1536(3), (4)).

Migratory Bird Treaty Act

Raptors (birds of prey), migratory birds, and other avian species are protected by a number of state and federal laws. The federal Migratory Bird Treaty Act (MBTA) prohibits the killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the

Secretary of Interior. Section 3503.5 of the California Fish and Game Code states, "It is unlawful to take, possess, or destroy any birds in the order *Falconiformes* or *Strigiformes* (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by the code or any regulation adopted pursuant thereto."

Clean Water Act

The U.S. Army Corps of Engineers (USACE) regulates discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act (CWA). "Discharge of fill material" is defined as the addition of fill material into waters of the U.S., including but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for the construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and sub-aqueous utility lines (33 C.F.R. §328.2[f]). In addition, Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Waters of the United States include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, and wet meadows. Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 C.F.R. §328.3[b]).

Furthermore, jurisdictional waters of the United States can be defined by exhibiting a defined bed and bank and ordinary high-water mark (OHWM). The OHWM is defined by the USACE as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 C.F.R. §328.3[e]).

State Regulations

The following are the State environmental laws and policies relevant to biological resources.

California Department of Fish and Wildlife

CDFW administers a number of laws and programs designed to protect fish and wildlife resources under the California Fish and Game Code (FGC), such as CESA (FGC Section 2050, et seq.), Fully Protected Species (FGC Section 3511) and the Lake or Streambed Alteration Agreement Program (FGC Sections 1600 to 1616). Such regulations are summarized in the following sections.

California Endangered Species Act

The State of California enacted CESA in 1984. CESA is similar to the FESA but pertains to State-listed endangered and threatened species. CESA requires State agencies to consult with CDFW when preparing CEQA documents to ensure that the State lead agency actions do not jeopardize the existence of listed species. CESA directs agencies to consult with CDFW on projects or actions that could affect listed species, directs CDFW to determine whether jeopardy would occur, and allows CDFW to identify "reasonable and prudent alternatives" to the project consistent with conserving the species. Agencies can approve a project that affects a listed species if they

determine that "overriding considerations" exist; however, the agencies are prohibited from approving projects that would result in the extinction of a listed species.

CESA prohibits the taking of State-listed endangered or threatened plant and wildlife species. CDFW exercises authority over mitigation projects involving State-listed species, including those resulting from CEQA mitigation requirements. CDFW may authorize taking if an approved habitat management plan or management agreement that avoids or compensates for possible jeopardy is implemented. CDFW requires preparation of mitigation plans in accordance with published guidelines.

Fish and Game Code Section 3505

Birds of prey are protected in California under provisions of the California FGC, Section 3503.5, (1992), which states, "it is unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by CDFW.

Lake or Streambed Alteration Program

The CDFW is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code, Section 1602, requires notification to CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state or local government agency, or public utility that proposes an activity that will:

- substantially divert or obstruct the natural flow of any river, stream or lake;
- substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

For the purposes of Section 1602, rivers, streams and lakes must flow at least intermittently through a bed or channel. If notification is required and CDFW believes the proposed activity is likely to result in adverse harm to the natural environment, the CDFW will require that the parties enter into a Lake or Streambed Alteration Agreement.

CDFW Species of Special Concern

In addition to formal listings under FESA and CESA, plant and wildlife species receive additional consideration during the CEQA process. Species that may be considered for review are included on a list of "Species of Special Concern" developed by CDFW. Species whose numbers, reproductive success, or habitat may be threatened are tracked by CDFW in California.

Native Plant Protection Act

The Native Plant Protection Act (NPPA) was enacted in 1977 and allows the Fish and Game Commission to designate plants as rare or endangered. Currently 64 species, subspecies, and varieties of plants are protected as rare under the NPPA. The NPPA prohibits take of endangered or rare native plants, but includes some exceptions for agricultural and nursery operations,

emergencies, and after properly notifying CDFW for vegetation removal from canals, roads, and other sites, changes in land use, and in certain other situations.

Regional Water Quality Control Board

Pursuant to Section 401 of the CWA and EPA 404(b)(1) guidelines, in order for a USACE federal permit applicant to conduct any activity which may result in discharge into navigable waters, they must provide a certification from the Regional Water Quality Control Board (RWQCB) that such discharge will comply with the State water quality standards. The RWQCB has a policy of no-net-loss of wetlands in effect and typically requires mitigation for all impacts to wetlands before the RWQCB will issue water quality certification.

On April 2, 2019, the State Water Resources Control Board (SWRCB) adopted a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures), for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California Plan. The Procedures consist of four major elements: (1) a wetland definition; (2) a framework for determining if a feature that meets the wetland definition is a water of the State; (3) wetland delineation procedures; and (4) procedures for the submittal, review, and approval of applications for Water Quality Certifications (WQCs) and Waste Discharge Requirements (WDR) for dredge or fill activities. The State Office of Administrative Law (OAL) approved the Procedures on August 28, 2019, and the Procedures became effective May 28, 2020.

Under the Procedures and the State Water Code (Water Code Section 13050[e]), “waters of the State” are defined as “any surface water or groundwater, including saline waters, within the boundaries of the state.” Unless excluded by the Procedures, any activity that could result in discharge of dredged or fill material to waters of the State, which includes waters of the U.S. and non-federal waters of the State, requires filing of an application under the Procedures.

When reviewing applications, the RWQCB focuses on ensuring that projects do not adversely affect the “beneficial uses” associated with waters of the State. Generally, the RWQCB defines beneficial uses to include all of the resources, services and qualities of aquatic ecosystems and underground aquifers that benefit the State. In most cases, the RWQCB seeks to protect the beneficial uses by requiring the integration of water quality control measures into projects that will result in discharge into waters of the State. For most construction projects, RWQCB requires the use of construction and post-construction Best Management Practices (BMPs). In many cases, proper use of BMPs, including bioengineering detention ponds, grassy swales, sand filters, modified roof techniques, drains, and other features, will speed project approval from RWQCB. Development setbacks from creeks are also requested by RWQCB as they often lead to less creek-related impacts in the future.

Local Regulations

The following are the local environmental laws and policies relevant to biological resources. It is noted that although Butte County drafted a Final Oak Woodland Mitigation Ordinance in 2018, the proposed chapter for the Municipal Code has not been ratified. Similarly, a proposed county-wide conservation plan called the Butte Regional Conservation Plan has been drafted, but has not been formally approved and adopted. Therefore, the following section is focused on the applicable policies included in the 2030 Butte County General Plan.

2030 Butte County General Plan

The 2030 Butte County General Plan biological resource policies that are applicable to the proposed project are presented below

Biological Resources

Goal COS-6 Engage in cooperative planning efforts to protect biological resources.

Policy COS-P6.1 The County shall coordinate with applicable federal, State, regional and local agencies on natural resources and habitat planning.

Fish and Wildlife Habitat

Goal COS-7 Conserve and enhance habitat for protected species and sensitive biological communities.

Policy COS-P7.1 Conservation easements that protect habitat areas, habitat corridors and sensitive biological resources shall be promoted.

Policy COS-P7.2 Clustered development patterns shall be encouraged in order to conserve habitat for protected species and biological resources.

Policy COS-P7.4 New development projects shall mitigate their impacts in habitat areas for protected species through on- or off-site habitat restoration, clustering of development, and/or project design and through the provisions of the Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP) within the HCP/NCCP Planning Area, upon the future adoption of the HCP/NCCP.

Policy COS-P7.7 Construction barrier fencing shall be installed around sensitive resources on or adjacent to construction sites. Fencing shall be installed prior to construction activities and maintained throughout the construction period.

Policy COS-P7.8 Where sensitive on-site biological resources have been identified, construction employees operating equipment or engaged in any development-associated activities involving vegetation removal or ground disturbing activities in sensitive resource areas shall be trained by a qualified biologist and/or botanist who will provide information on the on-site biological resources (sensitive natural communities, special-status plant and wildlife habitats, nests of special-status birds, etc.), avoidance of invasive plant introduction and spread, and the penalties for not complying with biological mitigation requirements and other State and federal regulations.

Policy COS-P7.9 A biologist shall be retained to conduct construction monitoring in and adjacent to all habitats for protected species when construction is taking place near such habitat areas.

Policy COS-P7.10 Long-term recovery plans for areas affected by wildfire shall incorporate native species and enhance wildlife habitat.

Goal COS-9 Protect identified special-status plant and animal species.

Policy COS-P9.1 A biological resources assessment shall be required for any proposed development project where special-status species or critical habitat may be present. Assessments shall be carried out under the direction of Butte County. Additional focused surveys shall be conducted during the appropriate season if necessary. Upon adoption of the Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP), assessment requirements of the HCP/NCCP shall be implemented for development projects within the HCP/NCCP area.

Policy COS-P9.2 If special-status plant or animal species are found to be located within a development site, proponents of the project shall engage in consultation with the appropriate federal, State and regional agencies and mitigate project impacts in accordance with State and federal law. Upon adoption of the Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP), mitigation requirements of the HCP/NCCP shall be implemented for development projects within the HCP/NCCP area. Examples of mitigation may include:

a. Design the proposed project to avoid and minimize impacts.
b. Restrict construction to specific seasons based on project-specific special-status species issues (e.g. minimizing impacts to special-status nesting birds by constructing outside of the nesting season).
c. Confine construction disturbance to the minimum area necessary to complete the work.
d. Mitigate for the loss of special-status species by purchasing credits at an approved conservation bank (if a bank exists for the species in question), funding restoration or habitat improvement projects at existing preserves in Butte County, or purchasing or donating mitigation lands of substantially similar habitat.

e. Maintain a minimum 100-foot buffer on each side of all riparian corridors, creeks and streams for special-status and common wildlife.
f. Establish setbacks from the outer edge of special-status species habitat areas.
g. Construct barriers to prevent compaction damage by foot or vehicular traffic.

Vegetation

Goal COS-8 Maintain and promote native vegetation.

Policy COS-P8.1 Native plant species shall be protected and planting and regeneration of native plant species shall be encouraged, wherever possible, in undisturbed portions of development sites.

Policy COS-P8.2 New landscaping shall promote the use of xeriscape and native tree and plant species, including those valued for traditional Native American cultural uses.

Policy COS-P8.3 Native plants shall be used wherever possible on County-owned and -controlled property.

Policy COS-P8.4 Introduction or spread of invasive plant species during construction of development projects shall be avoided by minimizing surface disturbance; seeding and mulching disturbed areas with certified weed-free native mixes; and using native, noninvasive species in erosion control plantings.

4.3.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to biological resources. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an impact related to biological resources is considered significant if the proposed project 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 CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS;
- Have a substantial adverse effect on State or federally protected wetlands (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; and
- Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or State habitat conservation plan (see Chapter 5, Effects Not Found to be Significant, of this EIR).

As noted above, issues related to whether the proposed project would result in the following are discussed in Chapter 5, Effects Not Found to be Significant, of this EIR:

- Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or State habitat conservation plan.

Method of Analysis

The information contained in the analysis is primarily based on the Biological Evaluation prepared for the proposed project by Live Oak Associates, Inc.

Biological Evaluation

The analysis within the Biological Evaluation is based on a literature review and field surveys of the study area, which are detailed further below.

Literature Review

A list of special-status plant and wildlife species with potential to occur within the Project Area was developed as part of the Biological Evaluation through queries of the following databases:

- CNDDB query of the Project Area and all areas within five miles of the Project Area;
- The California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2022);
- United States Department of Agriculture (USDA) Natural Resource Conservation Service Custom Soil Resource Report for Butte County, California (NRCS 2022);
- Reports previously prepared for other projects in the Project Area; and
- Manuals and references related to plants and animals of Butte County.

Field Surveys

A Live Oak Associates, Inc. ecologist conducted field surveys of the project site on January 31, and on February 1, 2022. The field surveys included the identification of onsite habitats, plant communities, and/or land uses. The site was inspected from the ground and, where necessary, using binoculars. All identifiable plants and animals observed on the site were noted.

Arborist Reports

In August 2019 and August 2020, CalTLC conducted arborist surveys of the project site. CalTLC conducted Level 1 – Limited Visual Assessments, in accordance with the International Society of Arboriculture's best management practices. As part of the ground level observations, the global positioning system (GPS) location of each tree was collected, and the data was processed to produce a tree location map.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts related to biological resources is based on implementation of the proposed project in comparison to existing conditions and the standards of significance presented above.

4.3-1 Have a substantial adverse effect, either directly or through habitat modifications, on special-status plant species. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Of the 14 special-status plants that occur regionally within habitats present on-site, and/or at elevations consistent the project site, one species, the Butte County Checkerbloom, was determined to be likely to occur. Another species, the veiny monardella, was considered possible to occur within the site. Three additional plant species, the big-scale balsamroot, white-stemmed clarkia, and Butte County fritillary, were considered unlikely to occur. The remaining nine plants are considered absent from the site (see Table 4.3-1).

If a population of a special-status plant species were to occur within or immediately adjacent to the grading envelope, the project could result in direct impacts to such species. Grading and construction impacts could damage or extirpate any occurring populations. This potential impact to special-status plant species could be considered significant. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.3-1(a) *An appropriately timed botanical survey (May through June) conducted by a qualified botanist within the vicinity of the development footprint shall be conducted within the project site to determine presence or absence of special-status plant species, inclusive of Butte County Checkerbloom and veiny monardella. If feasible, the survey shall be paired with reference population inspections of known populations in the region to ensure that the timing of the survey is suitable. If the survey determines that special-status plant species are absent, further mitigation shall not be required. If a population of a special-status plant species is identified within 50 feet from the development footprint of the project site, mitigation shall be required.*

- *Avoidance: In consultation with a qualified botanist, and to the maximum extent feasible, the project shall be reconfigured in such a way as to avoid substantial direct and indirect impacts to the species. Avoidance measures shall include a permanent disturbance-free buffer around the plant population(s). The size of the buffer will be determined by the botanist, based on the species, scope of the population, and type of construction disturbance occurring near the plant population. The disturbance-*

free buffer shall be no less than 10 feet and no greater than 100 feet.

- *<u>Compensation:</u> If open space that will not be developed as part of the project contains a healthy population of the impacted plant species, and the areas comprise equal or more area and equal or more plants than the impact footprint of the project, then onsite preservation can be used as mitigation.*

  The mitigation site shall be confirmed by a qualified botanist to support populations of the impacted species and protected in perpetuity with a deed restriction, conservation easement, or other such vehicle which prohibits future disturbance. Also, a qualified botanist should prepare a Preservation Plan for the site containing, at a minimum, the following elements:

  - *A monitoring plan and performance criteria for the preserved plant population;*
  - *A description of remedial measures to be performed if performance criteria are not met; and*
  - *A description of maintenance activities to be conducted on the site during the maintenance period including weed control, trash removal, irrigation, and control of herbivory by livestock and wildlife.*

  If onsite preservation is not feasible, offsite preservation can be used if an equivalent population occurs within an offsite parcel that can be deed restricted or otherwise encumbered to prevent future impacts. The same criteria for preservation of an onsite population would be required for offsite preservation. If neither suitable onsite populations nor offsite preservation is available, mitigation can be achieved through restoration of an onsite population and subsequent onsite preservation as discussed above.

4.3-1(b) *If special-status plant species are identified during the botanical survey, then prior to commencement of ground-disturbing activities, a qualified botanist shall conduct an environmental awareness training for all construction personnel. The training shall include information on the identification of special-status plant species, including Butte County Checkerbloom and veiny monardella, as well as their habitat, other sensitive natural communities, required practices before the start of construction, general measures that are being implemented to conserve the species as they relate to the proposed project, penalties for non-compliance, and boundaries of the development footprint and of the permitted disturbance zones. Supporting materials containing training information shall be prepared and distributed to construction personnel during the training. Upon completion of training, all construction personnel shall sign a form stating that they have attended the training and understand all of the measures. Proof of training completion shall be kept on-file with the project applicant, as well as submitted to the Butte County Department of Development Services.*

4.3-1(c) *If the project cannot be designed to avoid impacts to a rare plant population, and if onsite populations within preserved open space are not sufficient to offset the impact, then onsite restoration and preservation shall be utilized to establish and preserve an onsite population that is equivalent to or greater in extent than the impacted population. A Habitat Restoration Plan shall be developed for the species by a qualified botanist and/or restoration ecologist and approved by the County prior to the start of project construction. The objective of the mitigation measure would be to replace the special-status plant numbers and area lost during project implementation. The mitigation could include increasing the extent of a smaller onsite population within the preserved open space portions of the site. The Habitat Restoration Plan shall be based on the best available science and ecological research for the impacted species. The restoration plan shall include a monitoring program wherein the mitigation site shall be monitored for a period of 10 years (e.g., Years 1-3, 5, 7, and 10) from the date of initial restoration installation. At a minimum, the Habitat Restoration Plan shall contain the following:*

- *Identification of appropriate locations on-site as determined by the botanist or plant ecologist (i.e., areas with habitat types, suitable soils, aspect, hydrology, etc.) to restore lost plant populations.*
- *A description of any additional plant species to be used in the mitigation. For example, it is known that Butte County checkerbloom occurs near blue oak trees, including under the canopies of such trees. Therefore, planting of additional blue oak trees to replace those that were lost during site impacts (i.e., trees lost due to development of the golf course and fire recovery camp and/or due to the Camp Fire) and thus increase the potential habitat for this species may be a critical element for restoration of Butte County checkerbloom.*
- *A description of the propagation and planting techniques to be employed in the restoration effort, including evidence that the plant materials are provided from local sources (onsite is preferred) and grown under sanitary nursery conditions.*
- *A timetable for implementation of the restoration plan.*
- *A monitoring plan, performance criteria, and final success criteria.*
- *Adaptive management measures to be performed if initial restoration measures are unsuccessful in meeting the performance criteria.*
- *A site maintenance plan. The site maintenance plan may include weed control, irrigation, control of herbivory by livestock and wildlife, and public education to reduce potential tromping or vandalism impacts.*
- *Documentation of any research used to prepare the Habitat Restoration Plan.*

4.3-2 Impacts to coast horned lizard either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. Based on the analysis below, the impact is *less than significant*.

The project site provides mediocre habitat value for the coast horned lizard. While the species could possibly occur within the site from time to time, disturbances to the site over the past 20 years have reduced the habitat value for the coast horned lizard and has likely reduced the occurrences of the species (if any) within the site. Accordingly, buildout of the project on the site would not result in a significant effect to the loss of habitat for the coast horned lizard. Furthermore, individuals of the species are expected to escape the site once construction disturbances start, reducing the chance that individuals are directly impacted. Therefore, potential impacts to coast horned lizard individuals would also be considered less than significant.

Overall, the proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on coast horned lizard, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

4.3-3 Impacts to special-status birds either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. Based on the analysis below, the impact is *less than significant*.

Swainson's hawk, white-tailed kite, and American peregrine falcon were considered possible to occur within the site. The peregrine falcon would not be expected to breed within the site, and the site is considered to provide only occasional foraging habitat, which is equivalent or lesser in quality than potential foraging habitat that is abundant in the region for the species. Therefore, project buildout would not result in a significant impact to peregrine falcon habitat or individuals.

Habitats of the site provide potential nesting and/or foraging habitat for Swainson's hawk and white-tailed kite; however, the site does not represent important, unique, or quality habitat for either species. Therefore, according to the Biological Evaluation, buildout of the proposed would not result in a significant loss of habitat for the species due to the vast areas in the region with equivalent or superior habitat available.

Therefore, the proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on bird species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

4.3-4 Impacts to bats either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Although the western red bat is not federally or State listed, the species is a CDFW Species of Special Concern. Western red bat is typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. The species may associate with intact riparian habitat, particularly willows, cottonwoods, and sycamores.

The project site does not contain suitable breeding habitat for the western red bat. In addition, the project site is considered to provide only occasional foraging habitat, which is equivalent or lesser in quality than potential foraging habitat that is abundant in the region for the species. Therefore, the proposed project would not have a substantial adverse effect on the western red bat.

Townsend's big-eared bat is not federally listed; however, the species is a candidate for State listing. Townsend's big-eared bat roosts primarily in caves and cave-like roosting habitat, including abandoned mines. The species' habit of roosting on open surfaces while resembling a pendant makes the bat readily detectable, and the species can be most readily observed when present (commonly in low numbers) in caves and abandoned mines throughout the bat's range. Townsend's big-eared bat has also been reported to use buildings, bridges, rock crevices, and hollow trees as roost sites. The bat forages in edge habitats along streams and adjacent to and within a variety of wooded habitats.

Townsend's big-eared bat could forage within the site, and the tree hollows and remnant buildings of the site provide potentially suitable roosting habitat for Townsend's big-eared bat. While evidence of bats (i.e., individuals, guano and/or staining) was not observed during reconnaissance surveys of the site, a formal bat survey was not conducted. Townsend's big-eared bat may use the trees and buildings of the site for roosting habitat. The removal of trees bearing suitable cavities and the demolition of the onsite buildings could result in mortality to Townsend's big-eared bat. The mortality of Townsend's big-eared bat, which violates state law, would constitute a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.3-4(a) *A detailed bat survey shall be conducted by a qualified bat biologist within 30 days of any tree removal or partial or complete building demolition to determine if bats are roosting or breeding in the onsite trees or buildings prior to the work. The biologist shall look for individuals, guano, staining, and vocalization by direct observation. Ideally, the survey should be conducted during the times of year when bats are active, from March 1 to April 15 and from August 15 to October 15; however, the survey could be conducted at any point during the year. If bats are detected between October 15 and March 1, demolition shall be delayed until after March 1 or until a qualified biologist determines that bats are absent. An initial survey could be conducted to provide early warning if bats are present, but a follow-up survey will be necessary within 30 days of demolition. If bats are not observed to be roosting or breeding in the structures, then further action shall not be required, and tree removal and/or demolition can proceed.*

If a non-breeding bat colony is found in the trees or structures to be demolished, the individuals shall be humanely evicted using accepted methods. For example, humane eviction can include opening up the tree canopy or partial dismantlement of the buildings prior to demolition. This eviction shall be conducted under the direction and supervision of a qualified biologist to ensure that no harm or "take" would occur to any bats as a result of tree removal or demolition activities. Although not likely, if a maternity colony is detected, then a minimum 25-foot construction-free buffer shall be established around the structure and remain in place until it has been determined by the bat biologist that the nursery is no longer active.

4.3-4(b) *If protected bat species are identified during the bat survey, then prior to commencement of tree removal or demolition activities, a qualified bat biologist shall conduct an environmental awareness training for all construction personnel. The training shall include information on the identification of protected bat species, including Townsend's big-eared bat, as well as their habitat, other sensitive natural communities, required practices before the start of tree removal or demolition activities, general measures that are being implemented to conserve the species as they relate to the proposed project, penalties for non-compliance, and boundaries of the development footprint and of the permitted disturbance zones. Supporting materials containing training information shall be prepared and distributed to personnel during the training. Upon completion of training, all personnel shall sign a form stating that they have attended the training and understand all of the measures. Proof of training completion shall be kept on-file with the project applicant, as well as submitted to the Butte County Department of Development Services.*

4.3-5 Impacts to migratory nesting birds and raptors either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The project site provides potentially suitable nesting habitat for numerous bird species that occur regionally. Trees, buildings, and other structures on-site and immediately adjacent to the site may support nesting birds and raptors. Gravel areas of the site and other ground areas provide potential nesting habitat for ground-nesting species such as the killdeer and California quail. Buildout of the project during the nesting period for migratory birds (i.e., typically between February 1 to August 31), including initial site grading, soil excavation, and/or tree and vegetation pruning or removal, poses a risk to any nesting birds within or near the site in the form of nest abandonment and death of any eggs or young that may be present within the nest. Therefore, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.3-5(a) *If initial site disturbance activities, including tree removal, grading, and mobilization of project equipment and materials, would occur during the breeding season (February 1 to August 31), a qualified biologist shall conduct pre-construction surveys for nesting migratory birds onsite and within 250 feet of the construction footprint, including laydown areas and ingress and egress, where accessible. The survey shall occur no later than 14 days of the onset of ground disturbances if such disturbances are to commence during the nesting bird season. If site impacts will be phased such that impacts to some areas will occur more than 14 days after impacts to other areas, additional surveys shall be conducted so that nesting bird surveys correspond with the timing of impacts such that all areas of the site are surveyed within 14 days of the direct implementation of impacts within those areas. Results of the survey shall be submitted to the Butte County Department of Development Services. If nesting migratory birds are not found, further mitigation is not required.*

If a nesting migratory bird is detected during the surveys, an appropriate construction-free buffer shall be established. If active raptor nests are found, construction activities shall not take place within 500 feet of the nest until the young have fledged. If active songbird nests are found, a 100-foot non-disturbance buffer shall be established. The buffer shall be monitored periodically by the biologist to ensure compliance, and the buffer shall not be removed until the biologist has confirmed that the nest(s) is complete and young of the nest have fledged.

4.3-5(b) *If nesting migratory birds are identified during the pre-construction surveys, then prior to commencement of construction activities, a*

qualified biologist shall conduct an environmental awareness training for all construction personnel. The training shall include information on the identification of nesting migratory birds, as well as their habitat, other sensitive natural communities, required practices before the start of construction activities, general measures that are being implemented to conserve the species as they relate to the proposed project, penalties for non-compliance, and boundaries of the development footprint and of the permitted disturbance zones. Supporting materials containing training information shall be prepared and distributed to personnel during the training. Upon completion of training, all personnel shall sign a form stating that they have attended the training and understand all of the measures. Proof of training completion shall be kept on-file with the project applicant, as well as submitted to the Butte County Department of Development Services.

4.3-5(c) *When it has been determined that the size of the non-disturbance buffer requires the project biologist to monitor the nest, that monitoring shall include observations about the bird's behaviors relative to the construction activities. Should construction activities cause a nesting bird to do any of the following in a way that would be considered a result of construction activities, then the exclusionary buffer shall be increased such that activities are far enough from the nest to stop the following agitated behavior(s): vocalize, make defensive flights at intruders, get up from a brooding position, or fly off the nest. The revised non-disturbance buffer shall remain in place until the chicks have fledged or as otherwise determined by a qualified biologist in consultation with the County.*

Construction activities may only resume within the non-disturbance buffer after a follow-up survey by the project biologist has been conducted and a report has been prepared indicating that the nest (or nests) is no longer active, and that new nests have not been identified.

4.3-6 Impacts to ringtail either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The ringtail occurs in riparian habitats, forested habitats, and mature woodlands, within rocky areas, or forests. Ringtail utilize caves, tree hollows, mine shafts, and abandoned burrows of other animals as denning habitat. Ringtail could utilize tree hollows, suitable crevices in rocky outcrops, or remnant buildings of the site for denning habitat. Between early spring through mid-summer, ringtail dens may function as natal dens wherein recently born ringtail pups are cared for by parents until they are old enough to forage outside of the den with their mother. While it is unlikely for a ringtail to den within the site, if one were to be denning during tree removal or partial building demolition, the individual(s) could be killed, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.3-6(a) *A ringtail survey shall be conducted by a qualified biologist within 30 days prior to any tree removal or partial or complete building demolition to determine if ringtails are denning and/or breeding in the onsite trees or buildings prior to the start of construction work. The survey can be paired with the bat survey, given the overlap in suitable habitat types (Mitigation Measure 4.3-3). The biologist shall look for individuals, scat, and prints, and they may utilize tools such as camera scopes to investigate suitable crevices such as tree hollows. If ringtails are detected during the times of year when ringtails may be breeding, from March 15 through July 31, and a natal den (i.e., an active breeding den) is detected, tree removal and demolition must be delayed within a 300-foot disturbance-free buffer of the natal den until after a qualified biologist determines that ringtails are absent. The buffer shall be delineated with bright and secure fencing such as chain-link and/or snow fencing.*

If a non-breeding ringtail den is found in the trees or structures to be demolished, construction or demolition actions shall not commence until the ringtail has self-relocated. Self-relocation when a natal den is not present can be encouraged by utilizing methods that are considered safe for ringtails such as implementing work up to 50 feet from the den. If no ringtails are observed to be denning in these trees or structures, further action shall not be required, and tree removal and/or demolition can proceed.

4.3-6(b) *If ringtails are identified during the ringtail and/or bat survey, then prior to commencement of any tree removal or partial or complete building demolition, a qualified bat biologist shall conduct an environmental awareness training for all construction personnel. The training shall include information on the identification of ringtail, as well as their habitat, other sensitive natural communities, required practices before the start of any tree removal or partial or complete building demolition, general measures that are being implemented to conserve the species as they relate to the proposed project, penalties for non-compliance, and boundaries of the development footprint and of the permitted disturbance zones. Supporting materials containing training information shall be prepared and distributed to personnel during the training. Upon completion of training, all personnel shall sign a form stating that they have attended the training and understand all of the measures. Proof of training completion shall be kept on-file with the project applicant, as well as submitted to the Butte County Department of Development Services.*

4.3-7 Have a substantial adverse effect on riparian habitat or other sensitive natural community, or State or Federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As shown in Figure 4.3-1, the project site contains an approximately 0.19-acre ephemeral channel. The ephemeral channel is presumed to be a water of the U.S. and water of the State subject to regulation by the USACE, RWQCB, and CDFW. Although most of the channel is proposed to be avoided, permanent impacts to the channel are anticipated to occur from widening of, and improvements to, the existing access driveway from Skyway, and conversion of the golf course paths to a multi-use trail. Such activities are likely to result in some fill of the channel resulting from replacement of existing culverts, recontouring of the channel banks, or realignment of the channel near the proposed trail. As such, the proposed project has the potential to result in permanent and temporary impacts to the ephemeral channel, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.3-7 *Prior to the initiation of ground-disturbing activities, the project applicant shall submit a formal wetland delineation to the USACE for verification to determine the extent of all hydrological features, their jurisdictional status, and the extent of any impacts of the currently proposed project. A summary of the wetland delineation shall be submitted to the Butte County Department of Development Services.*

If jurisdictional waters are not identified on the site, further mitigation is not required. However, if the project is unable to avoid features deemed to be under the jurisdiction of either the USACE or RWQCB, the proposed project shall comply with all State and federal laws and regulations related to disturbance of such jurisdictional waters, such as obtaining a Section 404 Clean Water Act permit from the USACE, Section 401 water quality certification from the RWQCB, and/or Section 1602 Streambed Alteration Agreement from the CDFW prior to initiating any construction within the identified area of jurisdictional water. The project applicant shall comply with all conditions set forth by agency permit conditions, which could include purchase of suitable credits at an approved wetland mitigation bank or creation/enhancement of suitable aquatic features on or off-site. Compensation measures should include habitat replacement at a minimum of a 1:1 replacement-to-loss ratio, as well as reseeding of vegetation in temporarily disturbed areas. It is expected that all compensation measures can be accommodated at one or more locations along the channel or elsewhere onsite in areas that are proposed for preservation as open space. If these areas cannot

fully accommodate the compensation measures, then offsite restoration would be necessary. Compensation measures should either result in the creation of new habitat as replacement for habitat lost or enhance the quality of existing habitat for native plants and wildlife. A fully executed copy of the permit(s) shall be provided to the Butte County Department of Development Services.

4.3-8 Interfere substantially with the movement of any 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. Based on the analysis below, the impact is *less than significant*.

The project site consists of a former golf course facility, gravel clearings with oak woodlands and grassland areas, and an ephemeral channel. The project site is located within an area that is predominantly undeveloped and adjacent to the busy four-lane roadway of Skyway, which acts as a soft barrier for some wildlife species. Surrounding land uses are primarily open space lands. Other than Skyway, movement of native wildlife is generally unrestricted in the project vicinity. In addition, significant areas exist near the site that wildlife are likely to use for movement pathways between desirable habitat areas. Given the reduced habitat values offered by the developed and cleared areas of the site, the surrounding open space areas of the site are likely to be more attractive for wildlife. Therefore, although development of the project site may shift the way wildlife move through the general project vicinity due to the presence of new structures, residential night lighting, and human activity, such development is not expected to interfere with wildlife movements in a detrimental way due to the wide margin of open space surrounding the site.

Specifically related to the project site being located within the western edge of the winter deer herd migration area, as discussed above, due to the elevations on the site, the proximity of Skyway, a busy highway, and the disturbed nature of the site, deer use of the site is marginal at best. Only the on-site blue oak woodland habitat, discussed in further detail below, which comprises less than 10 percent of the site and has been adversely affected by the Camp Fire, could provide marginal habitat for deer. Because deer use of the site is expected to be low at best, as the site provides limited habitat for them to forage, development of the site would not interfere substantially with the movement of migratory deer.

The ephemeral channel is likely to be used by wildlife as a movement corridor, especially when water is present. Any night lighting that shines into the ephemeral stream portion of the site, such as street and porch lights and park lighting, may cause nocturnal animals to avoid the ephemeral stream. Such species include nesting birds or bats. Nonetheless, as discussed in Chapter 4.1, Aesthetics, of this EIR, Mitigation Measure 4.1-3 would require the preparation of a lighting plan for the proposed project. Therefore, such impacts would be reduced to a ***less-than-significant*** level.

Mitigation Measure(s)

None required.

4.3-9 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Arborist documentation of on-site tree resources from 2019 and 2020 show 843 on-site trees. Approximately 99.6 percent of the trees documented on-site are considered native to the site. Many of the trees are dead, dying, or hazardous, but of the 375 trees that are recommended for removal in the studies, 322 (approximately 38 percent) are blue oak trees (see Table 4.3-2). A project-specific arborist study of the site has not been conducted to determine which of the on-site trees would be impacted by project buildout. As such, the recommendations are based on tree health, and do not take into account the site plan of the proposed project.

Given the disturbed nature of the project site and the associated impacts upon the on-site trees, as well as the intense loss of trees, including blue oaks and California foothill pines, that has occurred regionally and within the Camp Fire footprint, and the increase in blue oak mortality across California, the value of the remaining living trees is significant. Both the on-site trees, and those that survived the fire in the vicinity of the site, constitute a diminished source population of native trees that can provide a critical seed source for tree recolonization and a food source for native wildlife; especially the blue oaks. Such trees constitute the remaining structural habitat to support roosting, nesting, foraging, and shade cover for local species in the project vicinity.

In addition, the trees both on-site and in the project vicinity represent a population that is likely to contain genetic variants that are uniquely adapted to soil and weather conditions in the part of the southern Cascade Mountain foothills where the project site is located.

Table 4.3-2
Tree Preservation Inventory

Tree Species	Trees Inventoried	Recommended for Preservation	Recommended for Removal	Trees Which Could be Preserved
Blue Oak	748	239	322	187
Interior Live Oak	7	4	2	1
California Foothill Pine	74	20	42	12
Fremont Cottonwood	8	1	6	1
Willow	3	-	3	-
Fig	1	1	-	-
Italian Stone Pine	2	1	-	1
Totals:	**843**	**266**	**375**	**202**

Source: California Tree and Landscape Consulting, Inc. **Arborist Fire Evaluation and Tree Preservation Plan, Addendum to Add Additional Trees and Recalculate Total: Tuscan Ridge Golf Course Site*. October 31, 2022.***

Based on a course comparison of the arborist survey documentation and the project plans, it is estimated that approximately 20 to 40 percent of the live trees (approximately 150 trees) on the site are likely to be subject to removal to develop the proposed project. Even at the low end of the estimate range, removal at such a level is considered to be a significant impact to native trees and oak woodlands due to the unique conditions of these tree resources described above. Therefore, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.3-9(a) *Avoidance Measures: Prior to approval of Improvement Plans, to the extent feasible and to the satisfaction of the Butte County Department of Development Services, the project shall be designed to reduce the number of living native trees that are removed. All trees that may potentially be retained and that occur near the project footprint shall be mapped and incorporated into project plans to ensure that trenching and grading do not impact the trees. The location of each tree and their corresponding critical root zones (CRZ), approximately 1.25 times the dripline area of the tree, shall be included in project plans.*

4.3-9(b) *Minimization Measures: Once the grading and demolition plans are finalized, and prior to grading and tree removal, a certified arborist shall review the final grading plan and prepare a Tree Resources Protection Plan for review and approval by the Butte County Department of Development Services that identifies which trees require protection measures during project buildout. The plan shall incorporate tree protection measures outlined below to protect trees that occur near the project footprint, including any areas used for material storage, laydown, parking, ingress/egress, or soil borrowing, from development impacts.*

- *Each tree to be retained that is near the project development footprint shall be enclosed by a "tree protection zone," to be established prior to site grading and retained for the duration of construction. Where possible, tree protection zones shall be designed to encompass an area approximately 1.5 times the dripline area of the trees. The zones shall be marked with sturdy and highly visible fencing material. Off-limits signs shall be posted on the fences that state that equipment is not to enter the tree protection zone. Signs will not be posted on the trunk of any trees. Fencing shall be maintained and not removed during the project development period. The type of fencing to be utilized will be at the direction of the consulting arborist.*
- *Stockpiling of materials, soils, and equipment storage shall not be permitted within the fenced tree protection zone.*
- *Any activities that must take place within the dripline of retained trees shall be done by hand or with light equipment that does*

not cause soil compaction. If roots will be impacted, a certified arborist shall be present to provide guidance on the action.

- *Any limb or root pruning to be conducted on retained trees shall be approved and supervised by the consulting arborist and shall follow best management practices developed by the International Society of Arboriculture. If feasible, any pruning work within the vicinity of the trees shall be scheduled for fall or winter, when the trees are dormant or semi-dormant.*
- *Should any roots need to be severed during construction, any exposed or cut roots shall be covered with burlap, soil, or mulch as soon as possible until the native soil can be backfilled. Clean and sharp tools (chainsaw or axe) shall be used for pruning roots. Equipment such as excavators shall not be used for root pruning, as the damage from such equipment can be extensive.*
- *Supplemental irrigation shall be applied to retained trees as determined by the consulting arborist.*
- *If any of the retained trees should be damaged during the construction phase, they shall be evaluated at the earliest possible time by the consulting arborist so that appropriate measures can be taken.*
- *The project applicant shall provide a copy of the final Tree Resources Protection Plan to all contractors and project managers, including the architect, civil engineer, and landscape designer or architect, as well as the Butte County Department of Development Services.*

4.3-9(c) *Compensation Measures: To mitigate for the trees that are removed as part of project buildout, replacement trees shall be accommodated within the open space of the site. Replacement trees shall be installed, maintained, and monitored semi-annually for a period of 7-years (e.g., Years 1-3, 5, and 7). A Habitat Restoration Plan shall be prepared by a qualified restoration ecologist for review and approval by the Butte County Department of Development Services to guide the tree planting effort. The Habitat Restoration Plan shall include a summary of impacts and mitigations, and it should define a planting strategy, a maintenance approach, monitoring methods, and adaptive management measures to overcome potential interim setbacks and failures (e.g., from vandalism, herbivory, or general dieback). The plan shall include success criteria that must be met for the restoration/tree planting effort to be considered completely implemented. Success criteria shall include, at a minimum, survival of a minimum of 60% of the required number of replacement trees by Year 5, and 50% of the required number of replacement trees by Year 7. The required replacement trees are determined by an accounting of the number of trees that are removed from the site and their corresponding replacement ratios. All native trees with a diameter at breast height (DBH) 5 inches or greater shall be replaced at a 3:1 ratio. Trees shall be sourced from seed stock within the planting site's watershed (preferred) or County to the extent practicable. If container grown trees that were grown from seed sources*

located in the southern Cascade Mountain foothills are available, they can be used in place of contract grown trees.

For the Tuscan Ridge Project, the replacement plantings constitute a blue oak woodland habitat restoration/enhancement. If onsite areas of the site cannot accommodate the required numbers of trees, an offsite location shall be identified to accommodate the remainder of the blue oak woodland habitat restoration. This means, the offsite location shall be appropriate for restoration and/or enhancement of blue oak woodlands.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

For further detail related to the cumulative setting of the proposed project, refer to Chapter 6, Statutorily Required Sections of this EIR.

4.3-10 Cumulative loss of habitat for special-status species. Based on the analysis below and with implementation of mitigation, the project's incremental contribution to the significant cumulative impact is *less than cumulatively considerable*.

Implementation of the proposed project would result in a significant cumulative impact related to the loss of special-status species habitat. As discussed above, the project site contains developed/gravel clearings, a wastewater disposal basin, blue oak woodland, annual grassland, and an ephemeral channel. Implementation of the proposed project would result in impacts to the foregoing habitat areas. The habitats listed represent potential habitat for various special-status species listed in Table 4.3-1.

This chapter provides a wide range of mitigation to minimize potential adverse effects to habitat for special-status species. For instance, Mitigation Measure 4.3-7 would require that an onsite habitat mitigation plan be developed to compensate for impacts to the ephemeral channel. Thus, any jurisdictional waters impacted within the project site must be compensated through the protection of existing jurisdictional waters, avoidance of impacts upon jurisdictional waters, or creation of new similar habitat elsewhere. Similarly, Mitigation Measures 4.3-8(a) through 4.3-8(c) require the avoidance of impacts to on-site protected tree species, to the maximum extent feasible, as well as the minimization of impacts to special-status species, and the replacement of any such species that are removed due to development of the proposed project.

In addition to mitigation measures requiring the compensation of lost habitat, this EIR contains mitigation measures requiring that pre-construction surveys be conducted to

reduce the potential for implementation of the proposed project to result in loss of individual special-status species. Such mitigation measures require that should pre-construction surveys identify special-status species within areas to be impacted by the proposed project, avoidance measures must be implemented to prevent the loss of identified special-status species.

The 2030 Butte County General Plan EIR determined that given compliance with the goals, policies, and actions of the 2030 Butte County General Plan, as well as compliance with the applicable federal and State regulations, impacts related to biological resources would be less-than-significant. However, the 2030 Butte County General Plan EIR determined that development allowed by the 2030 General Plan would contribute to the on-going loss of undeveloped lands that support sensitive biological resources in Butte County. The cumulative loss of habitat and sensitive natural communities in Butte County could potentially contribute to a general decline for the region, and might result in the loss or displacement of wildlife that would have to compete for suitable habitats with existing adjacent populations. As such, even with the implementation of mitigation, the 2030 Butte County General Plan EIR determined that a significant and unavoidable cumulative impact would occur.

As further discussed in Chapter 6 of this EIR, CEQA Guidelines, Section 15064, Subdivision (h)(5) states, "[…]the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." Therefore, even where cumulative impacts are significant, any level of incremental contribution is not necessarily deemed cumulatively considerable.

In addition, the courts have explicitly rejected the notion that a finding of significance is required simply because a proposed project would result in a net loss of habitat. "[M]itigation need not account for every square foot of impacted habitat to be adequate. What matters is that the unmitigated impact is no longer significant." (*Save Panoche Valley v. San Benito County* (2013) 217 Cal.App.4th 503, 528, quoting *Banning Ranch Conservancy v. City of Newport Beach* (2012) 211 Cal.App.4th 1209, 1233.)

The above discussion provides substantial evidence that, while the combined effects on biological resources resulting from approved/planned development would be considered significant, the proposed project's incremental contribution to the significant cumulative effect could be reduced with implementation of the mitigation measures required in this EIR. However, without implementation of the required mitigation measures, the proposed project's incremental contribution to the significant cumulative effect could be considered ***cumulatively considerable*** and ***significant***.

Mitigation Measure(s)

Implementation of the following mitigation measures is sufficient to reduce all project-specific impacts to a less-than-significant level. Thus, with implementation of the following mitigation measures, the project's incremental contribution to the significant cumulative impact would be reduced to a *less than cumulatively considerable* level.

4.3-10 *Implement Mitigation Measures 4.3-1(a) through 4.3-1(c), 4.3-4(a) and 4.3-4(b), 4.3-5(a) through 4.3-5(c), 4.3-6(a) and 4.3-6(b), 4.3-7, and 4.3-9(a) through 4.3-9(c).*

4.4. Cultural and Tribal Cultural Resources

4.4. CULTURAL AND TRIBAL CULTURAL RESOURCES

4.4.1 INTRODUCTION

The Cultural and Tribal Cultural Resources chapter of the EIR addresses known historic and prehistoric cultural resources, including tribal cultural resources, in the vicinity of the project area. Cultural resources can be categorized into prehistoric or historic resources. Prehistoric resources are those sites and artifacts of or related to a time period, generally prior to contact with people of European descent. Historic resources include structures, features, artifacts, and sites that date from Euroamerican settlement of the region. The chapter summarizes the existing setting with respect to cultural and tribal cultural resources, identifies thresholds of significance, evaluates project impacts to such resources, and sets forth mitigation measures as necessary. Information presented in the chapter is primarily drawn from the Archaeological Inventory Survey prepared by Genesis Society,[1] as well as the 2030 Butte County General Plan,[2] 2030 Butte County General Plan EIR,[3] and 2030 Butte County General Plan Supplemental EIR (SEIR).[4]

4.4.2 EXISTING ENVIRONMENTAL SETTING

The project site consists of approximately 163.12 acres of land located south of Skyway, approximately 5.5 miles east of the intersection of State Route (SR) 99 and Skyway, within Butte County, California. The following sections include further discussion of the project area's existing setting related to cultural and tribal cultural resources.

Environmental Context

The project area is located at the interface of the Northern Sacramento Valley with the lower reaches of the northern Sierra Nevada, near the southern margins of volcanic flows emanating from the Cascade Range. Volcanic deposits emanating from the latter have capped some lands around Chico, forming numerous buttes and ridges descending to the valley floor. Tertiary placer deposits are also exposed throughout the area east and southeast of Chico, and were discovered early in 1849 resulting in a substantial influx of Euro-Americans seeking gold, followed almost immediately by a series of landscape modifications as miners churned and sifted the creek and river bottoms in the County.

Prior to disturbance associated with mining, vegetation was dominated by a Foothill-Woodland Community, with small meadows and meadow margins containing both valley and blue oaks, and stream margins dominated by willow, native sycamore, dense blackberry thickets, and a variety of brush species.

Well-watered and containing an abundance of both plant and animal resources, the Chico area was intensively utilized and densely populated during prehistoric times. Small overhang shelters and caves have formed under the hard lava cap at many locations east of Chico, and most of

1 Genesis Society. *Archaeological Inventory Survey.* June 4, 2017.
2 Butte County. *Butte County General Plan 2030*. November 6, 2012.
3 Butte County. *Butte County General Plan 2030 Draft EIR*. April 8, 2010.
4 Butte County. *Butte County GPA & Zoning Ordinance Update Draft Supplemental EIR*. May 31, 2012.

them were utilized for at least temporary habitation. Elsewhere, benches and flats flanking the Big Chico Creek, Little Chico Creek, Butte Creek, and tributary streams were utilized for open-air camps and villages.

Cultural Context

The following sections include discussions of the project area's prehistory, ethnography, and history.

Prehistory

The earliest residents in the Great Central Valley are represented by the Fluted Point and Western Pluvial Lakes Traditions, which date from approximately 11,500 to 7,500 years ago. Within portions of the Central Valley, fluted projectile points have been found at Tracy Lake and around the margins of Buena Vista Lake in Kern County. Similar materials have been found to the north, at Samwell Cave near Shasta Lake and near McCloud and Big Springs in Siskiyou County. The early peoples of the region are thought to have subsisted using a combination of generalized hunting and lacustrine exploitation.

The population of the early cultures underwent a substantial increase in density after approximately 7,500 to 6,000 years ago. One of the most securely dated of the post-6,500-year-old assemblages is from the Squaw Creek Site located north of Redding: a charcoal-based C-14 date suggests extensive Native American presence by 6,500 years ago, or 4,500 B.C. Most of the artifactual material dating to this time period has counterparts further south, around Borax (Clear) Lake and the Farmington Area east of Stockton. Important artifact types from the time period include large wide-stemmed projectile points and manos and metates.

In the Northern Sacramento Valley, aboriginal populations continued to expand between 6,500 and 4,500 years ago. By approximately 2,000 years ago, Macro-Penutian-speaking peoples (including the Maidu) are believed to have arrived in the area, bringing with them an economy, which relied on extensive use of bulbs and other plant foods, animal and fishing products more intensively processed with mortars and pestles, and perhaps the bow and arrow and associated small stemmed- and corner-notched projectile points. Arriving ultimately from southern Oregon and the Columbia and Modoc Plateau region and proceeding down the major drainage systems (including the Feather, Yuba and American rivers), the Penutian-speaking Maidu eventually displaced Hokan populations as far west as the Sacramento Valley floor and the margins of the Sacramento River and, at the time of contact with Euroamerican populations (circa. A.D. 1850), were still expanding into areas previously occupied by the earlier Hokan-speaking peoples (including the Yana, who by this date had migrated to the north of Chico). Around Chico, the so-called Shasta (archaeological) Complex represents the material culture record of the local Penutian speakers.

Ethnographic Overview

The Konkow, or Northeast Maidu, were resident in the Chico area at the time of Euroamerican contact in the 1840s. The Konkow, whose language was a branch of the Penutian family, occupied a portion of the Sacramento Valley floor along both sides of the Sacramento River. In addition, the group occupied the foothills east of Chico and Oroville near the confluence of the south, middle, north, and west branches of the Feather River, as well as the lower drainages of Big and Little Chico Creeks and Butte Creek. On the basis of linguistic differences and geographical distribution, the Maidu have been divided into three primary groups: the Southern Maidu, or

Nisenan; the Northeastern Maidu, or Mountain Maidu; and the Northwestern Maidu, or Konkow. The Konkow laid claim to the Chico area around the time of General John Bidwell's arrival.

The basic social unit for the Maidu was the nuclear family. Although the village may also be considered a social, political, and economic unit. Villages were usually located on flats adjoining streams, and on ridges high above rivers and creeks and were most intensively occupied during the winter months. Villages typically consisted of a scattering of conical bark dwellings, numbering from four or five to several dozen in larger villages, each house containing a single family of from three to seven people. Larger villages, with from 12 to 15 or more houses, might also contain a *kumi,* a semi-subterranean earth-covered lodge. The village containing the largest such structures acted as the ceremonial assembly center. Between three and five villages comprised a "village community" which defended, controlled, and utilized a known territory. One such "village" was the Mechoopda, some of whose descendants still live in Chico today.

Resources utilized by the Maidu in the Chico area were both diverse and prolific. A variety of plant and animal species was readily available for collection, processing, and consumption, with several different food types complimenting one another during various seasons. During the spring, a variety of herbs, tubers, roots, and grass seeds were collected from environments within close proximity to the winter village. During the summer months, individuals and groups would venture into the higher elevations in order to procure various plants and animals. Small, medium, and large mammals were actively hunted within the mountainous regions east of Chico, with only the coyote, dog, wolf, and bear avoided. Several types of insects were also collected during the summer, including yellow jacket larvae, grasshoppers, locusts, and crickets; all of which could be eaten dry, or roasted, the bulk of which were often stored for the winter months.

The transition between summer and autumn brought an abundance of food resources. Late summer fish runs were actively utilized, with salmon providing a large portion of the spoils. In addition to salmon, suckers, eels, a variety of small, slow fish were actively hunted, especially during the Late Prehistoric periods. Fresh water mussels were also collected by the Maidu year-round, but were intensively collected during periods of low water volume (late summer/early autumn). Several types of nut seeds were collected during the early autumn months as well, with acorns provided by various oak species representing the greatest volume of nut meat harvested. While several varieties of acorn producing oaks exist, the Maidu preferred the black oak, golden oak, and the interior live oak. Other acorn producing varieties include the valley oak, blue oak, and the tan oak. The acorns were collected and then crushed in mortars to form acorn flour. Tannie acid had to be leached from the flour with warm water before consumption. A bland bread was baked from the flour, providing a carbohydrate staple.

Technological adaptations by the Maidu allowed for a quasi-sedentary lifestyle, especially within the Chico area, where food resources and surface water sources were abundant. Storage was crucial to sedentism, with storage devices, structures, and methods being numerous.

During the course of seasonal rounds and in conjunction with specialized resource utilization, the Maidu created a wide range of archaeological site "types" in the Chico area. While only fragmentary evidence of the associated material culture remains at many of the sites (due in large part to perishability but also to the impacts to archaeological sites resulting from later [historic] land uses), the range of such site types for this general area of Chico includes:

- Surface scatters of lithic artifacts and debitage, often but not always associated with dark brown to black "midden" deposits;

- Surface scatters of lithic artifacts and debitage without associated middens;
- Bedrock milling stations, including both mortar holes and metate slicks;
- Petroglyphs, especially "pitted" or "cupped" rock outcrops;
- Trails; and
- Isolated artifacts and flakes.

All such site/feature types are not expected to be present within the relatively small project area; rather, the site/feature types represent the most likely types to be encountered.

Historic Context

Early Spanish expeditions arrived in the Great Central Valley of California from Bay Area missions as early as 1804. By the mid-1820s, hundreds of fur trappers were annually traversing the Valley on behalf of the Hudson's Bay Company, some with devastating consequences for the local Maidu and other valley populations. By the late 1830s and early 1840s, several small permanent Euro-American settlements had emerged in the Valley and adjacent foothill lands, including ranchos in what are now Shasta, Tehama, and Butte counties. Chico's founder, General John Bidwell, eventually acquired one of the ranchos.

Bidwell arrived in California in 1841 as a member of the first band of Americans to cross the Sierra Nevada for the purpose of settlement. In the spring of 1843, a party of settlers headed north for Oregon from Sutter's Fort, which included John Bidwell, Peter Lassen, and James Bruheim. On the trip, Bidwell was impressed by the beauty of the region around Chico, and on his return from Oregon, Bidwell mapped the rivers and streams and the lay of the land at Chico. Bidwell's map later formed the basis of the grants made by Micheltorena, the Mexican Governor of California.

The Rancho Arroyo Chico Grant of November 7, 1844 had been made by Micheltorena on behalf of the Mexican Government to William Dickey. Dickey settled on the north side of Big Chico Creek and later sold the ranch to John Bidwell. Bidwell managed the land grant of approximately 22,200 acres, including lands now part of Bidwell Park, for many years from his home in Arroyo del Chico. As early as 1847, Bidwell maintained experimental orchards and fields alongside extensive farming operations, some of which bordered Lindo Channel and other natural surface water sources in the area, including lands along Chico Creek.

Following the 1849 California Gold Rush, one of the important objectives of 19th Century entrepreneurs was linking the burgeoning San Francisco and Sacramento Valley population and industry with the gold- and timber-producing counties to the north and east. To this end, voters approved bonds in 1862 to construct the California Northern Railroad, linking Marysville with Oroville. Later in the decade the line was acquired and expanded by Western Pacific, with the two systems merging with one another near Palermo, south of Oroville.

The merger of the California Northern Railroad and the Western Pacific was soon followed by construction of the Oroville Depot and the substantial maintenance yard at Oroville, setting the stage for additional rail links to Oroville, one of which ran through Chico.

The Chico Electric Railroad, and its eventual acquisition and expansion to Oroville by the Northern Electric Railroad Company, had its beginnings in 1900 with arrival of the Diamond Match Company to Chico. One consequence of the emergence of Diamond was a substantial expansion of the Chico urban area. In fact, Chico's population more than doubled between 1900 and 1910

as a direct result of Diamond's massive new mill at "Barber" (south Chico), as well as other operations east of Chico at Paradise, Sterling, and Sterling City.

The Butte County Railroad extended approximately 32 miles, connecting Chico with Sterling City. The railroad operated from 1903 to 1915 and then became the Southern Pacific's Sterling City Branch, before terminating operations in the 1970s.

The railroad route began at Barber (situated approximately one mile south of Chico at the time), across Butte Creek, through Paradise and Magalia, and ultimately ended at Sterling City. The last regular service by the Southern Pacific Railroad, over the line, was in 1974. The tracks, ties, and other hardware were removed in 1979, leaving only the grade in place. In Paradise, the railroad grade was ultimately converted into use as a bicycle/pedestrian trail. The railroad forms a portion of the project site's southern/southeastern boundary.

Known Historical Resources

The following sections include discussions of potential prehistoric and historic resources located at the project site.

Prehistoric Resources

Two prehistoric sites (P-04-1478 and P-04-1479) have been documented within the project site, both of which were recorded in 1999. P-04-1978 is described as two mortar cups situated on a single bedrock outcrop, situated approximately 90 feet south of Skyway. P-04-1479 is described as "several bedrock milling areas and what appears to be a small midden deposit located atop Coon Ridge in an area which has been used as an informal shooting range for years."

During the pedestrian survey conducted by Genesis Society, careful examination of the areas described above failed to identify P-04-1478 or P-04-1479, or any other prehistoric cultural material. Because the two prehistoric sites are described as being located within areas of the golf course that had previously been subjected to high levels of disturbance, the Archaeological Resources Inventory concludes that the absence of the two resources is best explained by the likelihood that both resources were destroyed during construction of the golf course.

Because both sites were likely destroyed as a result of golf course construction, neither resource represents a significant historical resource or unique archaeological resource, and neither warrant any further consideration or treatment.

The pedestrian survey of the site conducted as part of the Archeological Resources Inventory resulted in the identification of three isolated bedrock mortar features, which were recorded on DPR 523 Forms and assigned the temporary names of Tuscan 1 through 3. Tuscan 1, Tuscan 2, and Tuscan 3 are described in further detail below:

- Tuscan 1 consists of a prehistoric locale, which includes a single bedrock mortar cup on a single bedrock boulder. The boulder measures approximately one meter in diameter, and the single cup measures approximately 15 centimeters (cm) by 10 cm by 7 cm;
- Tuscan 2 consists of a prehistoric locale which includes five bedrock mortar cups situated on a single bedrock boulder. The boulder measures approximately 1.5 meters in diameter, and the cups average approximately 12 cm to 15 cm in diameter and between 3 cm and 9 cm in depth; and

- Tuscan 3 consists of a prehistoric locale which includes three mortar cups on a single bedrock boulder. The boulder measures approximately 1.75 meters in length, one meter in width, and approximately one meter in height. The three mortar cups measure approximately 12 cm to 15 cm in diameter and 5 cm to 10 cm in depth.

Other cultural materials, such as midden, lithics, bone, petroglyphs, or formed tools, were not observed within proximity of the three boulders, each of which appear to have been moved to the present locations, likely during golf course construction. The three resources lack additional associated cultural material, and the integrity of the resources appears to have been compromised. Consequently, the resources would not meet the criteria to be considered significant historical resources or unique archaeological resources, and do not warrant further consideration or treatment.

Historic-era Resources

Examination of the Nationwide Environmental Title Research (NETR) Aerial Photos (dated 1941, 1947, 1969, 1998, 2005, 2009, 2010, and 2012) and United States Geological Survey (USGS) maps (dated 1944, 1952, 1958, 1963, 1966, 1969, mad 1970) indicated that, with the exception of the Butte County Railroad (P-04-1446), additional historic structures or features are not and have not been located within the project site. The P-04-1446 site was determined not to be eligible for consideration as a significant historical resource due to wholesale disturbance (i.e., removal of rails, ties, and other features) causing substantial loss of integrity. Thus, the P-04-1446 site does not represent a significant historical resource and does not warrant further consideration or treatment.

Tribal Cultural Resources

Based on a search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF), as described in further detail in the Method of Analysis section below, recorded Native American sacred sites or traditional cultural properties are not known to exist within the project site.

Butte County received a request on September 25, 2018 from the Mechoopda Indian Tribe of Chico Rancheria for consultation regarding development within the tribe's traditionally and culturally affiliated geographic area, which includes the project site. Pursuant to Assembly Bill (AB) 52, notification of the pending environmental review of the proposed project was distributed to the Mechoopda Indian Tribe of Chico Rancheria on January 26, 2022; further requests for consultation were not received. In addition, pursuant to Senate Bill (SB) 18, project notification letters were distributed on April 29, 2022. At that time of distribution, the proposed project included a General Plan Amendment which triggered the need for SB 18 consultation. Although the current iteration of the proposed project does not include a General Plan Amendment, because notifications were distributed, it is acknowledged that notifications were distributed to the following tribes: Berry Creek Rancheria of Maidu Indians; Estom Yumeka Maidue Tribe of the Enterprise Rancheria; Greenville Rancheria of Maidu Indians; Konkow Valley Band of Maidu; Mechoopda Indian Tribe; Mooretown Rancheria of Maidu Indians; Tsi Akim Maidu; and Nevada City Rancheria Nisenan Tribe. Further requests for consultation were not received from any of the foregoing tribes.

4.4.3 REGULATORY CONTEXT

Federal, State, and local governments have developed laws and regulations designed to protect significant cultural and tribal cultural resources that may be affected by actions that they undertake

or regulate. The following section contains a summary of basic federal, State, and local regulations governing preservation of historic, archaeological, and tribal cultural resources of national, regional, State, and local significance.

Federal Regulations

The following are the federal environmental laws and policies relevant to cultural and tribal cultural resources.

Section 106 for the National Historical Preservation Act of 1966

Federal regulations for cultural resources are governed primarily by Section 106 of the National Historical Preservation Act (NHPA) of 1966. Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementing regulations, "Protection of Historic Properties," are found in 36 Code of Federal Regulations (CFR) Part 800. The goal of the Section 106 review process is to offer a measure of protection to sites, which are determined eligible for listing on the National Register of Historic Places (NRHP). The criteria for determining NRHP eligibility are found in 36 CFR Part 60. Amendments to the Act (1986 and 1992) and subsequent revisions to the implementing regulations have, among other things, strengthened the provisions for Native American consultation and participation in the Section 106 review process. While federal agencies must follow federal regulations, most projects by private developers and landowners do not require this level of compliance. Federal regulations only come into play in the private sector if a project requires a federal permit or uses federal funding.

National Register of Historic Places

NRHP is the nation's master inventory of known historic resources. The NRHP includes listings of resources, including: buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or cultural significance at the national, State, or local level. Resources over 50 years of age may be listed on the NRHP. However, properties under 50 years of age that are of exceptional significance or are contributors to a district may also be included on the NRHP. Four criteria are used to determine if a potential resource may be considered significant and eligible for listing on the NRHP. Potentially eligible resources include resources that:

A. Are associated with events that have made a significant contribution to the broad patterns of history; or
B. Are associated with the lives of persons significant in our past; or
C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. Have yielded or may likely yield information important in prehistory or history.

A resource can be individually eligible for listing on the NRHP under any of the above four criteria, or can be listed as contributing to a group of resources that are listed on the NRHP.

A resource can be considered significant in American history, architecture, archaeology, engineering, or culture. Once a resource has been identified as significant and potentially eligible for the NRHP, the resource's historic integrity must be evaluated. Integrity is a function of seven

factors: location, design, setting, materials, workmanship, feeling, and association. The factors closely relate to the resource's significance and must be intact for NRHP eligibility.

Historical buildings, structures, and objects are usually eligible under Criteria A, B, and C based on historical research and architectural or engineering characteristics. Archaeological sites are usually eligible under Criterion D, the potential to yield information important in prehistory or history. An archaeological test program may be necessary to determine whether the site has the potential to yield important data. The lead federal agency makes the determination of eligibility based on the results of the test program and seeks concurrence from the State Historic Preservation Officer (SHPO).

Effects to NRHP-eligible resources (historic properties) are adverse if the project may alter, directly or indirectly, any of the characteristics of an historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

State Regulations

The following are the State environmental laws and policies relevant to cultural and tribal cultural resources.

California Environmental Quality Act and California Register of Historic Places

State historic preservation regulations affecting this project include the statutes and guidelines contained in CEQA (Public Resources Code [PRC] Sections 21083.2 and 21084.1 and sections 15064.5 and 15126.4 (b) of the CEQA Guidelines). CEQA requires lead agencies to consider the potential effects of a project on historic resources and unique archaeological resources. A "historic resource" includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript that is historically or archaeologically significant (PRC Section 5020.1). Under Section 15064.5 of the CEQA Guidelines, a resource is considered "historically significant" if one or more of the following California Register of Historic Resources (CRHR) criteria have been met:

1. The resource is associated with events that have made a significant contribution to the broad patterns of California history;
2. The resource is associated with the lives of important persons from our past;
3. The resource 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. The resource has yielded, or may be likely to yield, important information in prehistory or history.

In addition, the resource must retain integrity. Cultural resources determined eligible for the NRHP by a federal agency are automatically eligible for the CRHR.

CEQA requires preparation of an EIR if a proposed project would cause a "substantial adverse change" in the significance of a historical resource. A "substantial adverse change" would occur if a proposed project would result in physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (CEQA Guidelines Section 15064.5[b][1]).

In addition to historically significant resources, which can include archeological resources that meet the criteria listed above, CEQA also requires consideration of "unique archaeological resources." If a site meets the definition of a unique archaeological resource, the site must be treated in accordance with the provisions of PRC Section 21083.2. Under PRC Section 20183.2(g), an archaeological resource is considered "unique" if it:

1) Is associated with an event or person of recognized significance in California or American history or recognized scientific importance in prehistory;
2) Can provide information that is of demonstrable public interest and is useful in addressing scientifically consequential and reasonable research questions;
3) Has a special kind or particular quality such as oldest, best example, largest, or last surviving example of its kind;
4) Is at least 100 years old and possesses substantial stratigraphic integrity; or
5) Involves important research questions that can be answered only with archaeological methods.

CEQA also includes specific guidance regarding the accidental discovery of human remains. Specifically, CEQA Guidelines Section 15064.5(e) requires that if human remains are uncovered, excavation activities must be stopped and that the county coroner be contacted. If the county coroner determines that the remains are Native American, the coroner must contact the NAHC within 24 hours. The NAHC identifies the most likely descendant, and that individual or individuals can make recommendations for treatment of the human remains under the procedures set forth in Section 15064.5 of the CEQA Guidelines.

The SHPO maintains the CRHR. Properties that are listed on the NRHP are automatically listed on the CRHR, along with State Landmarks and Points of Interest. The CRHR can also include properties designated under local ordinances or identified through local historical resource surveys.

Assembly Bill 52

AB 52 adds tribal cultural resources to the categories of cultural resources in CEQA, which had formerly been limited to historic, archaeological, and paleontological resources. "Tribal cultural resources" are defined as either:

(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    (A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
    (B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
(2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Under AB 52, a project that may cause a substantial adverse change in the significance of a Tribal Cultural Resource is defined as a project that may have a significant effect on the environment. Where a project may have a significant impact on a tribal cultural resource, the lead agency's

environmental document must discuss the impact and whether feasible alternatives or mitigation measures could avoid or substantially lessen the impact. AB 52 (PRC 21080.3.1) requires lead agencies to provide notice to tribes that are traditionally and culturally affiliated with the geographic area of a proposed project if they have requested notice of projects proposed within that area. If the tribe(s) requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the tribe(s). Consultation may include discussing the type of environmental review necessary, the significance of tribal cultural resources, the significance of the project's impacts on the tribal cultural resources, and alternatives and mitigation measures recommended by the tribe(s).

Senate Bill 18

SB 18, authored by Senator John Burton and signed into law by Governor Arnold Schwarzenegger in September 2004, requires local (city and county) governments to consult with California Native American tribes, when amending or adopting a general plan or specific plan, or designating land as open space, in order to aid in the protection of traditional tribal cultural places ("cultural places"). The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places. The consultation and notice requirements apply to adoption and amendment of both general plans (defined in Government Code Section 65300 et seq.) and specific plans (defined in Government Code Section 65450 et seq.).

Local Regulations

The following are the local environmental laws and policies relevant to cultural and tribal cultural resources.

2030 Butte County General Plan

Goals and policies from the County's 2030 General Plan related to cultural and tribal cultural resources are presented below.

Goal COS-14: Preserve important cultural resources.

- Policy COS-P14.1 Historic and cultural resources management shall be coordinated with nearby jurisdictions, including the five incorporated municipalities, the Lassen and Plumas National Forests, other planning and regulatory agencies, and local tribes.
- Policy COS-P14.2 As part of CEQA and NEPA projects, evaluations of surface and subsurface cultural resources in the county shall be conducted. Such evaluations should involve consultation with the Northeast Information Center.

Goal COS-15 Ensure that new development does not adversely impact cultural resources.

- Policy COS-P15.1 Areas found during construction to contain significant historic or prehistoric archaeological artifacts shall be examined by a qualified consulting archaeologist or historian for appropriate protection and preservation. Historic or prehistoric artifacts found during construction

shall be examined by a qualified consulting archaeologist or historian to determine their significance and develop appropriate protection and preservation measures.

Policy COS-P15.2 Any archaeological or paleontological resources on a development project site shall be either preserved in their sites or adequately documented as a condition of removal. When a development project has sufficient flexibility, avoidance and preservation of the resource shall be the primary mitigation measure.

Policy COS-P15.3 Demolition permit applications on potentially important historic sites shall be subject to discretionary review.

Goal COS-16 Respect Native American culture and planning concerns.

Policy COS-P16.2 Impacts to the traditional Native American landscape shall be considered during California Environmental Quality Act or National Environmental Protection Act review of development proposals.

Policy COS-P16.3 Human remains discovered during implementation of public and private development projects shall be treated with dignity and respect. Such treatment shall fully comply with the federal Native American Graves Protection and Repatriation Act and other appropriate laws.

Policy COS-P16.4 If human remains are located during any ground disturbing activity, work shall stop until the County Coroner has been contacted, and, if the human remains are determined to be of Native American origin, the NAHC and most likely descendant have been consulted.

Policy COS-P16.5 Consistent with State local and tribal intergovernmental consultation requirements such as SB18, the County shall consult with Native American tribes that may be interested in proposed new development projects and land use policy changes.

4.4.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to cultural and tribal cultural resources. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an impact related to cultural or tribal cultural resources is considered significant if the proposed project would:

- Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5;
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to CEQA Guidelines, Section 15064.5;
- Disturb any human remains, including those interred outside of dedicated cemeteries; and/or
- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:
    - Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k);
    - A resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American tribe.

Method of Analysis

The analysis presented within this chapter is based primarily on the Archaeological Inventory Survey prepared for the proposed project. The Archaeological Inventory Survey included a cultural resources literature search, archival research, consultation with the NAHC, and a field survey. The methods of analysis are described in further detail below, along with a discussion of the tribal consultation efforts conducted by the County pursuant to AB 52 and SB 18.

Records Search

A cultural resources records search for the project area was completed at the Northeast Information Center (NEIC) of the California Historical Resources Information System (CHRIS) at California State University, Chico, on May 2, 2017. The records search was conducted to determine the extent of previous surveys within a one-mile radius of the project site, and whether previously documented pre-contact or historic archaeological sites, architectural resources, or traditional cultural properties exist within the area. According to records from the NEIC, the entirety of the project site was subjected to a previous archaeological investigation in 1999, prior to the construction of the golf course. Seven additional investigations have been conducted within one mile of the project site. The records search determined that two prehistoric resources (P-04-1478 and P-04-1479) and one historic-era resource (P-04-1446) were recorded as a result of the 1999 investigation. In addition, 19 sites have been recorded within one mile of the project site.

In addition to examining records at the NEIC, the following sources were also reviewed at the NEIC, or separately:

- National Register of Historic Places;
- Office of Historic Preservation Property Data File;
- California Register of Historical Resources;
- California Inventory of Historic Resources;
- California Historical Landmarks;
- California Points of Historical Interest;

- Gold Districts of California;
- Historic Spots in California;
- USGS quadrangles: 1944, 1952, 1958, 1963, 1966, 1969, and 1970;
- Historical Aerial Photographs: 1941, 1947, 1951, 1969, 1998, 2005, 2009, 2010, and 2012; and
- Published and unpublished documents relevant to environment, ethnography, prehistory, and early historic developments in the vicinity, providing context for assessing site types and distribution patterns in the project area.

Field Survey

A complete coverage intensive field survey was conducted on May 18, May 19, May 25, 2017. The entirety of the approximately 163.12-acre project site was subjected to an intensive pedestrian survey by means of walking systematic transects, spaced at 20-meter intervals, across all portions of the project site not previously disturbed by the golf courses (i.e., tees, fairways, and greens were not observed at the intensive level). Rather, such areas were examined at the general level, with transects spaced at intervals between 21 and 50 meters.

In searching for cultural resources, the surveyor took into account the results of the background research and was alert for any unusual contours, soil changes, distinctive vegetation patterns, exotic materials, artifacts, feature or feature remnants and other possible markers of cultural sites.

Disturbance to the ground surface appeared to be rather uniform throughout the project site. The entirety of the project site has been previously subjected to past intensive disturbance associated first with the construction of the Butte County Railroad alignment, and more recently with the construction of the Tuscan Ridge Golf Course. The former activities involved substantial disturbance along the railroad's linear corridor, and included explosive demolition of bedrock with the removed, massive slabs stockpiled along the southeastern boundary of the project site. Construction of the golf course began in late 1999 to early 2000 and continued intermittently over the next decade. As previously discussed, during the golf course construction, unauthorized grading occurred, possibly destroying two prehistoric sites.

In addition, the site is currently highly disturbed due to damage sustained immediately before, during, and after the 2018 Camp Fire. In mid-2018, prior to the Camp Fire, the site was used as a Pacific Gas and Electric Co. (PG&E) vegetation management camp. The site was subsequently burned during the wildfire, then leveled and graveled for use as a base camp and staging area by PG&E and ECC Constructors during the wildfire response. PG&E continued to use portions of the site as a base camp for debris removal until March 2020.

As discussed above, the pedestrian survey resulted in the identification of three isolated bedrock mortar features, labeled as Tuscan 1 through 3. DPR 523 forms were prepared to document and preserve the valuable information each resource possesses.

Native American Tribal Consultation

As part of the Archeological Resources Inventory, an information request of the SLF was delivered to NAHC on May 2, 2017. The NAHC responded on January 13, 2017 indicating that the SLF search results were negative. In compliance with AB 52 (PRC Section 21080.3.1) and SB 18, project notification letters were distributed to the appropriate tribes in the project area. The County did not receive requests for consultation.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison with the standards of significance identified above.

4.4-1 Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5. Based on the analysis below, the impact is *less than significant*.

The proposed project would include subdivision of the project site to develop a total of 165 single-family residential lots, six commercial use lots, 36.7 acres of open space, and 49 acres of special utility district associated with the on-site water and sewer systems. The existing on-site structures proposed for demolition in order to accommodate the proposed project are less than 50 years old. Given that the existing structures are less than 50 years old, the existing structures within the site would not be considered eligible for listing as a historical resource under the NRHP or CRHR. As discussed previously, a portion of the Butte County Railroad (P-04-1446) is located on-site. However, the P-04-1446 site was determined not to be eligible for consideration as a significant historical resource due to wholesale disturbance (i.e., removal of rails, ties, and other features) causing substantial loss of integrity. Additional historic structures or features have not been identified within the project site.

Based on the above, the proposed project would not result in a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.4-2 Cause a substantial adverse change in the significance of a unique archeological resource pursuant to CEQA Guidelines, Section 15064.5 or disturb human remains, including those interred outside of dedicated cemeteries. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As discussed above, two prehistoric sites (P-04-1478 and P-04-1479) have been previously documented within the project site. However, according to the Archaeological Resources Inventory, the absence of the two resources on-site during the field survey indicates the likelihood that both resources were destroyed during construction of the golf course. As such, neither resource represents a significant historical or unique archaeological resource. In addition, as discussed above, three prehistoric isolated bedrock mortar features were identified during the field survey and recorded on DPR 523 forms. Other cultural materials, such as midden, lithics, bone, petroglyphs, or formed tools, were not observed within proximity of the three features, each of which appear to have been moved to the present locations, likely during the golf course construction. Because the three resources lack additional associated cultural material, and the integrity of the resources appears to have been compromised,

the resources are not considered significant historical or unique archaeological resources. Therefore, the proposed project would not result in any adverse impacts to known archeological resources.

As stated in the Archaeological Resources Inventory, the project site is located in a region where the Konkow, or Northwest Maidu, were known to reside. While field surveys did not detect human remains, cultural sites, or artifacts of ceremonial significance within the project site, the potential for human remains or other cultural resources to be discovered during construction cannot be eliminated due to the known occupation of the project area by Native American tribes.

Due to the possibility for previously unknown resources to be discovered within the project site during construction activities, construction associated with buildout of the proposed project could cause a substantial adverse change in the significance of a unique archeological resource pursuant to CEQA Guidelines, Section 15064.5 or disturb human remains, including those interred outside of dedicated cemeteries, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.4-2 *The following requirements shall be included through a notation on all project improvement plans prior to their approval and shall be implemented during project construction, to the satisfaction of the County Engineer:*

> *In the event subsurface deposits believed to be cultural or human in origin are discovered during construction, all work shall halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for precontact and historic archaeologists, shall be retained by the applicant to evaluate the significance of the find. The following notations on project improvement plans shall apply, depending on the nature of the find:*
>
> - *If the professional archaeologist determines that the find does not represent a cultural resource, work may resume immediately, and agency notifications are not required.*
> - *If the professional archaeologist determines that the find does represent a cultural resource from any time period or cultural affiliation, he or she shall immediately notify Butte County, the applicable landowner, and a traditionally and culturally affiliated California Native American tribe. Appropriate treatment measures that preserve or restore the character and integrity of a find may be, but are not limited to, processing materials for reburial, minimizing handling of historical objects, leaving objects in place within the landscape, construction monitoring of further construction activities, and/or returning objects to a location*

within the project area where they will not be subject to future impacts. Work shall not resume within the no-work radius until the determination is made through consultation, as appropriate, that the site either: 1) is not a historical resource under CEQA, as defined in Section 15064.5(a) of the CEQA Guidelines; or 2) that the treatment measures have been completed to the County's satisfaction.

- *If the find includes human remains, or remains that are potentially human, the professional archaeologist shall ensure reasonable protection measures are taken to protect the discovery from disturbance (Assembly Bill [AB] 2641). The archaeologist shall notify Butte County and the Butte County Coroner (per Section 7050.5 of the Health and Safety Code). The provisions of Section 7050.5 of the California Health and Safety Code, Section 5097.98 of the California PRC, and AB 2641 shall be implemented. If the Coroner determines the remains are Native American, the Coroner shall notify the NAHC, which then shall designate a Native American Most Likely Descendant (MLD) for the proposed project (Section 5097.98 of the PRC). The designated MLD shall have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC shall mediate (Section 5097.94 of the PRC). If an agreement is not reached, the landowner shall rebury the remains where they shall not be further disturbed (Section 5097.98 of the PRC). The burial shall also include either recording the site with the NAHC or the appropriate information center, using an open space or conservation zoning designation or easement, or recording a reinternment document with Butte County (AB 2641). Work shall not resume within the no-work radius until the County, through consultation as appropriate, determines that the treatment measures have been completed to their satisfaction.*

4.4-3 Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is: listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k); or a resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. Based on the

analysis below and with implementation of mitigation, the impact is *less than significant*.

As part of AB 52 and SB 18 requirements, the County sent project notification letters to the necessary tribes in the project area on January 26, 2022 and April 29, 2022, respectively. The County did not receive any responses.

As noted previously, a records search of the NAHC SLF did not indicate the presence of tribal cultural resources within the project site. Considering the results of the literature search, prehistory and history of the area, and prior disturbance of the site, the project site was determined to have a low probability for the presence of prehistoric or historic cultural resources, which would include tribal cultural resources. Nonetheless, even though the likelihood is low, the possibility still exists that buried tribal cultural resources associated with local tribes could occur on the project site. Thus, ground-disturbing activities associated with the proposed project could cause a substantial change in the significance of a tribal cultural resource as defined in PRC Section 21074, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.4-3 Implement Mitigation Measure 4.4-2.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, “cumulative impacts” refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Additional detail regarding the cumulative project setting can be found in Chapter 6, Statutorily Required Sections, of this EIR.

4.4-4 Cause a cumulative loss of cultural and tribal cultural resources. Based on the analysis below, the cumulative impact is *less than significant*.

Generally, while some cultural resources may have regional significance, the resources themselves are site-specific, and impacts to them are project-specific. For example, impacts to a subsurface archeological find at one project site would not generally be made worse by impacts to a cultural resource at another site due to development of another project. Rather, the resources and the effects upon them are generally independent. A possible exception to the aforementioned general conditions would be where a cultural resource represents the last known example of its kind or is part of larger cultural resources such as a single building along an intact historic Main Street. For such a resource, cumulative impacts, and the contribution of a project to them, may be considered cumulatively significant.

As described throughout this chapter, the proposed development would not result in adverse effects to historical, archeological, or tribal cultural resources. Furthermore, implementation of the project-specific mitigation measures set forth in this chapter (Mitigation Measures 4.4-2 and 4.4-3) would ensure that potential impacts related to disturbance of unknown cultural or tribal cultural resources within the site are reduced to less-than-significant levels.

Similar to the proposed project, future development projects within the County would be required to implement project-specific mitigation to ensure any potential impacts to identified cultural and tribal cultural resources are reduced to less-than-significant levels. For example, General Plan Policy COS-P15.1 requires historic resources and paleontological studies for all applicable discretionary projects, in accordance with CEQA. In addition, Policy COS-P16.4 requires that the County Coroner be notified immediately if any human remains are uncovered during construction, with all construction in the vicinity of the find ceasing immediately and appropriate steps taken subsequent to the find to determine next steps. Given that cultural and tribal cultural resource impacts are generally site-specific and each future project within the County would be required to adhere to State and County policies, any potential impacts associated with cumulative buildout of the 2030 Butte County General Plan planning area would not combine to result in a significant cumulative impact.

Based on the above information, implementation of the aforementioned mitigation measures would reduce all project-specific impacts to less-than-significant levels, and the potential for impacts related to a cumulative loss of cultural and tribal cultural resources, to which implementation of the proposed project might contribute, would be ***less than significant.***

Mitigation Measure(s)

None required.

4.5. Geology and Soils

4.5. GEOLOGY AND SOILS

4.5.1 INTRODUCTION

The Geology and Soils chapter of the EIR describes the geologic and soil characteristics of the project site and evaluates the extent to which implementation of the proposed project could be affected by unstable earth conditions and various geologic and geomorphic hazards. In addition, the chapter evaluates any adverse impacts on paleontological resources.

Information from this chapter is primarily drawn from a Geotechnical Engineering Report prepared by Wallace Kuhl & Associates (WKA) (Appendix E).[1] In addition, information was sourced from the 2030 Butte County General Plan,[2] the 2030 Butte County General Plan EIR,[3] and the 2030 Butte County General Plan Supplemental EIR (SEIR).[4]

4.5.2 EXISTING ENVIRONMENTAL SETTING

Background setting information regarding the geology, soils, seismicity, and paleontological resources associated with the project site and the surrounding region is provided below.

Regional Setting

Butte County is made up of three distinct geologic areas: the valley region, the foothill region, and the mountain region. The valley region covers approximately 45 percent of the County's land area and consists predominantly of marine sedimentary rocks and continentally derived sediments underlain by granitic and metamorphic bedrock. The foothill region, which transitions from the valley to the mountain ranges, comprises the area between elevations 200 and 4,100 feet above mean sea level (amsl). The geology of the foothill region is characterized by Tertiary sediments in the north and west, and older Mesozoic-Paleozoic rocks in the east and the south. The mountain region forms the eastern portion of Butte County, including parts of the Sierra Nevada and Cascade Mountain Ranges. The geology of the mountain region consists mainly of plutonic, volcanic, and metamorphic rocks of Paleozoic and Mesozoic age. The project site is located within the foothill region of the County.

Regional Geology

The project site is located along the northeastern edge of the Great Valley geomorphic province of California. Situated between the granitic and metamorphic basement rock which forms the Sierra Nevada range and the sedimentary and volcanic rock units of the Coast Ranges, the province is a vast asymmetrical, synclinal trough formed by uplifting of the Sierran block to form the Sierra Nevada mountains with the western side dropping to form the valley. Erosion of the adjacent Sierra Nevada and Coast Ranges has in-filled the valley with a thick sequence of unconsolidated to semi-consolidated Quaternary (Pleistocene and Holocene) age alluvial, basin, and delta plain sediments deposited by the Sacramento and San Joaquin rivers and associated tributaries.

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1 Wallace Kuhl & Associates. *Geotechnical Engineering Report Tuscan Ridge Subdivision.* May 6, 2021.
2 Butte County. *Butte County General Plan 2030.* November 6, 2012.
3 Butte County. *Butte County General Plan 2030 Draft EIR*. April 8, 2010.
4 Butte County. *Butte County GPA & Zoning Ordinance Update Draft Supplemental EIR*. May 31, 2012.

The primary geologic formation with the project region is the Tuscan Formation, extending south from Redding to just north of Oroville, where surface exposures are seen on the east side of the Central Valley. Overall, the Tuscan Formation is composed of a series of volcanic mudflows, known as lahars, that include volcanic conglomerate, sandstone, siltstone, and pumiceous tuff layers that were deposited over a period of about one million years. The source areas of the lahars were the eroded ancestral volcanoes, Mount Yana and Mount Maidu, which were historically located northwest and south of Lassen Peak in the Cascade Range. The lahars flowed westward off the ancestral volcanoes and onto the valley floor, fanning out and causing deposition that varies in thickness and topographic elevation. Over time, ancient streams and rivers flowed downslope over the lahars, forming channels that were then infilled with reworked volcanic sand and gravel sediments. East of the Chico Monocline, the Tuscan Formation has been uplifted to form the south to southwest sloping Sierra Foothills east of Chico. Subsequent streams and other drainages have cut into the Tuscan Formation to form deep, steep-sided, narrow canyons separated by equally long and narrow, fingerlike ridges or mesas. The total effect is a subparallel arrangement of canyons and southwestward sloping ridge-crests.

Regional Seismicity

A fault is defined as a fracture or zone of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side. A fault zone is a zone of related faults that is commonly braided and subparallel, but may be branching or divergent. Movement within a fault causes an earthquake. When movement occurs along a fault, the energy generated is released as waves that cause ground shaking. Ground shaking intensity varies with the magnitude of the earthquake, the distance from the epicenter, and the type of rock or sediment the seismic waves move through.

The potential risk of fault rupture is based on the concept of recency and recurrence. The more recently a particular fault has ruptured, the more likely the fault would rupture again. The California Geological Survey defines an “active fault” as one that has had surface displacement within the past 11,000 years (Holocene). Potentially active faults are defined as those that have ruptured between 11,000 and 1.6 million years before the present (Quaternary). Faults are generally considered inactive if evidence of displacement is not present during the Quaternary.

According to the 2030 Butte County General Plan, the area of Butte County most likely to be subject to strong ground shaking is the area closest to the Cleveland Hills Fault, which runs north to south between Yankee Hill and Bangor in the southeastern portion of the County. However, the westernmost portion of the County could also be subject to ground shaking from active earthquake faults within the Coast Ranges to the west, including the San Andreas, Maacama, and Bartlett Springs Faults and others. Shaking intensities at particular locations within the County would depend upon distance from the epicenter, the magnitude of the earthquake, and the properties of the underlying geology.

Butte County has a history of relatively low seismicity in comparison with more active seismic regions of the State, such as the Bay area or Southern California. The nearest quaternary fault to the project site is the Chico Monocline Fault, located approximately 0.92-mile west of the site.[5] Other faults in the project region include the Cohasset Ridge Fault and the Beaver Creek Fault, located approximately 15 miles north of the site, the Haskins Valley Fault located approximately

[5] California Department of Conservation. *Fault Activity Map of California*. Available at: https://maps.conservation.ca.gov/cgs/fam/. Accessed February 2022.

26 miles east of the site, and the Cleveland Hills Fault and Payne's Peak Fault, located 18 and 20 miles south of the site, respectively. [6]

Project Site Characteristics

The project site is the former location of the Tuscan Ridge Golf Course, and consists of approximately 163 acres located on the southeast side of Skyway, in unincorporated Butte County, approximately three miles southwest of the Town of Paradise, 0.77-mile northeast of the Rocky Bluffs residential subdivision, across Skyway, and four miles east of the City of Chico. The site is currently highly disturbed, with large graveled and/or paved areas void of vegetation, due to damage sustained immediately before, during, and after the 2018 Camp Fire. In mid-2018, prior to the Camp Fire, the site was used as a Pacific Gas and Electric Co. (PG&E) vegetation management camp. The site was subsequently burnt during the wildfire, then leveled and graveled for use as a base camp and staging area by PG&E and ECC Constructors during the wildfire response. PG&E continued to use portions of the site as a base camp for debris removal until March 2020. A small area of the site is currently being leased by Henkels & McCoy for materials storage and a portable administrative building. In addition, three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Course currently exist on-site: a 2,440-sf grill building, an 1,830-sf clubhouse, and a Quonset hut. An existing potable water well and associated system, as well as an existing wastewater treatment system, including septic tanks, leach field, and disposal ponds, are also located in the southwestern portion of the site.

The geologic conditions on the project site are discussed below in further detail, including descriptions of existing site geology, subsurface soil conditions, seismicity and ground shaking, potential for earthquake-induced liquefaction, expansive soils, and groundwater conditions. In addition, this section includes a description of known paleontological resources within the project area.

Site Geology and Subsurface Soil Conditions

The project site is situated on a fingerlike ridge (Coon Ridge) between Butte Creek Canyon to the north and Nance Canyon to the south. Rock exposed at the surface of the site is mapped as Unit C of the Tuscan Formation. Unit C is described as lahars with some interbedded volcanic conglomerate and sandstone locally, separated from overlying units by a partially stripped soil horizon. Within the general project area, the lahars are described as three to 12 meter (9.84 to 39.37 feet) thick layers separated from each other by thin layers of volcanic sediments containing abundant casts of wood fragments and prominent cooling fractures. Unit C is described as predominantly lahars composed of angular to subrounded volcanic fragments (cobbles and boulders) in a matrix of gray-tan volcanic mudstone in excess of 150 feet in total thickness.

In general, the site is mantled with relatively thin soil deposits, ranging from less than 0.5-foot to about 3.5 feet (averaging approximately 14 inches). The soils generally are composed of clayey sand to sandy lean clay with variable concentrations of gravel, cobble and occasional boulder to clayey gravels. Much of the native soils of the project site have been overlain by crushed gravel, aggregate base and disturbed fill soils placed during construction of the PG&E basecamp.

The underlying Tuscan formation consists of variably weathered and strong lahar. As discussed above, lahar is a fine-grained matrix of mud, volcanic ash, sand and gravel with inclusions of cobble and boulder. The lahar underlying the project site allows for a maximum of a few inches

[6] California Department of Conservation. Fault Activity Map of California. Available at: https://maps.conservation.ca.gov/cgs/fam/. Accessed February 2022.

of excavation before practical refusal is encountered. Surface exposures of the lahar are common all over the site. Areas where hard lahar is exposed at the surface or beneath a thin mantle of soil are referred to as lava cap. The individual lahar units dip at approximately one to five degrees to the southwest, which also generally conforms to the topography of the site. Many of the current and former tree lines visible on aerial photographs generally follow the boundaries between lahar units.

Seismicity and Ground Shaking

Fault rupture hazards are important near active faults and tend to reoccur along the surface traces of previous fault movements. The site is not located within an Alquist-Priolo Special Studies Zone and the potential for fault rupture, damage from fault displacement, or fault movement directly below the site is considered to be very low. However, the site is located within an area where shaking from earthquake generated ground motion waves could occur. Nonetheless, the site is not located within an Earthquake Fault Study Zone or an Earthquake Hazards Zone designated by the California Geologic Survey (CGS).

Liquefaction

Liquefaction occurs when saturated fine-grained sands and/or silts lose physical strength temporarily during earthquake induced shaking and behave as a liquid due to the loss of point-to-point grain contact and transfer of normal stress to the pore water. Liquefaction potential varies with water level, soil type, material gradation, relative density, and probable intensity and duration of ground shaking. Saturated and loose fine sands/silts were not encountered during site explorations. The CGS has designated certain areas within California as potential liquefaction hazard zones, which are areas considered at risk of liquefaction-related ground failure during a seismic event based upon mapped surficial deposits and the depth to the areal groundwater table. The project site is not currently mapped for potential liquefaction hazard by the CGS. The Geotechnical Engineering Report concluded that the overall potential for liquefaction within the project site is considered to be unlikely.

Expansive Soils

Expansive soils are characterized by their ability to undergo significant volume change due to variation in moisture content. Compressible materials consisting of surficial organic material, loose soils, undocumented fills, debris, rubble, rubbish, etc., are considered unsuitable materials for support of proposed structures as such materials can differentially settle. Changes in soil moisture content can result from rainfall, landscape irrigation, utility leakage, roof drainage, perched groundwater, drought, or other factors and may cause unacceptable settlement of structures. According to the Geotechnical Engineering Report performed for the proposed project, the near-surface sandy clays and clayey gravels encountered during subsurface explorations of the project site are low-plasticity clays with very low to low expansion (shrink/swell) potential. Furthermore, the lahar bedrock underlying the project site is non-expansive.

Groundwater

Groundwater was not encountered during the field explorations conducted as part of the Geotechnical Engineering Report. Furthermore, surface evidence of springs or seepage was not observed within the project site. A well log completed for the existing well on the project site suggests that groundwater in the project area is greater than 500 feet below the existing ground surface (bgs).

Paleontological Resources

Paleontological resources are the mineralized (fossilized) remains of prehistoric plant and animal life exclusive of human remains or artifacts. Fossil remains such as bones, teeth, shells, and leaves are found in geologic deposits (rock formations) where the resources were originally buried. The 2030 Butte County General Plan does not identify any paleontological resources in the project vicinity. In addition, as previously discussed, the project site is located within a region underlain by a complex assemblage of volcanic rock in the foothills of the Sierra Nevada. Fossils are not anticipated to survive the heat and pressure involved in the formation of volcanic rocks.

4.5.3 REGULATORY CONTEXT

The following section is a brief summary of the regulatory context under which soils, geology, seismic hazards, and paleontological resources are managed at the federal, State, and local levels.

Federal Regulations

The following are the federal environmental laws and policies relevant to soils, geology, seismic hazards, and paleontological resources.

Federal Earthquake Hazards Reduction Act

Passed by Congress in 1977, the Federal Earthquake Hazards Reduction Act is intended to reduce the risks to life and property from future earthquakes. The Act established the National Earthquake Hazards Reduction Program (NEHRP). The goals of NEHRP are to educate and improve the knowledge base for predicting seismic hazards, improve land use practices and building codes, and to reduce earthquake hazards through improved design and construction techniques.

International Building Code

The Uniform Building Code (UBC) was first published in 1927 by the International Council of Building Officials and is intended to promote public safety and provide standardized requirements for safe construction. The UBC was replaced in 2000 by the new International Building Code (IBC), published by the International Code Council (ICC), which is a merger of the International Council of Building Officials' UBC, Building Officials and Code Administrators International's National Building Code, and the Southern Building Code Congress International's Standard Building Code. The intention of the IBC is to provide more consistent standards for safe construction and eliminate any differences between the three preceding codes. All State building standard codes are based on the federal building codes with California amendments.

Federal Clean Water Act

Section 402 of the federal Clean Water Act (CWA) mandates that certain types of construction activities comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) stormwater program. The Phase II Rule, issued in 1999, requires that construction activities that disturb land equal to or greater than one acre require permitting under the NPDES program. In California, permitting occurs under the General Permit for Stormwater Discharges Associated with Construction Activity, issued to the State Water Resources Control Board (SWRCB), implemented and enforced by the nine Regional Water Quality Control Boards (RWQCBs).

As of July 1, 2010, all dischargers with projects that include clearing, grading or stockpiling activities expected to disturb one or more acres of soil are required to obtain compliance under

the NPDES Construction General Permit Order 2009-0009-DWQ. The General Permit requires all dischargers, where construction activity disturbs one or more acres, to take the following measures:

1. Develop and implement a Stormwater Pollution Prevention Plan (SWPPP) to include a site map(s) of existing and proposed building and roadway footprints, drainage patterns and stormwater collection and discharge points, and pre- and post- project topography;
2. Describe types and placement of Best Management Practices (BMPs) in the SWPPP that will be used to protect stormwater quality;
3. Provide a visual and chemical (if non-visible pollutants are expected) monitoring program for implementation upon BMP failure; and
4. Provide a sediment monitoring plan if the area discharges directly to a water body listed on the 303(d) list for sediment.

To obtain coverage, a SWPPP must be submitted to the RWQCB electronically and a copy of the SWPPP must be submitted to Butte County. When project construction is completed, the landowner must file a Notice of Termination (NOT).

State Regulations

The following are the State environmental laws and policies relevant to soils, geology, seismic hazards, and paleontological resources.

Alquist-Priolo Earthquake Fault Zone Act

The 1972 Alquist-Priolo Earthquake Fault Zone Act was passed to prevent the new development of buildings and structures for human occupancy on the surface of active faults. The Act is directed at the hazards of surface fault rupture and does not address other forms of earthquake hazards. The locations of active faults are established into fault zones by the Alquist-Priolo Zone Act. Local agencies regulate any new developments within the appropriate zones in their jurisdiction.

The Alquist-Priolo Zone Act regulates development near active faults so as to mitigate the hazard of surface fault rupture. The Alquist-Priolo Zone Act requires that the State Geologist (Chief of the California Department of Mines and Geology [CDMG]) delineate “special study zones” along known active faults in California. Cities and counties affected by the special study zones must regulate certain development projects within the special study zones. The Alquist-Priolo Zone Act prohibits the development of structures for human occupancy across the traces of active faults. According to the Alquist-Priolo Zone Act, active faults have experienced surface displacement during the last 11,000 years. Potentially active faults are those that show evidence of surface displacement during the last 1.6 million years. A fault may be presumed to be inactive based on satisfactory geologic evidence; however, the evidence necessary to prove inactivity sometimes is difficult to obtain and may not exist.

Seismic Hazards Mapping Act

The California Seismic Hazards Mapping Act of 1990 (California Public Resources Code Section 1690-2699.6) addresses non-surface rupture earthquake hazards, including liquefaction, induced landslides, and subsidence. A mapping program is also established by this Act, which identifies areas within California that have the potential to be affected by such non-surface rupture hazards. The Seismic Hazards Mapping Act specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and

mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

California Building Standards Code

The State of California regulates development within the State through a variety of tools that reduce or mitigate potential hazards from earthquakes or other geologic hazards. The California Building Standards Code (CBSC) (California Code of Regulations [CCR], Title 24) governs the design and construction of all building occupancies and associated facilities and equipment throughout California. In addition, the CBSC governs development in potentially seismically active areas and contains provisions to safeguard against major structural failures or loss of life caused by earthquakes or other geologic hazards. The California building standards include building standards in the national building code, building standards adapted from national codes to meet California conditions, and building standards adopted to address particular California concerns. It should be noted that the CBSC is updated on a triennial cycle. The most recent update, the 2022 CBSC, became effective on January 1, 2023.

Local Regulations

Relevant goals and policies from the 2030 Butte County General Plan and various other local guidelines and regulations related to soils, geology, seismic hazards, and paleontological resources are provided below.

2030 Butte County General Plan

The following goals and policies from the 2030 Butte County General Plan are applicable to the proposed project:

Conservation and Open Space Element

	COS-P15.2	Any archaeological or paleontological resources on a development project site shall be either preserved in their sites or adequately documented as a condition of removal. When a development project has sufficient flexibility, avoidance and preservation of the resource shall be the primary mitigation measure.

Health and Safety Element

Goal HS-6	Reduce risks from earthquakes.	
	HS-P6.1	Appropriate detailed seismic investigations shall be completed for all public and private development projects in accordance with the Alquist-Priolo Earthquake Fault Zone Act.
Goal HS-7	Reduce risks from steep slopes and landslides.	
	HS-P7.1	Site-specific geotechnical investigations shall be required to assess landslide potential for private development and public facilities projects in areas rated “Moderate to High” and “High” in Figure HS-4 or the most current available mapping.

Goal HS-8 Reduce risks from erosion.

HS-P8.1 Site-specific geotechnical investigations shall be required to assess erosion potential for private development projects and public facilities in areas rated "Very High" in Figure HS-7 or the most current available mapping.

Goal HS-9 Reduce risks from expansive soils.

HS-P9.1 Site-specific geotechnical investigations shall be required to assess risks from expansive soils for private development projects and public facilities in areas rated "High" in Figure HS-8 or the most current available mapping.

Public Facilities and Services Element

Goal PUB-12 Manage wastewater treatment facilities at every scale to protect the public health and safety of Butte County residents and the natural environment.

PUB-P12.1 Applicants shall be allowed to make case-by-case assessments of septic and other wastewater treatment systems to determine appropriate system designs and densities and shall be allowed to utilize new technologies that are supported by State and County practices.

PUB-P13.3 For development projects that will rely on on-site wastewater systems, applicants shall provide detailed plans demonstrating that the system will be adequate to serve the project.

Butte County Code

Chapter 13, Article I, and Chapter 19 of the Butte County Code are applicable to the proposed project and are summarized below.

Grading Ordinance

The purpose of Chapter 13, Article I, Grading, of the Butte County Code, is the control of erosion and siltation, the enhancement of slope stability, the protection of said resources and the prevention of related environmental damage by establishing standards and requiring permits for grading.

On-Site Wastewater Systems Ordinance

Chapter 19, On-Site Wastewater Systems, of the Butte County Code was adopted to (1) protect public health and the environment by protecting ground and surface water quality, (2) establish an administrative framework allowing the adoption of science-based standards for design, construction, installation, operation, maintenance, monitoring, replacement, alteration, enlargement, repair and abandonment of on-site wastewater treatment, conveyance, and dispersal systems, (3) provide for compliance and enforcement of a comprehensive on-site regulatory program, and (4) ensure compliance with applicable standards, laws, and guidelines as adopted, and/or modified by the SWRCB, or the Central Valley RWQCB.

The California Water Code requires that all dischargers of waste, including sanitary wastewater from homes, file a report of waste discharge. The RWQCB has traditionally waived the requirement for counties that have a program for on-site wastewater systems that is compatible with the RWQCB's "Guidelines for Waste Disposal from Land Developments." The requirements of Chapter 19 of the Butte County Code are intended to ensure compliance with the RWQCB Guidelines.

4.5.4 IMPACTS AND MITIGATION MEASURES

This section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to geology, soils, and paleontological resources. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an impact related to geology and soils is considered significant if the proposed project would:

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - Rupture of a known earthquake fault;
    - Strong seismic ground shaking;
    - Seismic-related ground failure, including liquefaction; and
    - Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse;
- Be located on expansive soil, as defined in Table 118-1-B of the UBC (1994), creating substantial risks to life or property;
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water; or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Method of Analysis

The analysis presented within this chapter is based primarily on the Geotechnical Engineering Report prepared for the proposed project by WKA. The purpose of the Geotechnical Engineering Report was to evaluate the subsurface soil and geologic conditions within the project site and provide conclusions and recommendations pertaining to the geotechnical and geologic aspects of the proposed project, based on the conditions encountered.

The scope of the Geotechnical Engineering Report included the following:

- A site reconnaissance;
- A review of United States Geological Survey (USGS) topographic maps, geologic maps and reports that included the project site, historical aerial photographs, and available groundwater information;
- A review of previous environmental assessments completed within the project site by WKA, which included the excavation of 40 test pits on March 15, 2019 to a maximum

depth of approximately 6.5 feet below existing site grade (bsg) using a track mounted excavator;
- A subsurface exploration, including the excavation of 11 supplemental test pits on March 17, 2021 to a maximum depth of approximately three feet bsg using a small excavator;
- The visual examination and classification of subsurface conditions encountered in the exploratory borings, which were logged in general accordance with the American Society for Testing and Materials (ASTM) standards and regulations; and
- Laboratory testing of selected soil samples to determine engineering properties of the soil.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison with the standards of significance identified above.

4.5-1 Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, and landslides. Based on the analysis below, the impact is *less than significant*.

As discussed above, Butte County has a history of relatively low seismicity in comparison with more active seismic regions of the State, such as the Bay Area or Southern California. The project site is not located in an area that would likely be subject to strong ground shaking. In addition, the project site is not underlain by any active faults and is not located within an Alquist-Priolo Fault Study Zone. According to the 2030 Butte County General Plan, the area of Butte County most likely to be subject to strong ground shaking is the area closest to the Cleveland Hills Fault. The Cleveland Hills Fault is located approximately 18 miles south of the project site. [7]

While lower-intensity earthquakes could potentially occur at the site, the design of project structures would be required to adhere to the provisions of the 2022 CBSC. The 2022 CBSC contains provisions to safeguard against major structural failures or loss of life caused by earthquakes or other geologic hazards. Specifically, projects designed in accordance with the CBSC should be able to: 1) resist minor earthquakes without damage; 2) resist moderate earthquakes without structural damage, but with some non-structural damage; and 3) resist major earthquakes without collapse, but with some structural, as well as non-structural damage. Although conformance with the CBSC does not guarantee that substantial structural damage would not occur in the event of a maximum magnitude earthquake, conformance with the CBSC can reasonably be assumed to ensure structures would be survivable, allowing occupants to safely evacuate in the event of a major earthquake.

Furthermore, the Geotechnical Engineering Report concluded that that the potential for geologic hazards, such as liquefaction, fault rupture, or slope instability (i.e., landslides), to occur within the project site is unlikely.

[7] California Department of Conservation. Fault Activity Map of California. Available at: https://maps.conservation.ca.gov/cgs/fam/. Accessed February 2022.

Based on the above, the proposed project would not expose people or structures to the risk of loss, injury, or death involving rupture of an earthquake fault, strong ground shaking, ground failure, liquefaction, or landslides, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.5-2 Result in substantial soil erosion or the loss of topsoil. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Erosion refers to the removal of soil from exposed bedrock surfaces by wind or water. Although naturally occurring, erosion is often accelerated by human activities that disturb soil and vegetation. The soils present on the project site are considered moderately susceptible to erosion where drainage concentrations occur.[8] The proposed project would require ground-disturbing activities within the project site, which, during the early stages of construction, could cause topsoil to be exposed, potentially resulting in wind erosion or an accelerated rate of erosion during storm events. According to Figure HS-7 of the 2030 General Plan, the project site is located in an area of moderate erosion hazard potential.

The topography of the project site is relatively level, and upon development of the site with buildings and structures, the amount of exposed soil that may be lost due to wind or stormwater runoff would be minimized, as the site would be largely covered with impervious surfaces.

Because the proposed project would result in land disturbance of over an acre, the project applicant would be required by the State to comply with the most current NPDES Construction General Permit requirements. Pursuant to NPDES requirements, a SWPPP would be prepared for the proposed project, which would include the site plan, drainage patterns and stormwater collection and discharge points, BMPs, and a monitoring and reporting framework for implementation of BMPs, as necessary. In addition, a Notice of Intent (NOI) would be filed with the RWQCB. A Qualified SWPPP Practitioner (QSP) would ensure compliance with the SWPPP through regular monitoring and visual inspections during construction activities. The QSP for the project would amend the SWPPP and revise project BMPs, as determined necessary through field inspections, to protect against substantial erosion or siltation on- or off-site.

In addition, Chapter 13, Article I, of the County Code regulates grading and erosion by requiring all projects that grade more than 50 cubic yards (CY) of soil to submit an application for review by the County prior to approval of a grading permit. The application must include a grading and sediment control plan, which would be reviewed for safety of grading and potential for erosion. The project would be subject to compliance with Chapter 13, Article I of the County Code and, thus, the project applicant would be required to prepare and submit a grading and sediment control

[8] Butte County. *Butte County General Plan 2030* [Figure HS-7]. November 6, 2012.

plan for the County's review. The grading and sediment control plan would include temporary and permanent grading and sediment control measures, such as the protection of established vegetation; the revegetation of disturbed areas; drainageway, fill slope, cut slope, and stockpile protection; sediment detention; the disposal of spoil material; and dust control. Therefore, with the preparation of an SWPPP in accordance with the NPDES Construction General Permit and preparation of a grading and sediment control plan in accordance with the County Code, development of the proposed project would not result in substantial soil erosion or the loss of topsoil.

Although topsoil exposure would be temporary during early construction activities and would cease once development of buildings and structures and asphalt for roads, parking, etc. occurs, after grading and leveling and prior to overlaying the ground surface with structures, the potential exists for erosion or loss of topsoil to occur. Therefore, short-term construction related impacts associated with substantial soil erosion or the loss of topsoil could be ***significant***.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.5-2 *Prior to issuance of any grading permits, the contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) for review and approval by the CVRWQCB. The contractor shall file the Notice of Intent (NOI) and associated fee to the SWRCB. The SWPPP shall serve as the framework for identification, assignment, and implementation of BMPs. The contractor shall implement BMPs to reduce pollutants in stormwater discharges to the maximum extent practicable. Construction (temporary) BMPs for the project may include, but are not limited to: fiber rolls, straw bale barrier, straw wattles, storm drain inlet protection, velocity dissipation devices, silt fences, wind erosion control, stabilized construction entrance, hydroseeding, revegetation techniques, and dust control measures. The SWPPP shall be submitted to both the County Director of Public Works and the County Engineer for review and approval and shall remain on the project site during all phases of construction. Following implementation of the SWPPP, the contractor shall subsequently demonstrate the SWPPP's effectiveness and provide for necessary and appropriate revisions, modifications, and improvements to reduce pollutants in stormwater discharges to the maximum extent practicable.*

4.5-3 Be located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse, or be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code, creating substantial risks to life or property. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Issues associated with unstable geologic units and/or soils, including landslide, lateral spreading, subsidence, liquefaction, collapse, and expansive soils are discussed below.

Landslides

A landslide is defined as the movement of a mass of rock, debris, or earth down a slope. Almost every landslide has multiple causes. Slope movement occurs when forces acting down-slope exceed the strength of the earth materials that compose the slope. Landslides in California occur mainly due to intense rainfall or are triggered by earthquakes. Based on Figure HS-6 of the 2030 General Plan, the project site is located in an area with moderate landslide potential. However, according to the CGS, the project site is not currently within a State of California Seismic Hazard Zone for seismically induced landsliding.[9] In addition, the terrain of the site is varied from flat to gently sloped, with elevations ranging from approximately 650 feet amsl in the west to approximately 925 feet amsl in the east, and the site does not contain any steep slopes. Given that the project site is not mapped in a landslide zone and the site does not contain any slopes that could be subject to landslide risks, development of the proposed project would not result in on- or off-site landslide hazards.

Lateral Spreading

Lateral spreading is associated with terrain near free faces such as excavations, channels, or open bodies of water. As discussed above, the project site is relatively level, with elevations ranging from approximately 650 feet amsl in the west to approximately 925 feet amsl in the east. Given that the proposed development area does not contain any steep slopes or free faces, the proposed project would not be subject to substantial risks related to lateral spreading.

Subsidence/Settlement

Subsidence is the settlement of soils of very low density, generally from either oxidation of organic material, desiccation and shrinkage, or both, following drainage. Subsidence takes place gradually, usually over a period of several years, and is a common consequence of liquefaction. During construction of the emergency base camp during and following the Camp Fire in 2018, PG&E performed extensive grading and placed large areas of aggregate base throughout the central and southern portions of the project site. Evidence does not suggest that the fill and aggregate was compacted as engineered fill, or that quality control/testing was performed during grading. As such, the Geotechnical Engineering Report concluded that the current conditions of the previously disturbed on-site soils and the fill and aggregate placed on-site would not be suitable for support of the proposed project due to potential settlement issues. However, implementation of the recommendations included in the Geotechnical Engineering Report, such as site clearing during demolition and subgrade preparation to expose firm and stable soils; grading to address areas containing undocumented fill; the use of continuous and/or isolated spread foundations that extend at least 12 inches below lowest adjacent soil grade; and engineered fill recommendations, would ensure that potential impacts related to subsidence/settlement would not occur during development of the proposed project.

[9] California Geological Survey. *Landslide Inventory Map.* Available at: https://maps.conservation.ca.gov/cgs/lsi/app/. Accessed July 2023.

Liquefaction

Liquefaction occurs when saturated fine-grained sand and/or silts lose their physical strength temporarily during earthquake-induced shaking and behave as a liquid. The project site is not currently mapped for potential liquefaction hazard by the CGS. Additionally, based on the on-site soil conditions, and given that Butte County has a history of relatively low seismicity, the Geotechnical Engineering Report concluded that the overall potential for liquefaction within the project site is considered to be unlikely. Therefore, the proposed project would not result in any substantial risks associated with liquefaction.

Collapse

As discussed above, the project site is not located in an area that would likely be subject to strong ground shaking, and is not underlain by any active faults or located within an Alquist-Priolo Fault Study Zone. Additionally, all structures constructed as part of the proposed project would be required to adhere to the provisions of the most recent version of the CBSC in effect at the time of building permit issuance. Structures built according to the seismic design provisions of current building codes would be able to resist major earthquakes without collapse, but with some structural, as well as non-structural damage. Given the project's adherence to the CBSC requirements, the proposed project would not be subject to substantial risks associated with building collapse.

Expansive Soils

Based on Figure HS-8 of the 2030 General Plan, the project site is located in an area with low to moderate potential for expansive soils. According to the Geotechnical Engineering Report, the near-surface sandy clays and clayey gravels encountered during project site explorations are low-plasticity clays with very low to low expansion potential, and the lahar bedrock underlying the project site is non-expansive. Based on the findings by the Geotechnical Engineering Study, the proposed project would not be subject to substantial risks associated with expansive soils.

Conclusion

Based on the above, the proposed project would not result in any new hazards or the exacerbation of any existing hazards related to landslide, lateral spreading, liquefaction, collapse, or expansive soils. However, the previously disturbed on-site soils and the fill and aggregate placed on-site would not be suitable for support of the proposed project due to potential settlement issues. As such, implementation of the recommendations included in the Geotechnical Engineering Report, including, but not limited to, site clearing during demolition and subgrade preparation to expose firm and stable soils; grading to address areas containing undocumented fill; the use of continuous and/or isolated spread foundations that extend at least 12 inches below lowest adjacent soil grade; and engineered fill recommendations, would be required in order to ensure adequate support of the proposed project. Without implementation of the recommendations included in the Geotechnical Engineering Report, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.5-3 *Prior to approval of Improvement Plans, a qualified geotechnical engineer, in coordination with the County Engineer, shall review the Improvement Plans and specifications to assess whether all recommendations from the Geotechnical Engineering Report[10] prepared for the proposed project have been properly implemented and shall evaluate if additional recommendations are required. The recommendations include, but are not limited to:*

- *Site clearing during demolition and subgrade preparation to expose firm and stable soils;*
- *Grading to address areas containing undocumented fill;*
- *The use of continuous and/or isolated spread foundations that extend at least 12 inches below lowest adjacent soil grade; and*
- *Several recommendations regarding the materials used for fill, such as requiring the use of compactable, well-graded, granular soils with a Plasticity Index not exceeding 15, an Expansion Index of 20 or less, and particles less than three inches in maximum dimension.*

4.5-4 Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water. Based on the analysis below, the impact is *less than significant*.

The existing on-site wastewater treatment system currently consists of four 40,000-gallon septic tanks, four 25,000 gallons per day (gpd) Presby multi-level aerobic treatment modules, and four 3,000-gallon collection pump tanks with UV disinfection units, which were constructed to serve the temporary base camp that provided wildfire response efforts in the area during the 2018 Camp Fire. Treated effluent is routed through a two-inch force main to evaporative ponds with bottom-mounted aerators for disposal. The existing on-site wastewater treatment system currently operates under the SWRCB General Order 2014-0153-DWQ-R5309.

The proposed project would require improvements to the existing wastewater system, and additional infrastructure, in order to adequately handle the wastewater generated by the proposed on-site uses. For example, a new sewer collection system would be required to collect and convey the wastewater from the proposed residential and commercial land uses to the treatment system. In addition to the proposed residential and commercial land uses, the proposed project would include a new sanitary waste disposal station, which would be primarily intended to serve future patrons of the mini storage use, and would include an adjacent 40,000-gallon solids holding tank and a 20,000-gallon clarification tank. The proposed project would also include two new 20,000-gallon equalization tanks located near the existing wastewater treatment system in the southwestern portion of the project site, as well as a new headworks/bar screen and a new three-inch effluent force main, which would be connected to the

[10] Wallace Kuhl & Associates. *Geotechnical Engineering Report Tuscan Ridge Subdivision.* May 6, 2021.

subsurface drip dispersal system located within the open space area adjacent to Skyway.

A detailed discussion of the existing and proposed on-site wastewater treatment systems is included in Chapter 3, Project Description, and Chapter 4.12, Utilities and Service Systems, of this EIR. As noted therein, a new Waste Discharge Requirements (WDR) Permit from the SWRCB would be required for the proposed improvements to the existing wastewater treatment system. As part of the permitting process, the RWQCB would review the proposed wastewater treatment system design and have the authority to specify whether the proposed loading, soil characteristics, and system design is adequate to receive the proposed flows generated by the project. In addition, according to the Wastewater Capacity Study prepared for the proposed wastewater treatment system updates, the system has been deemed adequate to handle the proposed project. The proposed project would also be required to adhere to all requirements included in Chapter 19 of the Butte County Code, which would ensure compliance with applicable standards, laws, and guidelines as adopted, and/or modified by the SWRCB and RWQCB, as well as the applicable standards set forth in Section 11.0 (Sewage Disposal) of the Butte County Public Works Improvement Standards and the Butte County On-Site Wastewater Manual.

Overall, consistency with applicable State and local regulations would ensure that the on-site soils would be capable of adequately supporting the use of septic tanks or alternative waste water disposal systems. Therefore, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.5-5 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. Based on the analysis below, the impact is *less than significant*.

As previously discussed, the project site is located within a region underlain by a complex assemblage of volcanic rock in the foothills of the Sierra Nevada. Fossils are not anticipated to survive the heat and pressure involved in the formation of volcanic rocks. In addition, the project site has been subject to extensive disturbance associated with the former Tuscan Ridge Golf Course, as well as the 2018 Camp Fire and the PG&E base camp. Consequently, the potential for unknown, intact paleontological resources to occur on the site is negligible. Furthermore, the project site does not contain any unique geologic features. As such, the proposed project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, “cumulative impacts” refers to two or more individual effects which, when considered together, are considerable, compound, or increase

other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

Additional detail regarding the cumulative project setting can be found in Chapter 6, Statutorily Required Sections, of this EIR.

4.5-6 Cumulative increase in the potential for geological related impacts and hazards. Based on the analysis below, the cumulative impact is *less than significant*.

Impacts to geology, soils, seismicity, and paleontological resources related to implementation of the proposed project are analyzed throughout this chapter. As discussed above, provided that the recommendations included in the Geotechnical Engineering Report prepared for the proposed project are implemented into the project design and specifications, as required by Mitigation Measure 4.5-3, geological and soil conditions on the site would be adequate to support development of the proposed project.

While some geologic characteristics may affect regional construction practices, impacts and mitigation measures are primarily site-specific and project-specific. For example, impacts resulting from development on expansive soils at one project site are not worsened by impacts from development on expansive soils or undocumented fill at another project site. Rather, the soil conditions, and the implications of such conditions for each project, are independent.

As such, the potential for cumulative impacts related to geology, soils, seismicity, and paleontological resources, to which implementation of the proposed project might contribute, is ***less than significant***.

Mitigation Measure(s)

None required.

4.6. Hazards and Hazardous Materials

4.6. HAZARDS AND HAZARDOUS MATERIALS

4.6.1 INTRODUCTION

The Hazards and Hazardous Materials chapter of the EIR describes existing and potentially occurring hazards and hazardous materials within the proposed project area. The chapter includes a discussion of potential impacts posed by such hazards to the environment. Specifically, the chapter identifies whether the proposed project would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.

The Hazards and Hazardous Materials chapter is primarily based on information drawn from a Phase I Environmental Site Assessment (ESA) prepared for the project site by Wallace Kuhl & Associates (WKA) (see Appendix F).[1] In addition, information was sourced from the 2030 Butte County General Plan,[2] the 2030 Butte County General Plan EIR,[3] and the 2030 Butte County General Plan Supplemental EIR (SEIR).[4]

4.6.2 EXISTING ENVIRONMENTAL SETTING

The following section includes a definition of hazardous materials and descriptions of the existing conditions associated with the project site related to hazards and hazardous materials.

Hazardous Materials

The term hazardous substance refers to both hazardous materials and hazardous wastes. A material is defined as hazardous if the material appears on a list of hazardous materials prepared by a federal, State, or local regulatory agency or if the material has characteristics defined as hazardous by such an agency. The California Environmental Protection Agency (CalEPA), California Department of Toxic Substances Control (DTSC) defines hazardous waste, as found in the California Health and Safety Code Section 25141(b), as follows:

> […] its quantity, concentration, or physical, chemical, or infectious characteristics: (1) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; (2) pose a substantial present or potential hazard to human health or the environment, due to factors including, but not limited to, carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties, or persistence in the environment, when improperly treated, stored, transported, or disposed of, or otherwise managed.

The following discussion focuses on the potential Recognized Environmental Conditions (RECs) associated with the project site. A REC indicates the presence or likely presence of any hazardous substances in, on, or at a property due to any release into the environment, under conditions

1 Wallace-Kuhl & Associates. *Phase I Environmental Site Assessment – Tuscan Ridge Property.* April 21, 2020.
2 Butte County. *Butte County General Plan 2030.* November 6, 2012.
3 Butte County. *Butte County General Plan 2030 Draft EIR*. April 8, 2010.
4 Butte County. *Butte County GPA & Zoning Ordinance Update Draft Supplemental EIR*. May 31, 2012.

indicative of a release to the environment, or under conditions that pose a material threat of a future release to the environment.[5]

Project Area Conditions

Based on the Phase I ESA, the project site appears to have been vacant land from 1891 to approximately 1998. Railroad tracks appear along the southern boundary of the project site by 1941; however, the tracks, ties, and other hardware were removed in 1979, leaving only the grade in place. By 2006, the site was developed with the Tuscan Ridge Golf Course, which included three structures on the southeastern portion of the site. The site is highly disturbed, with large graveled and/or paved areas void of vegetation, due to damage sustained immediately before, during, and after the 2018 Camp Fire. In mid-2018, prior to the Camp Fire, the site was used as a Pacific Gas and Electric Co. (PG&E) vegetation management camp. The site was subsequently burned during the wildfire, then leveled and graveled for use as a base camp and staging area by PG&E and ECC Constructors during the wildfire response. PG&E continued to use portions of the site as a base camp for debris removal until March 2020. Currently, the project site is primarily vacant, except for a small area of the site, which is being leased by Henkels & McCoy for construction materials storage and a portable administrative building.

With the exception of the Paradise Rod & Gun Club adjacent to the northeast of the site boundaries, the land surrounding the project site is undeveloped. The Paradise Rod & Gun Club consists of two buildings with associated parking spaces, and two outdoor shooting ranges. Agricultural land, primarily used for grazing, is located to the south and southwest of the site.

Butte Creek is located to the north of, and runs roughly parallel to, Skyway. The Butte Creek Ecological Preserve is located north of the site, across Skyway, with Butte Creek Canyon located further to the northeast. Butte Creek and the Butte Creek Ecological Preserve are separated from the project site by Skyway and an approximately 380-foot decline in elevation. The nearest existing residential uses to the project site are the Rocky Bluffs residential subdivision located approximately 4,100 feet to the southwest, across Skyway, and a number of rural single-family residences located along Honey Run Road, approximately 0.45-mile to the north of the project site, across Skyway. The rural residences are separated from the project site by Butte Creek, the Butte Creek Ecological Preserve, Skyway, and an associated decline in elevation of approximately 434-feet.

The potential hazards associated with the project area identified in the Phase I ESA prepared for the project site by WKA are described in further detail below.

Potential On-Site Recognized Environmental Conditions

Based on the Phase I ESA prepared for the project site, WKA determined that potential RECs associated with the project site include the presence of former railroad tracks along the southern boundary of the site, two aboveground storage tanks (ASTs) located within the southeastern portion of the site, and a mobile fueling area, which was previously located in the central portion of the site. Each of the potential on-site RECs are discussed in further detail below.

[5] ASTM International. *ASTM E1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.* 2013.

Railroad Tracks

Historical records dating back to the late 1800s revealed that railroad tracks were present on the southern portion of the site by 1941. According to the Archeological Inventory Survey prepared for the proposed project, the last regular service of the tracks by the Southern Pacific Railroad was in 1974. The tracks, ties and other hardware were removed in 1979, leaving only the grade in place.[6] According to the 2030 Butte County General Plan EIR, hazardous waste is not currently transported through the County by rail. Historically, however, considerable transport of hazardous materials by rail has occurred throughout the County, and a number of investigations have documented contamination.[7] As such, the Phase I ESA noted that contaminants such as CAM 17 metals, organochlorine pesticides, total petroleum hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs) have the potential to be present within the vicinity of the former on-site railroad tracks associated with the historic use of the railroad tracks.

Aboveground Storage Tanks

During a site visit on January 18, 2019, WKA observed two ASTs on the southeastern portion of the project site. According to the Phase I ESA, WKA was not provided additional information regarding the ASTs. An additional site visit was conducted on April 9, 2020, and, while WKA observed that the project site was no longer being used as a base camp by PG&E, the two ASTs observed in January 2019 remained on the project site. The ASTs have since been removed from the site; however, due to the lack of information surrounding the use of the ASTs on-site, the Phase I ESA noted that total petroleum hydrocarbons, BTEX (i.e., benzene, toluene, ethylbenzene, and xylenes), and fuel oxygenates have the potential to be present in the soils located within the vicinity of the two ASTs.

Mobile Fueling Area

WKA observed a mobile fueling area located in the central portion of the project site during a site visit on January 2, 2019. Two fuel trucks were parked within the designated mobile fueling area, and tarps were observed beneath the fuel trucks; however, significant staining was noted around the tarps. In addition, an empty 55-gallon drum labeled as “oily debris” was observed in the vicinity of the fuel trucks. Subsequent site inspections were conducted on February 15, 2019 and April 9, 2020. Site inspection reports for the subsequent visits describe that gravel in the vicinity of the former mobile on-site fueling operation appeared to have been disturbed, and evidence of soil staining was not evident during the second inspection, nor was petroleum odor was noted. The visual evidence, and lack of olfactory indicators, suggests that efforts were made by PG&E to clean up the previously recorded stained soil.

Nearby Recognized Environmental Conditions

Because the majority of land surrounding the project site is undeveloped, the project vicinity does not include any sites that are listed in federal, State, and/or local databases of hazardous materials sites. However, it should be noted that the Tuscan Ridge Golf Course is listed on the DTSC Haznet Database, the California Air Resources Board’s Emission Inventory Data, the Certified Unified Program Agency (CUPA), the California Environmental Reporting System, the National Pollution Discharge Elimination System, the California Integrated Water Quality System, and the Facility Index System. The DTSC Haznet database is a list of all facilities that have submitted manifests for the disposal of hazardous waste at a landfill. A listing on the database is not considered to be indicative of a release of a hazardous material or petroleum product at a

[6] Genesis Society. *Archaeological Inventory Survey.* June 4, 2017.
[7] Butte County. *Butte County General Plan 2030 Draft EIR* [pg. 4.7-14]. April 8, 2010.

property. According to the Phase I ESA, a manifest was submitted to DTSC for the disposal of an unspecified organic liquid mixture in 2006. The remaining databases do not indicate that a release of hazardous materials or petroleum products has occurred at the project site. In addition, the aforementioned databases are not included on the list of data resources that provide information regarding the facilities or sites identified as meeting the "Cortese List" requirements, pursuant to Government Code 65962.5.

Nearest Airports

The closest public use airport to the project site is the Paradise Skypark Airport, which is located approximately five miles east of the site. The project site is not located in the vicinity of any private airstrips. The Butte County Airport Land Use Compatibility Plan (ALUCP) determines land use compatibility depending on type of use and proximity to the airports located within Butte County. According to the ALUCP, the project site is not located within the Paradise Skypark Airport Influence Area.[8]

4.6.3 REGULATORY CONTEXT

The following discussion contains a summary of regulatory controls pertaining to hazardous substances, including federal, State, and local laws and ordinances.

Federal Regulations

Federal agencies that regulate hazardous materials include the U.S. Environmental Protection Agency (USEPA), the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and the National Institute of Health (NIH). Prior to August 1992, the principal agency at the federal level regulating the generation, transport, and disposal of hazardous waste was the USEPA under the authority of the Resource Conservation and Recovery Act (RCRA). As of August 1, 1992, however, the DTSC was authorized to implement the State's hazardous waste management program for the USEPA. The USEPA continues to regulate hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). The following federal laws and related regulations govern hazardous materials.

Occupational Safety and Health Act

Congress passed the Occupational and Safety Health Act (29 U.S.C. §651 et seq. [1970]) to ensure worker and workplace safety. Their goal was to make sure employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. In order to establish standards for workplace health and safety, the Act also created the National Institute for Occupational Safety and Health (NIOSH) as the research institution for OSHA. OSHA is a division of the U.S. Department of Labor that oversees the administration of the Act and enforces standards in all 50 states. OSHA requires 40 hours of training for hazardous materials operators, as well as an annual eight-hour refresher course, which includes training regarding personal safety, hazardous materials storage and handling, and emergency response.

[8] Butte County Airport Land Use Commission. *Butte County Airport Land Use Compatibility Plan.* November 15, 2017

Comprehensive Environmental Response, Compensation, and Liability Act

The CERCLA (42 U.S.C. §9601 et seq. [1980]) provides a federal "Superfund" to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through CERCLA, the USEPA was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup. The USEPA cleans up orphan sites when potentially responsible parties cannot be identified or located, or when they fail to act. Through various enforcement tools, USEPA obtains private party cleanup through orders, consent decrees, and other small party settlements. The USEPA also recovers costs from financially viable individuals and companies once a response action has been completed. The USEPA is authorized to implement the Act in all 50 states and U.S. territories.

Superfund Amendments and Reauthorization Act of 1986

The Superfund Amendments and Reauthorization Act (SARA) of 1986, (Title III; Section 305(a)) reauthorized CERCLA to continue cleanup activities around the country. Several site-specific amendments, definitions clarifications, and technical requirements were added to the legislation, including additional enforcement authorities. In addition, Title III of SARA authorized the Emergency Planning and Community Right-to-Know Act (EPCRA). SARA, Title III provides funding for training in emergency planning, preparedness, mitigation, response, and recovery capabilities associated with hazardous chemicals. Title III of SARA addresses concerns about emergency preparedness for hazardous chemicals, and emphasizes helping communities meet their responsibilities in preparing to handle chemical emergencies and increasing public knowledge and access to information on hazardous chemicals present in their communities.

Resource Conservation and Recovery Act

The RCRA (42 U.S.C. §6901 et seq. [1976]) gives USEPA the authority to control hazardous waste from the "cradle-to-grave," which includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled USEPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. The federal Hazardous and Solid Waste Amendments (HSWA) are the 1984 amendments to RCRA that focused on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for USEPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank (UST) program. States have the authority to implement individual hazardous waste programs in lieu of the RCRA as long as the state program is as stringent as federal RCRA requirements and is approved by the USEPA.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) of 1976 (15 U.S.C. §2601 et seq. [1976]) provides USEPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides. TSCA addresses the production, importation, use, and disposal of specific chemicals including polychlorinated biphenyls (PCBs), asbestos, radon, and lead-based paint.

U.S. Department of Transportation

Transportation of hazardous materials is regulated by the DOT's Office of Hazardous Materials Safety. The office formulates, issues, and revises hazardous materials regulations under the Federal Hazardous Materials Transportation Law. The hazardous materials regulations cover hazardous materials definitions and classifications, hazard communications, shipper and carrier operations, training and security requirements, and packaging and container specifications. The hazardous materials transportation regulations are codified in 49 CFR Parts 100–185.

The hazardous materials transportation regulations require carriers transporting hazardous materials to receive required training in the handling and transportation of hazardous materials. Training requirements include pre-trip safety inspections, use of vehicle controls and equipment including emergency equipment, procedures for safe operation of the transport vehicle, training on the properties of the hazardous material being transported, and loading and unloading procedures. All drivers must possess a commercial driver's license as required by 49 CFR Part 383. Vehicles transporting hazardous materials must be properly placarded. In addition, the carrier is responsible for the safe unloading of hazardous materials at the site, and operators must follow specific procedures during unloading to minimize the potential for an accidental release of hazardous materials.

Asbestos Hazard Emergency Response Act

The 1986 Asbestos Hazard Emergency Response Act (AHERA) was signed into law as Title II of the TSCA, requiring the Asbestos Model Accreditation Plan (MAP) for accrediting individuals conducting asbestos inspection and corrective-action activities in schools and public and commercial buildings. The MAP provides guidance on the minimum training requirements for accrediting asbestos professionals such as, procedural entry, exit, sampling, and monitoring, safety hazards, and relevant federal, state, and local regulatory standards.

Lead-based Paint Regulations

Lead pollutants are regulated by several laws administered by the USEPA, including the TSCA, the Residential Lead-Based Paint Hazard Reduction Act of 1992, the California Apartment Association (CAA), the California Waterfowl Association (CWA), the Safe Drinking Water Act (SDWA), the RCRA, and CERCLA. The aforementioned regulations address lead in paint, dust and soil, lead in air and water, and the disposal of lead wastes. Regulations specific to lead-based paint include, but are not limited to, the Lead Renovation Repair and Painting Program Rule, the Lead Abatement Program, the residential Lead-based Paint Disclosure Program, and Residential Hazards of Lead in Paint, Dust and Soil. Such regulations require risk assessments, inspections, and work practices that work to minimize exposure to lead hazards.

State Regulations

The CalEPA and the State Water Resources Control Board (SWRCB) establish rules governing the use of hazardous materials and the management of hazardous waste. Within CalEPA, DTSC has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the State agency, for the management of hazardous materials and the generation, transport, and disposal of hazardous waste under the authority of the Hazardous Waste Control Law (HWCL). The following discussion contains the applicable State laws.

Regional Water Quality Control Board

The CalEPA and the Office of Emergency Services (OES) establish regulations governing the use of hazardous materials in California. Within CalEPA, DTSC has primary regulatory responsibility for hazardous waste management. Enforcement of regulations can be delegated to local jurisdictions that enter into agreements with DTSC for the generation, transport, and disposal of hazardous materials under the authority of the HWCL. Along with the DTSC, the Regional Water Quality Control Board (RWQCB) is responsible for implementing regulations pertaining to management of soil and groundwater investigation and cleanup. The RWQCB's regulations are contained in Title 27 of the California Code of Regulations (CCR). The DTSC, RWQCB, and/or a local agency typically oversees investigation and cleanup of contaminated sites.

Department of Toxic Substances Control

The DTSC was established to protect California against threats to public health and degradation to the environment and to restore properties degraded by past environmental contamination. Through statutory mandates, DTSC cleans up existing contamination, regulates management of hazardous wastes, and prevents pollution by working with businesses to reduce hazardous waste and use of toxic materials in California. DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste in California. In addition, DTSC's Site Mitigation and Brownfields Reuse Program oversees the cleanup of State Superfund Sites. State Superfund sites are additionally known as Annual Workplan sites, listed sites, or Cortese List sites. Superfund sites demonstrate evidence of a hazardous substance release or releases that could pose a significant threat to public health and/or the environment. DTSC requires responsible parties to cleanup such sites. When responsible parties cannot be found or where they do not take proper and timely action, DTSC may use State funds to undertake the cleanup.

Cortese List

Pursuant to Government Code Section 65962.5(a), the DTSC shall compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection, a list of all of the following:

1. All hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code.
2. All land designated as hazardous waste property or border zone property pursuant to former Article 11 (commencing with Section 25220) of Chapter 6.5 of Division 20 of the Health and Safety Code.
3. All information received by the DTSC pursuant to Section 25242 of the Health and Safety Code on hazardous waste disposals on public land.
4. All sites listed pursuant to Section 25356 of the Health and Safety Code.

California Code of Regulations

Hazardous waste is characterized and defined in CCR, Title 22, Sections 66261.20-24. Soils that meet the descriptions of the characteristics of hazardous waste defined in Sections 66261.20-24 and contain contaminants above regulatory screening levels are considered hazardous waste and must be handled and disposed of as such. The CCR includes the California Health and Safety Code.

California Health and Safety Code

The handling and storage of hazardous materials is regulated on the federal level by the USEPA under CERCLA as amended by the SARA. Under SARA Title III, a nationwide emergency

planning and response program was established that imposed reporting requirements for businesses which store, handle, or produce significant quantities of hazardous or acutely toxic substances as defined under federal laws. SARA Title III required each state to implement a comprehensive system to inform federal authorities, local agencies, and the public when a significant quantity of hazardous, acutely toxic substances are stored or handled at a facility.

Ammonia is an example of an acutely hazardous material (AHM) that is regulated by the OES under the California Accidental Release Program (CalARP), the USEPA under the Risk Management Program (40 CFR 68), and the OSHA under the Process Safety Management Program (OSHA 1910.119). The CalARP and Risk Management Program require that all facilities that store, handle, or use AHMs above a minimum quantity, known as the threshold planning quantity, are required to develop a plan and prepare supporting documentation that summarizes the facility's potential risk to the local community and identifies safety measures to reduce potential risks to the public.

The HWCL, Chapter 6.5 of the California Health and Safety Code, is administered by the CalEPA to regulate hazardous wastes. While the HWCL is generally more stringent than RCRA, until the USEPA approves the California program, both the State and federal laws apply in California. The HWCL lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal and transportation; and identifies some wastes that cannot be disposed of in landfills.

In California, the underground storage of hazardous materials is regulated by Chapter 6.7 of the California Health and Safety Code per the Underground Storage of Hazardous Substances Act. Under section 25280, the USTs used for the storage of substances hazardous to the public health and safety and to the environment are stored prior to use or disposal in thousands of underground locations in the State. The USTs used for storage are potential sources of contamination of the ground and underlying aquifers, and may pose other dangers to public health and the environment. Chapter 6.7 establishes orderly procedures that will ensure that newly constructed USTs meet appropriate standards and that existing tanks be properly maintained, inspected, tested, and upgraded so that the health, property, and resources of the people of the state will be protected.

California Vehicle Code Section 31303

The California Highway Patrol (CHP) and California Department of Transportation (Caltrans) are the enforcement agencies for hazardous materials transportation regulations. Hazardous materials and waste transporters are responsible for complying with all applicable packaging, labeling, and shipping regulations. California Vehicle Code Section 31303 regulates the transport of hazardous materials.

Emergency Response to Hazardous Materials Incidents

California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local governments and private agencies. Response to hazardous material incidents is one part of this plan. The plan is managed by the OES, which coordinates the responses of other agencies, including CalEPA, CHP, California Department of Fish and Wildlife (CDFW), Central Valley RWQCB, and Butte County Fire.

Unified Hazardous Materials Management Regulatory Program

On January 1, 1996, CalEPA adopted implementing regulations and implemented a unified hazardous waste and hazardous materials management regulatory program (Unified Program), to consolidate the administration of specified statutory requirements for the regulation of hazardous wastes and materials. The Unified Program is implemented at the local level by government agencies certified by the Secretary of CalEPA. The CUPA is responsible for implementation of the Unified Program. CUPA is certified and responsible for oversight of the following consolidated programs: Hazardous Materials Release Response Plans and Inventories (Business Plans); California Accidental Release Program; UST Program; Aboveground Petroleum Storage Act; Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Programs; and California Uniform Fire Code: Hazardous Materials Management Plans and Hazardous Material Inventory Statements.

Local Regulations

Relevant goals and policies from the 2030 Butte County General Plan and various other local guidelines and regulations related to hazards and hazardous materials are discussed below.

2030 Butte County General Plan

The following goals and policies from the 2030 Butte County General Plan are applicable to the proposed project.

Health and Safety Element

Goal HS-14 Reduce risks from the harmful effects of hazardous materials.

HS-P14.1 The County supports the Hazardous Materials Emergency Response Plan (Area Plan).

HS-P14.2 Hazardous materials carrier routes shall be designated to direct hazardous materials transport away from populated areas.

HS-P14.3 Hazardous and toxic materials shall be transported only along the designated highway and rail routes shown in Figure HS-11.

HS-P14.5 Environmental assessment and/or investigation shall be required prior to General Plan Amendment or Rezone approval that would allow uses with sensitive receptors, such as residential developments, schools, or care facilities, on sites previously used for commercial, industrial, agricultural or mining uses to determine whether soils, groundwater and existing structures are contaminated and require remediation. Policies and oversight authority shall follow Health and Safety Code Division 20, Chapters 6.5 and 6.8 when determining jurisdiction.

Butte County Public Health Department

The Butte County Public Health Department (BCPHD) is the CUPA for local implementation of the California Accidental Release Prevention Program and several other hazardous materials and hazardous waste programs. The mission of the BCPHD is to protect the public through promoting

individual, community, and environmental health. BCEHD is responsible for regulating USTs, ASTs, Hazardous Waste, and Hazardous Material Release Response Plans (HMRRP). The HMRRP program applies to facilities that handle, store, or use hazardous materials over threshold quantities. The HMRRP program is used to satisfy federal and State Community Right-To-Know laws by providing detailed information about hazardous materials storage to emergency responders, planning officials and the community.

Butte County Hazardous Waste Management Plan

The Butte County Hazardous Waste Management Plan was completed and approved by the Butte County Board of Supervisors and all of the County's incorporated municipalities in 1989, and approved by the California Department of Health Services in 1991. The goals of the Plan reflect the County's intent to reduce the need for additional hazardous waste disposal sites by reducing the amount of waste generated. Goals related to waste reduction include minimizing waste at the source, recycling waste, and reducing the quantity of hazardous substances used. The goals place particular priority on recycling of waste oil, which constitutes the largest portion of the County's waste stream. Goals related to public health and safety focus on properly treating waste, ensuring safe transportation of waste on the key transportation routes, and siting community collection and transfer stations to contribute to proper handling of the County's waste.

Butte County Local Hazard Mitigation Plan

The Butte County Local Hazard Mitigation Plan (LHMP) was adopted in October 2019. The overall intent of the LHMP is to reduce or eliminate long-term risk to people and property from hazards. The participating entities of the plan include Butte County, five incorporated communities within the County (including the City of Oroville), and ten special districts. As part of the LHMP, a risk assessment was conducted that identified and profiled hazards that pose a risk to the County and participating jurisdictions, assessed the vulnerability of the planning area to such hazards, and examined the existing capabilities to mitigate them. Based on the results of the risk assessment, a mitigation strategy was developed for reducing the County's and all participating jurisdictions' risk and vulnerability to hazards. The resulting Mitigation Strategy for the Butte County planning area is comprised of LHMP goals and objectives and a mitigation action plan which includes a series of mitigation action projects and implementation measures.

Hazardous Materials Emergency Response Plan

The Environmental Health Division of the BCPHD has developed a Hazardous Materials Emergency Response Plan containing processes and strategies for responding to emergencies involving hazardous materials in the County. Hazardous materials incidents result from cleanup of waste, especially drug labs, highway collisions involving tankers or other hazardous transporters, industrial accidents, accidental rupture of a pipeline or tank during construction or demolition, or from a natural disaster such as a flood or landslide that damages a hazardous materials container or pipeline.

Butte County Airport Land Use Compatibility Plan

The Butte County Airport Land Use Commission is charged with promoting land use compatibility around the County's airports in order to minimize public exposure to excessive noise and safety hazards. The Airport Land Use Commission prepared the Butte County ALUCP, which was adopted in 2000 and updated in 2017, to address land use compatibility in the County. The ALUCP encompasses the four principal airports in the County: Chico Municipal Airport; Oroville Municipal Airport; Paradise Skypark Airport; and the Ranchaero Airport.

4.6.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to hazards and hazardous materials. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

In accordance with CEQA Guidelines Appendix G, an impact related to hazards and hazardous materials is considered significant if the proposed project would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school (see Chapter 5, Effects Not Found to be Significant);
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area (see Chapter 5, Effects Not Found to be Significant);
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (see Chapter 4.13, Wildfire); and/or
- Expose people or structures, either directly or indirectly, to the risk of loss, injury or death involving wildland fires (see Chapter 4.13, Wildfire).

As noted above, impacts related to the emission of hazardous materials within one-quarter mile of an existing or proposed school, and safety hazards associated with airports and private airstrips are discussed in Chapter 5, Effects Not Found to be Significant, of this EIR.

In addition, impacts related to impairing implementation of or physically interfering with an adopted emergency response plan or emergency evacuation plan, and exposing people or structures, either directly or indirectly, to the risk of loss, injury or death involving wildland fires are discussed in Chapter 4.13, Wildfire, of this EIR.

Method of Analysis

Site conditions and impacts for this chapter are based primarily on the Phase I ESA conducted for the proposed project by WKA. The goal of a Phase I ESA is to identify whether RECs exist at a property, where RECs are defined by the American Society for Testing and Materials (ASTM) as "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. […]." The Phase I ESA meets or exceeds the requirements of the ASTM "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process E 1527-05."

Information included in the Phase I ESA was drawn from the following sources:

- Site reconnaissance conducted on January 2, 2019, January 18, 2019, February 15, 2019, and April 9, 2020 for visual evidence of surface contamination and potential sources of subsurface contamination. The site reconnaissance consisted of walking the project site and driving by nearby adjacent properties from public vantages to observe apparent uses. Photographs of the site were taken during the site reconnaissance;
- A visual inspection of the adjoining properties for evidence of RECs;
- An interview with the key site manager,
- A records review of the following:
    - Physical setting documents to determine regional geology, general soil information, and local and regional groundwater conditions;
    - Historical information, including but not limited to, Sanborn maps, topographic maps, aerial photographs, ownership records, building department records, local street directories, zoning and land use records, and prior assessments, as available;
    - Environmental records, including federal, state, tribal, and county regulatory agency lists that will help identify RECs on the project site and the adjoining properties; and
    - A review of specific regulatory agency files for identified contaminated facilities in order to evaluate whether the listed facilities are hazardous materials threats to the project site.
- A preliminary screen for vapor encroachment conditions on the Site per ASTM E2600-15. The screening included performing a Search Distance Test to identify if any known or suspect contaminated properties are present within the project vicinity, and a Chemicals of Concern (COC) Test for any known or suspect contaminated properties identified within the Search Distance Test to evaluate whether or not COC are likely to be present;
- A review of the completed ASTM E1527-13 User Questionnaire regarding Recorded Environmental Liens, activity and use limitations (AULs), relationship of the purchase price to the fair market value of the project site, and any specialized knowledge of the site; and
- A review of environmental liens and AULs reports, as provided.

Project-Specific Impacts and Mitigation Measures

The project site conditions have been compared to the standards of significance presented above in order to determine the project's impact significance. If significant impacts are identified for the construction and operational phases of the proposed project, recommended mitigation measures have been included to reduce the identified impacts to less-than-significant levels.

4.6-1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Based on the analysis below, the impact is *less than significant*.

A significant hazard to the public or the environment could result from the routine transport, use, or disposal of hazardous materials, which is typically associated with projects that are industrial in nature. Operations of the proposed single-family residential project, as well as the majority of the proposed commercial uses on-site would not include any activities that would involve the routine transport, use, disposal,

or generation of substantial amounts of hazardous materials. However, the proposed project's gas station component would involve the routine transport and use of gasoline and diesel fuels. Fuel would be stored on-site in USTs, which would dispense fuels through up to 16 fuel dispensers. In addition, storage and selling of automotive fluids would occur associated with the convenience store. Nonetheless, fuel pump dispensers at the gas station would be required to be equipped with automatic shutoffs and other safety devices and signage as required by applicable fire, building, and health codes. In accordance with CCR, Title 23, Section 2635(b), USTs would be required to have spill containment and overfill prevention systems.

In addition, due to the proposed gas station use on-site, the proposed project would be subject to regulations by the BCPHD, which is the CUPA for the County. The Unified Program is a statewide program overseen by the CalEPA that delegates the responsibility of applying regulatory standards established by State agencies to local agencies through inspections, permitting, and enforcement activities. The Unified Program encompasses regulatory standards from the OES, DTSC, Office of the State Fire Marshal (OSFM), the SWRCB, and CalEPA. Pursuant to the requirements established by BCPHD as the CUPA, the proposed project would be required to prepare a HMRRP to ensure impacts related to the proposed USTs would not occur. The HMRRP is required for businesses with hazardous materials on-site and must detail the quantity of such materials stored on the premises, spill prevention and control measures, and an emergency response plan to address potential incidents related to such materials including a release, fire, and/or disaster. In addition, underground storage of hazardous materials is subject to the provisions of CCR, Title 23, and the transport of fuels to the project site would be required to adhere to the Hazardous Materials Regulations stipulated in the Code of Federal Regulations, Title 49, Parts 100-185, which regulate the transportation of hazardous material and hazardous waste. Furthermore, Mitigation Measure 4.11-4(a) of this EIR would require installation of a signal at the main project site access, which would help ensure the safe movement into and out of the project site, which would help to reduce accident potential with fuel trucks, and, thus, limit the potential for spills associated with the routine transport, use, or disposal of hazardous materials.

It should also be noted that the proposed project would require improvements to the existing on-site wastewater system, and additional infrastructure, in order to adequately handle the wastewater generated by the proposed on-site uses. For example, the proposed project would include a new sanitary waste disposal station, which would be primarily intended to serve future patrons of the mini storage use, and would include an adjacent 40,000-gallon solids holding tank and a 20,000-gallon clarification tank. The proposed project would also include two new 20,000-gallon equalization tanks located near the existing wastewater treatment system in the southwestern portion of the project site, as well as a new headworks/bar screen and a new three-inch effluent force main, which would be connected to the proposed spray dispersal fields to be located within the open space area adjacent to Skyway.

A detailed discussion of the existing and proposed on-site wastewater treatment systems is included in Chapter 3, Project Description, of this EIR. As noted within Chapter 4.7, Hydrology and Water Quality, of this EIR, a new Waste Discharge Requirements (WDR) Permit from the SWRCB would be required for the proposed improvements to the existing wastewater treatment system. The proposed on-site

wastewater treatment system would also be required to adhere to all requirements included in Chapter 19 of the Butte County Code, which would ensure compliance with applicable standards, laws, and guidelines as adopted, and/or modified by the SWRCB and RWQCB. Compliance with the aforementioned standards and permit requirements would be required through implementation of Mitigation Measure 4.7-2(c) included in Chapter 4.7 of this EIR, which would ensure that the proposed on-site wastewater treatment system would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Construction activities associated with implementation of the proposed project would involve the use of heavy equipment, which would contain fuels and oils, and various other products such as concrete, paints, and adhesives. The project contractor is required to comply with all California Health and Safety Codes and local County ordinances regulating the handling, storage, and transportation of hazardous and toxic materials. Pursuant to California Health and Safety Code Section 25510(a), except as provided in subdivision (b),[9] the handler or an employee, authorized representative, agent, or designee of a handler, shall, upon discovery, immediately report any release or threatened release of a hazardous material to the unified program agency (in the case of the proposed project, the BCPHD) in accordance with the regulations adopted pursuant to Section 25510(a). The handler or an employee, authorized representative, agent, or designee of the handler shall provide all State, city, or county fire or public health or safety personnel and emergency response personnel with access to the handler's facilities. In the case of the proposed project, the contractors are required to notify the BCPHD in the event of an accidental release of a hazardous material, who would then monitor the conditions and recommend appropriate remediation measures.

Based on the above, the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.6-2 Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As discussed previously, the Phase I ESA identified three potential RECs on the project site, including the presence of former railroad tracks within the southern portion of the site, two ASTs located within the southeastern portion of the site, and a mobile fueling area previously located in the central portion of the site. The potential for

[9] California Health and Safety Code Section 25510(a), subdivision (b), states that, "subdivision (a) does not apply to a person engaged in the transportation of a hazardous material on a highway that is subject to, and in compliance with, the requirements of Sections 2453 and 23112.5 of the Vehicle Code."

development of the proposed project to result in risks or hazards related to such existing environmental hazards is described below.

Railroad Tracks

As discussed above, due to a number of investigations having documented contamination associated with railroad tracks within the County, the Phase I ESA concluded that contaminants such as CAM 17 metals, organochlorine pesticides, total petroleum hydrocarbons, and PAHs have the potential to be present within the on-site soils near the historic railroad tracks. Land uses proposed within the vicinity of the former rail alignment include open space, areas designated for the proposed water and wastewater systems, residential uses, and commercial uses. The potential presence of the aforementioned contaminants is considered a REC. According to the Phase I ESA, WKA recommends the collection of shallow soil samples along the former rail alignment to confirm the presence or absence of contaminants. Without confirmation, a significant impact could occur related to contaminated soils in the vicinity of the former railroad tracks.

Aboveground Storage Tanks

During two site visits conducted on January 18, 2019 and April 9, 2020, WKA observed two ASTs on the southeastern portion of the project site. The ASTs have since been removed from the site; however, due to the lack of information surrounding the use of the ASTs on-site, the Phase I ESA concluded that total petroleum hydrocarbons, BTEX, and fuel oxygenates have the potential to be present in the soils located within the vicinity of the two ASTs. The potential presence of the aforementioned contaminants is considered a REC. As such, WKA recommends the collection of two shallow soil samples in the area of the ASTs to assess the effectiveness of the secondary containment located below the ASTs and to determine whether any contamination is present. The ASTs were located in an area that is designated for the proposed water and wastewater systems. Nonetheless, if contaminants are determined to be present within the soils in the vicinity of the ASTs, a significant impact could occur.

Mobile Fueling Area

WKA observed a mobile fueling area located in the central portion of the project site during a site visit on January 2, 2019, and noted the presence of significant oil staining within the mobile fueling area. Subsequent site visits were conducted on February 15, 2019 and April 9, 2020, and according to the Phase I ESA, visual evidence and lack of olfactory indicators suggested that efforts were made by PG&E to clean up the previously recorded stained soil. However, WKA recommends that samples be collected in the portion of the site where the mobile fuel area was previously located to ensure, at a minimum, that the soil was removed. The mobile fuel area is located in an area that is proposed for development with residential uses. Therefore, if contaminants are determined to be present within the soils in the vicinity of the mobile fueling area, a significant impact could occur.

Conclusion

Based on the above, soil contamination could pose substantial risk to workers or residents on the project site if not properly removed from the site and disposed of properly. Therefore, implementation of the proposed project could create a significant

hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.6-2(a) *Prior to initiation of ground-disturbing activities, the project applicant shall complete testing of on-site soils along the former rail alignment for contaminants including CAM 17 metals, organochlorine pesticides, total petroleum hydrocarbons, and polycyclic aromatic hydrocarbons. In addition, on-site soils in the vicinity of the ASTs and the mobile fuel area shall be tested for total petroleum hydrocarbons, BTEX, and fuel oxygenates. All on-site soil testing shall be conducted in accordance with U.S. Environmental Protection Agency (USEPA) testing methods. In the event that soils are determined to be hazardous by exceeding the USEPA Regional Screening Levels, the soil shall be transported and disposed of at a Class I facility permitted by the California Department of Toxic Substances Control. Hazardous waste shall be transported for disposal by a licensed hazardous waste hauler under a uniform hazardous waste manifest. The results of soil sampling and analysis, as well as verification of proper remediation and disposal, if warranted, shall be submitted to the Butte County Community Development Services Department for review and approval.*

4.6-2(b) *Prior to initiation of ground-disturbing activities, the project applicant shall obtain documentation of on-site stained soil removal activities associated with the mobile fueling area from PG&E environmental services. Proof of obtainment shall be submitted to the Butte County Community Development Services Department for review and approval.*

If documentation of on-site stained soil removal activities cannot be obtained, the project applicant shall complete testing of on-site soils within the vicinity of mobile fueling area in accordance with the requirements set forth in Mitigation Measure 4.6-2(a). The results of soil sampling and analysis, as well as verification of proper remediation and disposal, if warranted, shall be submitted to the Butte County Community Development Services Department for review and approval.

4.6-3 Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment. Based on the analysis below, the impact is *less than significant*.

The Cal-EPA has compiled a list of data resources that provide information regarding the facilities or sites identified as meeting the "Cortese List" requirements, pursuant to Government Code 65962.5. The components of the Cortese List include the DTSC Hazardous Waste and Substances Site List,[10] the list of leaking UST sites from the SWRCB's GeoTracker database,[11] the list of solid waste disposal sites identified by the SWRCB,[12] and the list of active Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO) from the SWRCB.[13] The project site is not included on and of the aforementioned data resources.

Based on the above, the proposed project would not create a significant hazard to the public or the environment related to being located on a site which is included on a list of hazardous materials compiled pursuant to Government Code Section 65962.5, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Additional detail regarding the cumulative setting can be found in Chapter 6, Statutorily Required Sections, of this EIR.

4.6-4 Cumulative exposure to potential hazards and increases in the transport, storage, and use of hazardous materials. Based on the analysis below, the cumulative impact is *less than significant*.

As discussed, project-specific impacts associated with hazardous materials related to implementation of the proposed project were found to be less than significant with implementation of mitigation. Hazardous materials and other public health and safety issues are generally site-specific and/or project-specific, and would not be significantly affected by other development within the project area. Cumulative development projects would be subject to the same federal, State, and local hazardous materials management requirements as would the proposed project, which would minimize potential risks associated with increased hazardous materials use in the community. Therefore, cumulative impacts associated with hazardous materials transport, storage,

[10] Department of Toxic Substances Control. *Hazardous Waste and Substances Site List (Cortese).* Available at: https://www.envirostor.dtsc.ca.gov/public/. Accessed August 2023.

[11] State Water Resources Control Board. GeoTracker. Available at: https://geotracker.waterboards.ca.gov/map/?myaddress=California&from=header&cqid=5340390861. Accessed August 2023.

[12] CalEPA. *Cortese List Data Resources*. Available at: https://calepa.ca.gov/sitecleanup/corteselist/. Accessed August 2023.

[13] *Ibid.*

and use associated with implementation of past, present, and reasonably foreseeable future projects, as well as the proposed project, would be ***less than significant***.

Mitigation Measure(s)

None required.

4.7. Hydrology and Water Quality

4.7. HYDROLOGY AND WATER QUALITY

4.7.1 INTRODUCTION

The Hydrology and Water Quality chapter of the EIR describes existing drainage patterns on the project site, current stormwater flows, and stormwater infrastructure. The chapter also evaluates potential impacts of the proposed project with respect to increases in impervious surface area and associated stormwater flows, degradation of water quality, and increases in on- and off-site flooding. Information used for the chapter was primarily drawn from a Drainage Report prepared for the proposed project by LACO Associates, Inc. (see Appendix G).[1] In addition, information was drawn from the 2030 Butte County General Plan,[2] the 2030 Butte County General Plan EIR,[3] and the 2030 Butte County General Plan Supplemental EIR (SEIR).[4] It should be noted that water supply availability is addressed in Chapter 4.12, Utilities and Service Systems, of this EIR.

4.7.2 EXISTING ENVIRONMENTAL SETTING

The section below describes regional hydrology, the existing drainage patterns within the project site, including peak flows, existing water quality, and groundwater conditions.

Regional Hydrology

The project site is located in unincorporated Butte County, California, within the Butte Creek Watershed (identified at the federal watershed mapping level by hydrologic unit code (HUC) 8). Butte Creek originates in the Jonesville Basin, Lassen National Forest, on the western slope of the Sierra Nevada Mountains, and drains about 800 square miles in the northeast portion of Butte County. Butte Creek enters the Sacramento Valley southeast of Chico and meanders in a southwesterly direction to the initial point of entry into the Sacramento River at Butte Slough. In addition to Butte Creek and its tributaries, the watershed includes a series of dams, diversions and canals mostly located in the valley portion of the watershed and in the middle and lower canyon portions of Butte Creek.

The subwatershed within which the project site is located is the Hamlin Slough subwatershed (HUC 180201580203), which consists of approximately 109 km^2 and is shown in Figure 4.7-1. The general boundaries of the subwatershed consist of Skyway to the north, Butte Creek to the west, McKay Ridge and the Town of Paradise to the east/northeast, and farmland north of Little Dry Creek to the south/southeast.

Project Site and Surrounding Area Drainage

The project site consists of approximately 163 acres of what was formerly the Tuscan Ridge Golf Course. The terrain of the project site is varied from flat to gently sloped, with elevations ranging from approximately 650 feet above mean sea level (amsl) in the west to approximately 925 feet amsl in the east.

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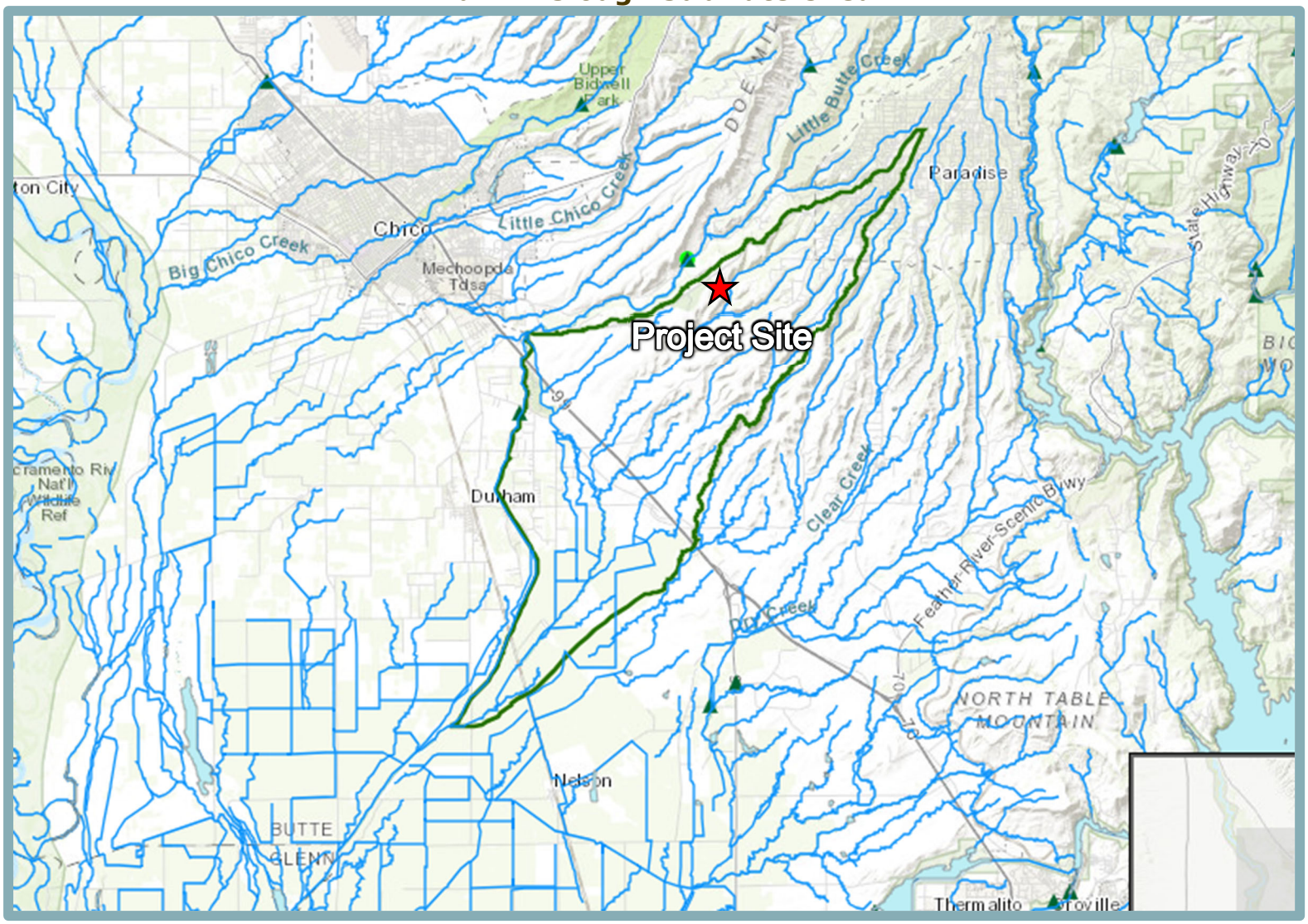
1 LACO Associates, Inc. *Drainage Report (Hydrology & Hydraulic Analysis Tuscan Ridge Planned Development)*. February 7, 2023. Revised December 2023.
2 Butte County. *Butte County General Plan 2030*. November 6, 2012.
3 Butte County. *Butte County General Plan 2030 Draft EIR*. April 8, 2010.
4 Butte County. *Butte County GPA & Zoning Ordinance Update Draft Supplemental EIR*. May 31, 2012.

Figure 4.7-1
Hamlin Slough Subwatershed



Source: United States Geological Survey, 2023.

Vegetation on the site consists primarily of sparse ruderal vegetation, along with scattered oak and pine trees. An existing drainage ravine is located within the northwestern portion of the site, generally parallel with Skyway, and includes a culvert under the main access driveway, as well as under an existing access easement in the western portion of the site. An existing outfall is located near the westernmost border of the site. The entirety of the project site is within Zone X (unshaded), which is designated by the Federal Emergency Management Agency (FEMA) as an Area where the risk for flood is less than 0.2 percent and may be protected from 100-year flood by a levee.

In general, the site is mantled with relatively thin soil deposits, ranging from less than 0.5-foot to about 3.5 feet (averaging approximately 14 inches). The soils generally are composed of clayey sand to sandy lean clay with variable concentrations of gravel, cobble and occasional boulder to clayey gravels. Much of the native soils of the project site have been overlain by crushed gravel, aggregate base, and disturbed fill soils placed during construction of the PG&E basecamp.

The project site is currently split into three watersheds (A, B, and C), which are made up of seven subbasins. Figure 4.7-2 depicts the location of each watershed and associated subbasins. As shown on Figure 4.7-2, the site currently contains three primary drainages, Discharge Points A, B, and C, which are located at the southern end of the project site between the planned development and Skyway going towards the west, along the trail easement down to the existing sanitary sewer ponds towards the southeast of the site, and above the northwest property line from Skyway and down across the southern property line, respectively. Watersheds B and C were delineated by shared points of confluence (i.e., the assumption was made that the areas that drain to the same location off-site could be considered part of the same watershed). Subbasins B-1 and B-2 were determined to have different discharge points off-site; however, the drainages ultimately converge downstream to the south. Subbasin C-1 was determined to drain as a concentrated flow near the southern property line, and subbasin C-2 currently drains as primarily sheet flow to the south before becoming a concentrated flow and converging downstream with the runoff from C-1. In the southern portion of the site, the existing topography shows pre-development drainage from sub-areas A-3 and B-1 primarily flowing past and around the two sewage treatment ponds, and, thus, the ponds were determined to be outside of the watershed area of concern.

The stormwater runoff estimates for existing conditions on the project site are summarized in Table 4.7-1. Figure 4.7-2 depicts the location of each modeled subbasin. Overall, the total watershed area being analyzed herein includes the seven subbasins summarized in Table 4.7-1, which encompass a total of 153.46 acres.

Table 4.7-1
Existing On-Site Drainage Conditions

Drainage Shed	Shed Area (Acres)	Peak Flow, cubic feet per second (cfs)	
		10-Year, 24-hour	100-Year, 24-hour
A-1	1.20	1.69	2.54
A-2	38.86	36.65	54.81
A-3	58.93	86.20	128.80
B-1	7.19	8.59	12.89
B-2	14.18	19.61	17.45
C-1	10.65	10.73	16.05
C-2	22.45	22.60	33.83

Source: LACO Associates, Inc., 2023.

Figure 4.7-2
Existing Drainage Shed Locations

Source: LACO Associates Inc., 2023.

Water Quality

Activities and/or conditions that have the potential to degrade water quality include but are not limited to, construction activities and urban stormwater runoff.

Construction activities have the potential to cause erosion and sedimentation associated with groundbreaking and clearing activities, which could cause unstabilized soil to be washed or wind-blown into nearby surface water. In addition, the use of heavy equipment during construction activities, especially during rainfall events, has the potential to cause petroleum products and other pollutants to enter nearby drainages.

Water quality degradation from urban stormwater runoff is primarily the result of runoff carrying pollutants from the land surface (i.e., streets, parking lots, etc.) to the receiving waters (i.e., streams and lakes). Pollutants typically found in urban runoff include facility maintenance and lawn-care/landscaping chemicals (insecticides, herbicides, fungicides, and rodenticides), heavy metals (such as copper, zinc and cadmium), oils and greases from automobiles and other mechanical equipment, and nutrients (nitrogen and phosphorus).

Groundwater

The project site is located within the Vina Subbasin, which is under the jurisdiction of the Vina Groundwater Sustainability Agency (Vina GSA). The Vina GSA is one of two groundwater sustainability agencies (GSAs) that work together to manage the Vina Subbasin in order to comply with the requirements of the Sustainable Groundwater Management Act (SGMA). The goal of the Vina GSA is to manage portions of the Vina Subbasin by protecting against overdraft and creating sustainable water supplies.

The Vina Subbasin is a portion of the Sacramento Valley Groundwater Basin and is located entirely within Butte County. The Vina Subbasin is generally bounded by Tehama County to the north, an alluvial basin to the east (as defined by Bulletin 118), the border of the Western Canal Water District to the south, and the Sacramento River to the west. The Vina Subbasin is bounded by the Los Molinos Subbasin to the north, Corning Subbasin to the west, and Butte Subbasin to the south. The lateral boundaries of the subbasin are jurisdictional in nature, and the Vina GSA has recognized that groundwater flows across each of the defined subbasin boundary lines to some degree. Annual precipitation within the Subbasin is approximately 24.8 inches per year. According to the Groundwater Sustainability Plan (GSP) prepared for the Vina Subbasin, the subbasin has been identified by the California Department of Water Resources (DWR) as a high-priority subbasin.[5] However, the Vina Subbasin, within which the project site is located, is not identified by the California Department of Water Resources (DWR) as being in a state of overdraft.[6] Groundwater overdraft is a condition within a developed groundwater basin in which the amount of water pumped from the basin exceeds the sustainable yield of the basin over the long term.

According to the Geotechnical Engineering Report prepared by Wallace Kuhl and Associates (WKA) for the proposed project,[7] groundwater was not encountered during the field explorations conducted at the project site. Furthermore, surface evidence of springs or seepage was not observed within the project site. However, an existing well, which was initially installed in 1999 for the purposes of irrigating the Tuscan Ridge Golf Course and providing services to the associated

5 Vina GSA. *Vina Groundwater Subbasin Groundwater Sustainability Plan*. December 2021.
6 California Department of Water Resources. *California's Critically Overdrafted Groundwater Basins.* January 2020.
7 Wallace Kuhl & Associates. *Geotechnical Engineering Report Tuscan Ridge Subdivision.* May 6, 2021.

bistro, is currently located on-site. The well was subsequently used for potable water purposes by PG&E and ECC Constructors during their occupation of the site. The water system is currently permitted as a domestic water supply well through the Butte County Environmental Health Division (Permit Number 04-09182) and the State Water Resources Control Board (SWRCB) Division of Drinking Water. A well log completed for the existing on-site well suggests that groundwater in the project area is greater than 500 feet below the existing ground surface (bgs).

4.7.3 REGULATORY CONTEXT

The following is a description of federal, State, and local environmental laws and policies that are relevant to the review of hydrology and water quality under the CEQA process.

Federal Regulations

The following section includes federal environmental goals and policies relevant to the CEQA review process pertaining to the hydrology and water quality aspects of the proposed project.

Federal Emergency Management Agency

The FEMA is responsible for determining flood elevations and floodplain boundaries based on U.S. Army Corps of Engineers (USACE) studies. FEMA is also responsible for distributing the Flood Insurance Rate Maps (FIRMs), which are used in the National Flood Insurance Program (NFIP). The FIRMs identify the locations of special flood hazard areas, including the 100-year floodplains.

FEMA allows non-residential development in the floodplain; however, construction activities are restricted within flood hazard areas, depending upon the potential for flooding within each area. Federal regulations governing development in a floodplain are set forth in Title 44, Part 60 of the Code of Federal Regulations (CFR).

Federal Clean Water Act

The National Pollutant Discharge Elimination System (NPDES) permit system was established in the federal Clean Water Act (CWA) to regulate municipal and industrial discharges to surface waters of the U.S.

Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that the USEPA must consider in setting effluent limits for priority pollutants.

Nonpoint sources are diffuse and originate over a wide area rather than from a definable point. Nonpoint pollution often enters receiving water in the form of surface runoff but is not conveyed by way of pipelines or discrete conveyances. As defined in the federal regulations, such nonpoint sources are generally exempt from federal NPDES permit program requirements. However, two types of nonpoint source discharges are controlled by the NPDES program – nonpoint source discharge caused by general construction activities and the general quality of stormwater in municipal stormwater systems. The 1987 amendments to the CWA directed the USEPA to implement the stormwater program in two phases. Phase I addressed discharges from large (population 250,000 or above) and medium (population 100,000 to 250,000) municipalities and certain industrial activities. Phase II addresses all other discharges defined by USEPA that are not included in Phase I.

Section 402 of the CWA mandates that certain types of construction activities comply with the requirements of the NPDES stormwater program. The Phase II Rule, issued in 1999, requires that construction activities that disturb land equal to or greater than one acre require permitting under the NPDES program. In California, permitting occurs under the General Permit for Stormwater Discharges Associated with Construction Activity, issued to the SWRCB, implemented and enforced by the nine Regional Water Quality Control Boards (RWQCBs).

As of July 1, 2010, all dischargers with projects that include clearing, grading or stockpiling activities expected to disturb one or more acres of soil are required to obtain compliance under the NPDES Construction General Permit Order 2009-0009-DWQ. The General Permit requires all dischargers, where construction activity disturbs one or more acres, to take the following measures:

1. Develop and implement a Stormwater Pollution Prevention Plan (SWPPP) to include a site map(s) of existing and proposed building and roadway footprints, drainage patterns and stormwater collection and discharge points, and pre- and post- project topography;
2. Describe types and placement of Best Management Practices (BMPs) in the SWPPP that will be used to protect stormwater quality;
3. Provide a visual and chemical (if non-visible pollutants are expected) monitoring program for implementation upon BMP failure; and
4. Provide a sediment monitoring plan if the area discharges directly to a water body listed on the 303(d) list for sediment.

To obtain coverage, a SWPPP must be submitted to the RWQCB electronically and a copy of the SWPPP must be submitted to Butte County. When project construction is completed, the landowner must file a Notice of Termination (NOT).

State Regulations

The following section includes the State regulations relevant to the CEQA review process pertaining to the hydrology and water quality aspects of the proposed project.

State Water Resources Control Board

The SWRCB and the RWQCBs are responsible for ensuring implementation and compliance with the provisions of the federal CWA and California's Porter-Cologne Water Quality Control Act. The project site is situated within the jurisdictional boundaries of the Central Valley RWQCB (CVRWQCB) (Region 5). The CVRWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within their jurisdiction.

Central Valley Regional Water Quality Control Board

As authorized by the Porter-Cologne Water Quality Control Act, the CVRWQCB primary function is to protect the quality of the waters within its jurisdiction for all beneficial uses. State law defines beneficial uses of California's waters that may be protected against quality degradation to include, but not be limited to: domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

The CVRWQCB implements water quality protection measures by formulating and adopting water quality control plans (referred to as basin plans, as discussed below) for specific groundwater and

surface water basins, and by prescribing and enforcing requirements on all agricultural, domestic, and industrial waste discharges. The CVRWQCB oversees many programs to support and provide benefit to water quality, including the following major programs: Agricultural Regulatory; Above-Ground Tanks; Basin Planning; CALFED; Confined Animal Facilities; Landfills and Mining; Non-Point Source; Spills, Leaks, Investigations, and Cleanups (SLIC); Stormwater; Total Maximum Daily Load (TMDL); Underground Storage Tanks (UST), Wastewater Discharges (including the NPDES); Water Quality Certification; and Watershed Management.

The CVRWQCB is responsible for issuing permits for a number of varying activities. Activities subject to the CVRWQCB permitting requirements include stormwater, wastewater, and industrial water discharge, disturbance of wetlands, and dewatering. Permits issued and/or enforced by the CVRWQCB include, but are not limited to, the NPDES Construction General Permit, NPDES Municipal Stormwater Permits, Industrial Stormwater General Permits, CWA Section 401 and 404 Permits, and Dewatering Permits.

Basin Plans and Water Quality Objectives

The Porter-Cologne Water Quality Control Act provides for the development and periodic review of water quality control plans (basin plans) that are prepared by the RWQCBs. Basin plans designate beneficial uses of California's major rivers and groundwater basins, and establish narrative and numerical water quality objectives for those waters. Beneficial uses represent the services and qualities of a water body (i.e., the reasons why the water body is considered valuable), while water quality objectives represent the standards necessary to protect and support those beneficial uses. Basin plans are primarily implemented through the NPDES permitting system and by issuing waste discharge regulations to ensure that water quality objectives are met.

Basin plans provide the technical basis for determining waste discharge requirements and taking regulatory enforcement actions if deemed necessary. The project site is located within the jurisdiction of the CVRWQCB. A basin plan has been adopted for the Sacramento and San Joaquin River Basin (Basin Plan), which covers all of the project area.

The Basin Plan sets water quality objectives for the surface waters in its region for the following substances and parameters: ammonia, bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, radioactivity, salinity, sediment, settleable material, suspended material, taste and odor, temperature, toxicity, turbidity, and pesticides. For groundwater, water quality objectives applicable to all groundwater have been set for bacteria, chemical constituents, radioactivity, taste, odors, and toxicity.

Senate Bill 5

In 2007, the State of California set the 200-year event as the Urban Level of Flood Protection (ULOP) for the State through a series of laws included in Senate Bill (SB) 5. Along with other related legislation, SB 5 established a mandate for local governments to amend their general plans and zoning codes to be consistent with State law on floodplain management. Specifically, SB 5 requires all cities and counties within the Sacramento-San Joaquin Valley, as defined in California Government Code Sections 65007(h) and (j), to make findings related to an ULOP or the national FEMA standard of flood protection before: (1) entering into a development agreement for any property that is located within a flood hazard zone; (2) approving a discretionary permit or other discretionary entitlement, or a ministerial permit that would result in the construction of a new residence, for a project that is located within a flood hazard zone; or (3) approving a tentative map, or a parcel map for which a tentative map was not required, for any subdivision that is

located within a flood hazard zone. The primary purpose of the law is to ensure that appropriate flood protection is provided in urban and urbanizing areas.

A project would be subject to the requirements of SB 5 if the project would meet all of the following five criteria:

1. Located within an urban area that is a developed area, as defined by CFR Title 44, Section 59.1, with 10,000 residents or more, or an urbanizing area that is a developed area or an area outside a developed area that is planned or anticipated to have 10,000 residents or more within the next 10 years.
2. Located within a flood hazard zone that is mapped as either a special hazard area or an area of moderate hazard on FEMA's official (i.e., effective) FIRM for the NFIP.
3. Located within the Sacramento-San Joaquin Valley.
4. Located within an area with a potential flood depth above 3.0 feet, from sources of flooding other than localized conditions that may occur anywhere in a community, such as localized rainfall, water from stormwater and drainage problems, and water from temporary water and wastewater distribution system failure.
5. Located within a watershed with a contributing area of more than 10 square miles.

As discussed above, the entirety of the project site is within Zone X, which is designated by FEMA as an Area of Minimal Flood Hazard. Therefore, the proposed project is not subject to SB 5 legislation.

Sustainable Groundwater Management Act

Groundwater Management is outlined in the California Water Code Sections 10750 through 10755.4. The Groundwater Management Act was first introduced in 1992 as Assembly Bill (AB) 3030 and has since been modified by SB 1938 in 2002, AB 359 in 2011, and the Sustainable Groundwater Management Act (SGMA) (SB 1168, SB 1319, and AB 1739) in 2014. The intent of the SGMA is to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions and to provide a methodology for developing a Groundwater Management Plan.

The SGMA became law on January 1, 2015 and applies to all groundwater basins in the State (Water Code Section 10720.3). By enacting the SGMA, the Legislature intended to provide local agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater within their jurisdiction (Water Code Section 10720.1).

The SGMA outlines four basic requirements: (1) development of a Groundwater Sustainability Agency; (2) development of a GSP or development of an Alternative Submittal; (3) implementation of the specific plan and management to meet quantifiable sustainability objectives; and (4) reporting of the implementation activities. Pursuant to the SGMA, Vina GSA, as the GSA for the Vina Subbasin, submitted the Vina Subbasin GSP for approval to the DWR. The most recent update of the Vina Subbasin GSP (as discussed in further detail below), was approved in December 2021. In early 2019, DWR undertook a review of basin prioritization. The DWR has identified the Vina Subbasin as high priority.

Executive Order N-7-22

On March 28, 2022, Executive Order (EO) N-7-22 was issued to enhance water supply resilience and increase drought response within the State. EO N-7-22 limits a county, city, or other public

agency's ability to permit modified or new groundwater wells. Specifically, before local entities can permit new or modified groundwater wells in high and medium priority groundwater basins, EO N-7-22 requires the GSA monitoring the basin to verify in writing that the permitted action is not inconsistent with the GSP or other groundwater management program for the basin. Additionally, the permitting entity must determine that the well will not interfere with nearby wells and will not cause subsidence that could negatively affect nearby infrastructure.

Local Regulations

Relevant goals and policies from the 2030 Butte County General Plan, as well as various other local guidelines and regulations related to hydrology and water quality, are discussed below.

2030 Butte County General Plan

The following goals and policies from the 2030 Butte County General Plan related to hydrology and water quality are applicable to the proposed project.

Goal W-1 Maintain and enhance water quality.

- Policy W-P1.4 Where appropriate, new development shall be Low Impact Development (LID) that minimizes impervious area, minimizes runoff and pollution and incorporates best management practices.
- Policy W-P1.5 Pest-tolerant landscapes shall be encouraged to minimize the need for pesticides.

Goal W-3 Effectively manage groundwater resources to ensure a long-term water supply for Butte County.

- Policy W-P3.3 The County shall protect groundwater recharge and groundwater quality when considering new development projects.

Goal W-5 Protect water quality through effective stormwater management

- Policy W-P5.2 New development projects shall identify and adequately mitigate their water quality impacts from stormwater runoff.
- Policy W-P5.3 Pervious pavements shall be allowed and encouraged where their use will not hinder mobility.
- Policy W-P5.4 Temporary facilities shall be installed as necessary during construction activities in order to adequately treat stormwater runoff from construction sites.
- Policy W-P5.5 Stormwater collection systems shall be installed concurrently with construction of new roadways to maximize efficiency and minimize disturbance due to construction activity.

Vina Subbasin Groundwater Sustainability Plan

In September 2014, the California legislature passed the SGMA, establishing new measures for groundwater management and regulation statewide. SGMA provides for local control of groundwater resources while requiring sustainable management of the State's groundwater basins. Under the provisions of SGMA, local agencies must establish governance of groundwater subbasins by forming GSAs with the authority to develop, adopt, and implement a GSP for the subbasin under their jurisdiction.

The Vina Subbasin is managed by two GSAs, which work together under a Subbasin Cooperation Agreement to manage the subbasin. The Vina Subbasin GSP was prepared by the GSAs, and was adopted in December 2021. The purpose of the Vina Subbasin GSP is to characterize groundwater conditions in the Vina Subbasin, establish sustainability goals, and to describe programs and management actions the GSAs intend to implement to maintain sustainable groundwater management through 2042.

Butte County Code

The applicable ordinances within the Butte County Code associated with hydrology and water quality are discussed in further detail below.

Water Well Ordinance

Chapter 23B of the Butte County Code provides minimum procedures for the proper construction and placement of water wells within the County. Specifically, Section 23B-5c includes well spacing requirements to ensure that wells of an engineered pumping capacity of 1,000 gallons per minute or greater are located an adequate distance from the nearest existing well.

Grading and Mining Ordinance

Chapter 13, Grading and Mining, of the Butte County Code regulates grading on property within the unincorporated area of Butte County in order to control erosion and siltation, the enhancement of slope stability, the protection of said resources and the prevention of related environmental damage by establishing standards and requiring permits for grading.

Erosion Control Ordinance

Division 14, Land Use Compatibility Standards, of Chapter 24, Zoning, of the Butte County Code establishes performance standards to minimize various negative impacts resulting from land uses and development within Butte County. The intent of the standards is to promote compatibility among various land uses; protect and enhance the rural character of Butte County; protect the general health, safety, or welfare of the community; and control noise, dust, odor, smoke, vibration, danger to life and property, or similar causes likely to create a public nuisance. Specifically, Section 24-145, Erosion Control, includes control standards which apply to development projects within the County. The erosion control standards include the following:

- The smallest area practical of land shall be exposed at any one (1) time during development;
- When land is exposed during development, the exposure shall be kept to the shortest practical period of time;
- Natural features such as trees, groves, natural terrain, waterways, and other similar resources shall be preserved where feasible;

- Temporary vegetation or mulching shall be used to protect critical areas exposed during development;
- The permanent final vegetation and structures shall be installed as soon as practical in the development;
- Wherever feasible the development shall be fitted to the topography and soils to create the least erosion potential;
- Provisions shall be made to effectively accommodate the increased runoff caused by changed soil and surface conditions during and after development; and
- Sediment basins (debris basins, desalting basins, or silt traps) shall be installed and maintained to remove sediment from runoff waters from land undergoing development where needed.

Groundwater Conservation Ordinance

Chapter 33, Groundwater Conservation, of the Butte County Code provides regulations that foster prudent water management practices to avoid significant environmental, social, and economic impacts related to groundwater extraction within the County. Specifically, the County requires a permit to extract groundwater for use outside the County, and for the substitution of groundwater for surface water that has been used in the County and is now voluntarily transferred outside the County, to protect against groundwater overdraft and to ensure that the safe yield of the groundwater aquifers and subbasins are not exceeded.

4.7.4 IMPACTS AND MITIGATION MEASURES

This section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to hydrology and water quality. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an impact related to hydrology and water quality is considered significant if the proposed project would:

- Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    - Result in substantial erosion or siltation on- or off-site;
    - Substantially increase the rate or amount of surface runoff in a manner which would 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; or;
    - Impede or redirect flood flows (see Chapter 5, Effects Not Found to be Significant, of this EIR);
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation (see Chapter 5, Effects Not Found to be Significant, of this EIR); or

- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

As noted above, issues related to whether the proposed project would result in the following are discussed in Chapter 5, Effects Not Found to be Significant, of this EIR:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    - Impede or redirect flood flows; or
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

In addition, the proposed project's impacts associated with erosion or siltation on- or off-site are discussed in Chapter 4.5, Geology and Soils, of this EIR. As previously noted, water supply availability is addressed in Chapter 4.12, Utilities and Service Systems, of this EIR.

Method of Analysis

The impacts analysis for this chapter is based primarily on the Drainage Report prepared for the proposed project by LACO Associates, Inc.

In accordance with Section 10.05-3, Drainage Calculations, of the Butte County Public Works Improvement Standards, LACO Associates used the rational method to calculate pre- and post-development peak flow rates for the project area for both the 10-year and 100-year design storms. Runoff coefficients for pre-development conditions were determined using the County's Improvement Standards, surface permeability was determined based on the predominant soil type on the project site according to the U.S. Department of Agriculture (USDA) Web Soil Survey, time of concentration was determined using methods outlined in the USDA's Urban Hydrology for Small Watersheds: TR-55 (1986), and the rainfall intensity for each sub-basin was determined based on current National Oceanic and Atmospheric Administration (NOAA) point precipitation frequency estimates for the specified time of concentration within the County's Improvement Standards. All open space and landscaped areas within the project site were assumed to be classified as "landscaped areas", with the exception of open space areas that were not to be changed due to the proposed project. The runoff coefficient for the landscaped and open space areas were calculated using the "unimproved areas" methodology detailed in the County Improvement Standards. A composite runoff coefficient was then calculated for the catchments that had both "improved" and "unimproved" areas.

For proposed residential lots larger than 0.125-acre, a conservative assumption that 50 percent of the lot would be pervious (i.e., landscaped) was used. The model also assumed that 30 percent of each lot would be roof surface and 20 percent of each lot would be paved. For sub-catchment areas with any residential lots less than 0.125-acre, a conservative assumption that 35 percent of all the lots would be pervious (i.e., landscaped) was used. Additionally, 40 percent of the lots smaller than 0.125-acre was assumed to be roof surface and 25 percent was assumed to be paved. A conservative assumption was made that the vast majority of commercial areas would be paved (i.e., 70 percent of commercial areas was assumed to be paved, 25 percent was assumed to be roofed, and five percent was assumed to be landscaped).

Detailed calculations are provided in the Drainage Report prepared for the proposed project by LACO Associates, Inc (see Appendix G).

In addition, LACO Associates used the Autodesk Storm and Sanitary Analysis version 2022.0.1, which is a hydrodynamic model for analyzing and designing urban drainage systems, stormwater sewers, and sanitary sewers, to analyze the hydraulics of the proposed pipe system.

Project Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in comparison with the standards of significance identified above.

4.7-1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during construction. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Construction of the proposed project would include grading, excavation, trenching for utilities, and other construction-related activities that could cause soil erosion at an accelerated rate during storm events. All such activities have the potential to affect water quality and contribute to localized violations of water quality standards if impacted stormwater runoff from construction activities enters downstream waterways.

Soils exposed by the aforementioned types of construction activities have the potential to affect water quality in two ways: 1) suspended soil particles and sediments transported through runoff; or 2) sediments transported as dust that eventually reach local water bodies. Spills or leaks from heavy equipment and machinery, staging areas, or building sites also have the potential to enter runoff. Typical pollutants include, but are not limited to, petroleum and heavy metals from equipment and products such as paints, solvents, and cleaning agents, which could contain hazardous constituents. Sediment from erosion of graded or excavated surface materials, leaks or spills from equipment, or inadvertent releases of building products could result in water quality degradation if runoff containing the sediment or contaminants should enter receiving waters in sufficient quantities. Discharge of polluted stormwater or non-stormwater runoff could violate waste discharge requirements. However, in general, impacts from construction-related activities would generally be short-term and of limited duration.

Because the proposed project would require construction activities that would result in a land disturbance of greater than one acre, the project applicant would be required by the State to comply with the most current Construction General Permit requirements. Consistent with the requirements, a SWPPP would be prepared for the overall project, which would include the site map, drainage patterns and stormwater collection and discharge points, BMPs, and a monitoring and reporting framework for implementation of BMPs, as necessary. In addition, a Notice of Intent (NOI) would be filed with RWQCB.

Development of the SWPPP would include plans to treat stormwater runoff in accordance with the standards of the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook for New Development and Redevelopment. In addition, Chapter 13, Article I, of the County Code regulates grading and erosion by requiring all projects that grade more than 50 cubic yards (CY) of soil to submit an application for review by the County prior to approval of a grading permit. The application must include a grading and sediment control plan which would be reviewed for safety of grading and potential for erosion. The project would be subject to compliance with Chapter 13, Article I of the County Code and the project applicant would be required to prepare a grading and sediment control plan. The grading and sediment control plan would include temporary and permanent grading and sediment control measures such as the protection of established vegetation; the revegetation of disturbed areas; drainageway, fill slope, cut slope, and stockpile protection; sediment detention; the disposal of spoil material; and dust control.

Non-stormwater management and material management controls reduce non-sediment-related pollutants from potentially leaving the construction site to the extent practicable. The Construction General Permit prohibits the discharge of materials other than stormwater and authorized non-stormwater discharges (such as irrigation and pipe flushing and testing). Non-stormwater BMPs tend to be management practices with the purpose of preventing stormwater from coming into contact with potential pollutants. Examples of non-stormwater BMPs include preventing illicit discharges, and implementing good practices for vehicle and equipment maintenance, cleaning, and fueling operations, such as using drip pans under vehicles. Waste and materials management BMPs include implementing practices and procedures to prevent pollution from materials used on construction sites. Examples of materials management BMPs include the following:

- Good housekeeping activities such as storing of materials covered and elevated off the ground, in a central location;
- Securely locating portable toilets away from the storm drainage system and performing routine maintenance;
- Providing a central location for concrete washout and performing routine maintenance;
- Providing several dumpsters and trash cans throughout the construction site for litter/floatable management; and
- Covering and/or containing stockpiled materials and overall good housekeeping on the site.

While the final materials management BMPs to be used during construction of the proposed project are currently unknown, the project would likely include a combination of the BMP examples listed above. Final BMPs for the proposed project construction would be chosen in consultation with the applicable CASQA Stormwater BMP Handbooks and implemented by the project contractor.

In accordance with the Construction General Permit, the project site would also be inspected during construction before and after storm events and every 24 hours during extended storm events in order to identify maintenance requirements for the implemented BMPs and to determine the effectiveness of the implemented BMPs. As

a "living document", the site-specific SWPPP that would be prepared for the proposed project would be modified as construction activities progress. A Qualified SWPPP Practitioner (QSP) would ensure compliance with the SWPPP through regular monitoring and visual inspections during construction activities. The QSP for the project would amend the SWPPP and revise project BMPs, as determined necessary through field inspections, to protect against substantial erosion or siltation on- or off-site.

Compliance with the State NPDES Construction General Permit and Chapter 13, Article I of the County Code, as described above, would minimize the potential degradation of stormwater quality and downstream surface water associated with construction of the proposed project. In addition, BMPs would be required to be designed in accordance with the CASQA Stormwater BMP Handbook for New Development and Redevelopment. However, because a SWPPP has not yet been prepared for the proposed project, proper compliance with the aforementioned regulations cannot be ensured at this time, and the proposed project's construction activities could violate water quality standards or waste discharge requirements or otherwise degrade water quality. As a result, the proposed project could result in a ***significant*** impact related to short-term construction-related water quality.

Mitigation Measure(s)

Implementation of the following mitigation measure, requiring preparation of a SWPPP for review and approval by the CVRWQCB, would reduce the above potential impact to a *less-than-significant* level.

4.7-1 Implement Mitigation Measure 4.5-2.

4.7-2 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during operations. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Development of the proposed project would result in the conversion of a rural area to mixed-use development, which would include a total of 165 residential units, commercial development, recreation areas, open space, various on-site road improvements, and a sanitary waste disposal station, within the project site. Such new land uses could result in new stormwater pollutants being introduced to the project area. Pollutants associated with the operational phase of the proposed project could include nutrients, oil and grease, metals, organics, pesticides, bacteria, sediment, trash, and other debris. Nutrients that could be present in post-construction stormwater include nitrogen and phosphorous resulting from fertilizers applied to landscaping. Excess nutrients could affect water quality by promoting excessive and/or a rapid growth of aquatic vegetation, which reduces water clarity and results in oxygen depletion. Pesticides, which are toxic to aquatic organisms and can bioaccumulate in larger species, such as birds and fish, can potentially enter stormwater after application to landscaped areas within the project site. Oil and grease could enter stormwater from vehicle leaks, traffic, and maintenance activities. Metals could enter stormwater as surfaces corrode, decay, or leach. Clippings associated with landscape

maintenance and street litter could be carried into storm drainage systems. Pathogens (from wildlife and human activities) have the potential to affect downstream water quality.

Development of the proposed project could also increase polluted non-stormwater runoff (e.g., wash water and landscape irrigation runoff). Such non-stormwater runoff could flow down sidewalks, parking areas, and streets, and pick up additional pollutants deposited on impervious surfaces prior to discharge into the storm drain system and surface waters. Discharge of polluted stormwater or non-stormwater runoff could violate waste discharge requirements.

Proposed Storm Drain System

According to the Drainage Report prepared for the proposed project, the proposed project would include an on-site storm drain system composed of post construction stormwater quality measures such as dedication of landscaping areas, bioswales, and two on-site detention basins, consistent with federal, State, and local regulations.

Impervious surfaces proposed as part of the project include building roofs, driveways, and roadways. Runoff from such surfaces would be captured by the on-site stormwater drainage system. Three separate drainage networks are proposed at the site: the eastern commercial catchment, the upper commercial catchment, and the lower catchment (see Figure 4.7-3). A detention basin would not be required for the eastern commercial catchment, as a large portion of the pre-development area of the catchment would be rerouted to the Upper Commercial Catchment. The upper commercial catchment would consist primarily of commercial lots and a portion of the open space located between Skyway and the proposed development. The runoff from the upper commercial catchment would be directed to a new detention basin located in the open space area to the south of the northern project entrance road cul-de-sac.

The lower catchment would be the largest of the catchments and runoff collected from the lower catchment would be directed towards a detention basin located east of the southernmost roadway cul-de-sac. Please refer to Impact 4.7-4 for further description of the proposed drainage system for the project.

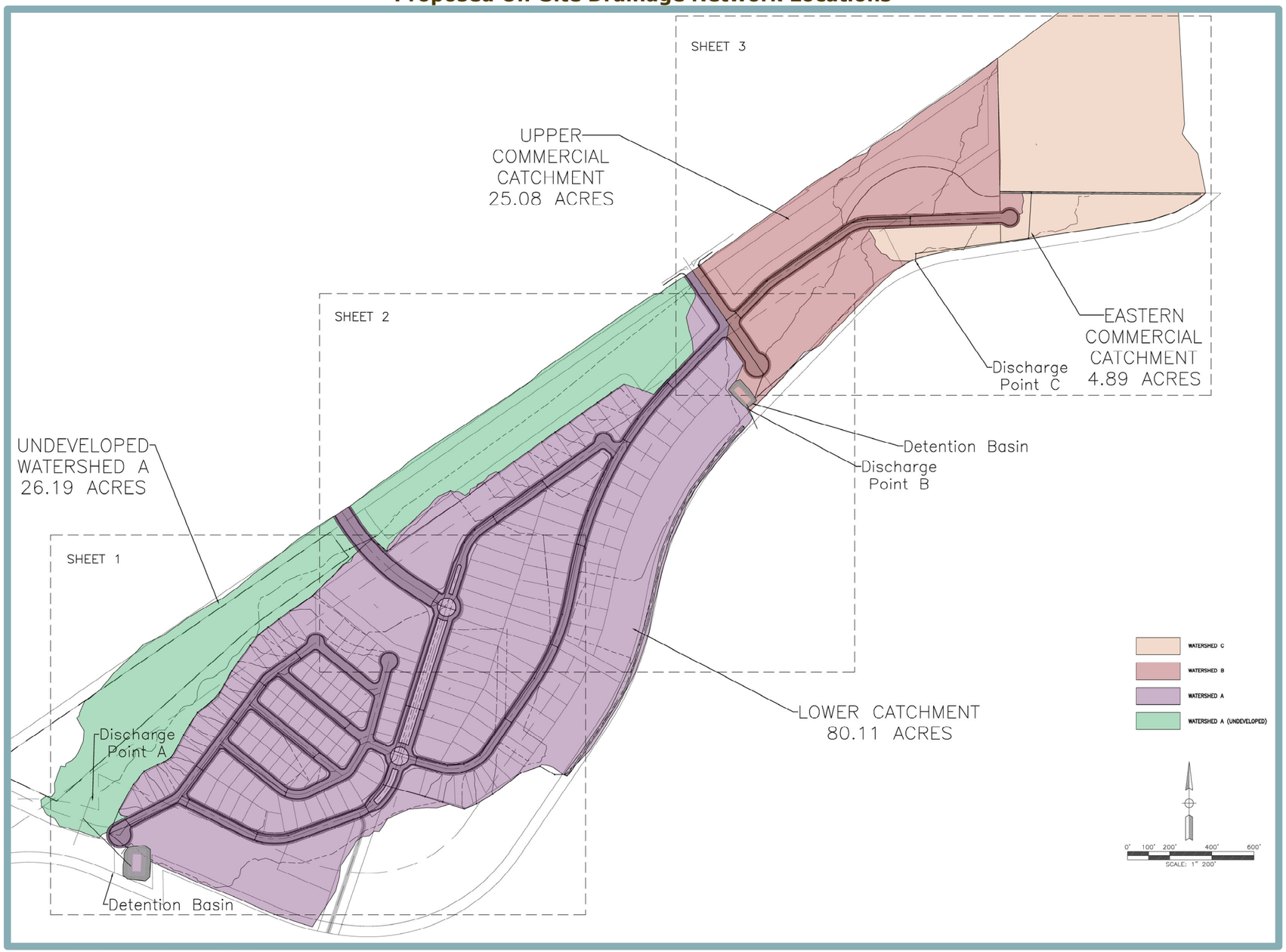
Maintenance and Inspection

In order to ensure continued operation of the proposed stormwater control features, a detailed site-specific inspection and maintenance procedures plan should be implemented. For example, plants and vegetation within the detention basins should be inspected monthly, and the basins should be inspected for the presence of standing water 72 hours after rain events. Required maintenance activity should include, but not necessarily be limited to, removal of debris from basins and removal of debris from outlets of basins. Without implementation of such measures, the basins could fail to ensure that polluted runoff would not enter downstream water bodies during the continued operation of the project.

Water Well

The existing on-site 735-foot-deep water well is located near the center of the southern border of the project site.

Figure 4.7-3
Proposed On-Site Drainage Network Locations



Source: LACO Associates Inc., 2023.

The well is currently permitted as a domestic water supply well through the Butte County Environmental Health Division (Permit Number 04-09182) and the SWRCB Division of Drinking Water.

A number of improvements to the existing on-site water system would be required in order to upgrade the system to accommodate the proposed project, including the installation of an additional water supply well (subject to verification by the Vina GSA under EO N-7-22), a water treatment system, a water distribution system, water meters at each service connection, and additional water tanks for storage. The proposed water system would be subject to the standards and monitoring requirements set forth by federal, State, and local laws, including, but not limited to, public health standards of Title 22 of the California Code of Regulations (CCR), the California Safe Drinking Water Act, and Butte County standards. The water distribution system and proposed second well would be constructed in accordance with the California Waterworks Standards (Title 22, Chapter 16). In addition, a new permit through the SWRCB and/or Butte County Environmental Health Division would be required to allow use of the new water system as a community water system. Compliance with the aforementioned requirements would ensure that the proposed water well would not violate water quality standards or waste discharge requirements or otherwise result in the substantial degradation of surface or ground water quality during operations.

On-Site Wastewater System

The existing on-site wastewater treatment system currently consists of four 40,000-gallon septic tanks, four 25,000 gallons per day (gpd) Presby multi-level aerobic treatment modules, and four 3,000-gallon collection pump tanks with UV disinfection units, which were constructed to serve the temporary base camp that provided wildfire response efforts in the area during the 2018 Camp Fire. Treated effluent is routed through a two-inch force main to evaporative ponds with bottom-mounted aerators for disposal. The existing on-site wastewater treatment system currently operates under the SWRCB General Order 2014-0153-DWQ-R5309.

The proposed project would require improvements to the existing wastewater system, and additional infrastructure, in order to adequately handle the wastewater generated by the proposed on-site uses. For example, the proposed project would include a new sanitary waste disposal station, which would be primarily intended to serve future patrons of the mini storage use, and would include an adjacent 40,000-gallon solids holding tank and a 20,000-gallon clarification tank. The proposed project would also include two new 20,000-gallon equalization tanks located near the existing wastewater treatment system in the southwestern portion of the project site, as well as a new headworks/bar screen and a new three-inch effluent force main, which would be connected to the proposed subsurface drip dispersal system to be located within the open space area adjacent to Skyway.

With regard to water quality associated with the subsurface drip dispersal system, the system would be comprised of special drip tubing that discharges the treated wastewater in small, precise doses. The tubing would be placed at or slightly below the ground surface to make use of the most biologically active soil zone for distribution, nutrient uptake, and evapotranspiration of the wastewater. The drip dispersal system would be located at a distance greater than 50 feet from the existing drainage course

which runs through the open space areas and nearest property line; therefore, the system would meet all setback requirements. In regard to potential impacts to groundwater, the water discharged to the ground surface is not expected to infiltrate the underlying bedrock. If the treated wastewater does reach groundwater levels, the wastewater will have already been treated to State standards for discharge to groundwater.

A detailed discussion of the existing and proposed on-site wastewater treatment systems is included in Chapter 3, Project Description, and Chapter 4.12, Utilities and Service Systems, of this EIR. As noted therein, a new Waste Discharge Requirements (WDR) Permit from the SWRCB would be required for the proposed improvements to the existing wastewater treatment system. The proposed on-site wastewater treatment system would also be required to adhere to all requirements included in Chapter 19 of the Butte County Code, which would ensure compliance with applicable standards, laws, and guidelines as adopted, and/or modified by the SWRCB and RWQCB. Compliance with the aforementioned standards and permit requirements would ensure that the proposed on-site wastewater treatment system would not violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during operations.

Conclusion

Based on the above, the proposed project could result in a ***significant*** impact related to a violation of water quality standards or waste discharge requirements or otherwise substantial degradation of surface or ground water quality during operations.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.7-2(a) *Prior to approval of final project improvement plans, a detailed Best Management Practice (BMP) and water quality maintenance plan shall be submitted to the County Director of Public Works, and the County Engineer for review and approval. The BMP and water quality maintenance plan shall meet the standards of the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook for New Development and Redevelopment. Site design measures, source control measures, hydromodification management, and Low Impact Development (LID) standards, as necessary, shall be incorporated into the design and shown on the improvement plans.*

4.7-2(b) *Prior to approval of final project improvement plans, the project applicant shall obtain a new permit from the SWRCB and/or Butte County Environmental Health Division to allow use of the new on-site water system as a community water system. All SWRCB and/or Butte County Environmental Health Division permit requirements shall be incorporated into the project design and shown on the improvement plans. Proof of compliance shall be submitted to the Butte County Director of Public Works for review and approval.*

4.7-2(c) *Prior to approval of final project improvement plans, the project applicant shall obtain a new Waste Discharge Requirements (WDR) Permit from the SWRCB for the proposed improvements to the existing on-site wastewater treatment system. All WDR Permit requirements shall be incorporated into the project design and shown on the improvement plans. Proof of compliance shall be submitted to the Butte County Director of Public Works for review and approval.*

4.7-2(d) *Prior to the completion of construction, the applicant shall prepare and submit, for the County's review, an acceptable Stormwater Control Operation and Maintenance Plan identifying the maintenance entity for the project's storm drainage system and maintenance requirements for the review and approval by the Butte County Director of Public Works. Typical routine maintenance consists of the following:*

- *Limit the use of fertilizers and/or pesticides. Mosquito larvicides shall be applied only when absolutely necessary.*
- *Visually inspect for ponding water to ensure that filtration is occurring.*
- *After all major storm events, inspect basins to ensure that the system is functioning as intended and is not clogged.*
- *Continue general landscape maintenance, including pruning and cleanup throughout the year.*
- *Irrigate throughout the dry season. Irrigation shall be provided with sufficient quantity and frequency to allow plants to thrive.*
- *Excavate, clean and or replace and screen or filter media to ensure ongoing infiltration.*

4.7-3 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Based on the analysis below, the impact is *less than significant*.

As discussed above, the project site is located within the Vina Subbasin and is under the jurisdiction of the Vina GSA. According to the GSP prepared for the Vina Subbasin, the subbasin has been identified by the DWR as a high-priority subbasin. However, the Vina Subbasin is not identified by the DWR as being critically overdrafted.

The existing on-site water system consists of an on-site well at a depth of 735 feet. Water produced from the well is currently sent to two 10,000-gallon above-ground storage tanks using a 75 horse power (hp) turbine pump, and is subsequently pulled from the tank using two 10 hp pumps and pressurized into a distribution system through four pressure tanks. The water system is generally located near the center of the southern border of the project site. The existing well was initially installed in 1999 for the purposes of irrigating the Tuscan Ridge Golf Course and providing services to the associated bistro. The well was subsequently used for potable water purposes by

PG&E and ECC Constructors during their occupation of the site. The water system is currently permitted as a domestic water supply through the Butte County Environmental Health Division (Permit Number 04-09182) and the SWRCB Division of Drinking Water.

A number of improvements to the existing on-site water system would be required in order to upgrade the system to accommodate the proposed project, including the installation of an additional water supply well, a water treatment system, a water distribution system, water meters at each service connection, and additional water tanks for storage. The proposed water system would be subject to the standards and monitoring requirements set forth by federal, State, and local laws, including, but not limited to, public health standards of Title 22 of the CCR, GSA review standards of EO N-7-22, the California Safe Drinking Water Act, and Butte County standards. The water distribution system and proposed second well would be constructed in accordance with the California Waterworks Standards (Title 22, Chapter 16). The water system would be capable of meeting the maximum daily demand of the proposed project, in accordance with Title 22, Section 64554(c). Any additional water tanks needed to support the proposed development would be constructed using materials that meet appropriate California Department of Forestry and Fire Protection (CAL FIRE) standards. A minimum of 300,000 gallons of water storage is anticipated to be required to meet minimum fire flows; however, the water storage requirements would be determined in consultation with the Butte County Fire Department and CAL FIRE. An approximately 487,000-gallon water tank would be located in the northeastern portion of the project site, adjacent to the proposed mini-storage facility. The tank would be approximately 72 feet in diameter and 16 feet in height, and would be surrounded by a 125-foot by 125-foot security fence. A new permit through the SWRCB and/or Butte County Environmental Health Division would be required to allow use of the system as a community water system.

According to LACO Associates, Inc., the proposed project would require approximately 147,977 gallons of water per day.[8] The existing on-site well has a documented usage of 325,000 to 425,000 gallons per day.[9] As such, the existing well is anticipated to have more than sufficient supply to meet the daily demand of the proposed project. Nonetheless, the additional well described above is being constructed at the request of the Butte County Department of Environmental Health to provide water system redundancy.

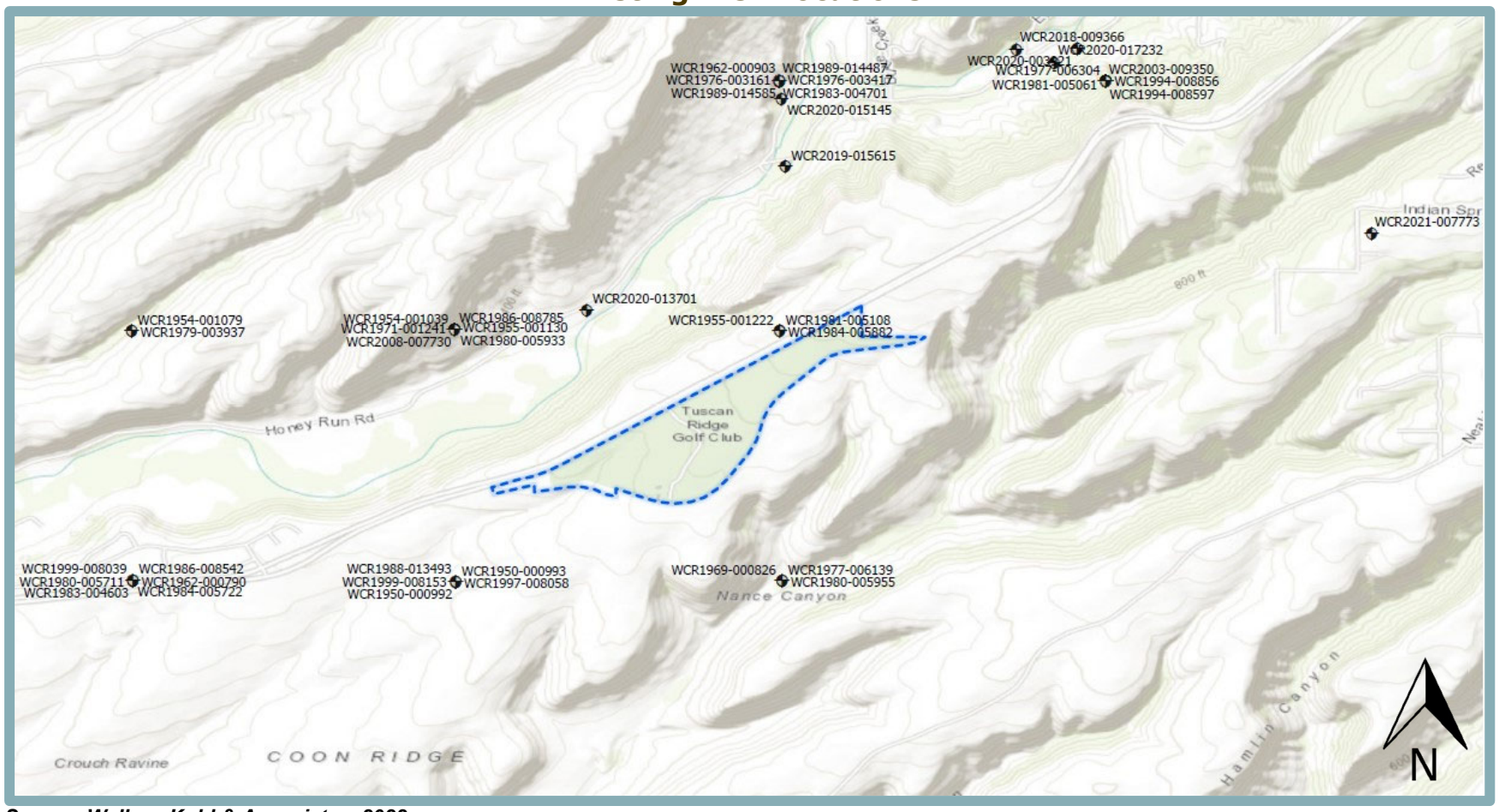
In order to assess the location of the proposed additional on-site well, a Well Siting Memo was prepared for the proposed project by WKA.[10] According to the Well Siting Memo, several wells exist in the vicinity of the site; however, only two wells in addition to the existing on-site well, identified as WCR 1999-008039 and WCR 1980-005711 (see Figure 4.7-4), meet the location and approximate depth parameters to be located on the same ridge, and, thus, be affected by, the proposed well.

8 LACO Associates, Inc. *Tuscan Ridge Planned Development Estimated Water Use and Storage Tank Sizing Technical Memorandum*. May 15, 2022

9 Wallace Kuhl & Associates. *Well Siting Consultation Services – 3100 Skyway Property*. March 31, 2022.

10 *Ibid.*

Figure 4.7-4
Existing Well Locations



Source: Wallace Kuhl & Associates, 2022.

The nearest well to the project site (WCR 1980-005711) is located approximately 1.1 miles southwest of the site, and serves a 65-unit residential subdivision. According to the Well Siting Memo, the additional on-site well would be anticipated to provide similar production as the existing on-site well if drilled to a similar depth, and is not anticipated to affect any existing wells within the project area.

However, to minimize pumping influences between the two on-site wells, WKA recommend separating the wells by a minimum of 1,500 feet. It should be noted that the 1,500-foot separation is precautionary, as the pumping capacity of the existing on-site well suggests a very productive aquifer beneath the project site, and due to the fact that the additional well is proposed as a redundancy to the existing well, and the wells are not anticipated to operate at the same time. The location of the existing on-site well with a 1,500-foot radius is shown in Figure 4.7-5.

It should also be noted that while the proposed project would result in an increase in on-site impervious surfaces, which would reduce the infiltration of groundwater as compared to existing conditions, as discussed in the Drainage Report, approximately 52.6 acres of the project site would remain as open space, and an additional 3.9 acres of the project site would be reserved for landscaped areas. The project also includes construction of two detention basins on-site to collect and store runoff from the new impervious surface which will hold water and increase infiltration. Consequently, the proposed project would not result in substantial interference with groundwater recharge in the area.

Based on the above, the proposed project's impacts related to groundwater would be ***less than significant***.

Mitigation Measure(s)
None required.

4.7-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or 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. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Increases to peak runoff flows or volumes resulting from alterations to the existing drainage pattern of the site have the potential to result in exceedance of existing or planned stormwater drainage systems or flooding on- or off-site.

Figure 4.7-5
Well Siting Buffer Location

Source: Wallace Kuhl & Associates, 2022.

As discussed previously, runoff from impervious surfaces created as part of the proposed project would be captured by the on-site stormwater drainage system, which would be separated into three drainage networks: the eastern commercial catchment, the upper commercial catchment, and the lower catchment (see Figure 4.7-3).

The eastern commercial catchment would be approximately 24.28 acres and would include the commercial lots in the north and northeastern portions of the project site, as well as the open space area to the north. A network of on-site pipes would convey the runoff from the eastern commercial catchment to a bioswale, which would treat the stormwater prior to discharging to an outfall located in the trail easement at Discharge Point C. A detention basin would not be required for the eastern commercial catchment, as a large portion of the pre-development area of the catchment would be rerouted to the upper commercial catchment.

The upper commercial catchment would be approximately 25.80 acres and would consist primarily of the commercial lots within the eastern portion of the project site and a portion of the open space located between Skyway and the proposed development. Runoff from the upper commercial catchment would be directed to a new detention basin located in the open space area near the cul-de-sac at the end of the proposed eastern entryway. Runoff would be treated in the basin and then discharged at Discharge Point B.

The lower catchment would be the largest of the catchments, consisting of approximately 85.06 acres of predominantly residential lots, as well as portions of open space areas and commercial areas. The residential lots along the western edge of the project site would be graded such that runoff would drain to the back of the lot, rather than to the front where runoff could be collected along the street. To address runoff conditions, a 10-foot drainage easement along the back of the lots is proposed. The pipes along the easement would connect to the rest of the lower catchment network. Additionally, several of the lots along the eastern portion of the lower catchment area would be graded towards the back (i.e., away from the roadway). A bioswale is proposed to collect and transport the runoff generated from the eastern lots to the rest of the lower catchment pipe system. The bioswale would be located within the trail easement behind the lots. The runoff collected from the lower catchment would be directed towards a detention basin located east of the westernmost roadway cul-de-sac. Stormwater would be treated at the detention basin and discharged at Discharge Point A.

It should be noted that a portion of the existing Watershed A that runs along the main drainage between the proposed residential development and Skyway would not be developed under post-development conditions. As such, runoff from the undeveloped portion of Watershed A would naturally route to Discharge Point A. However, the main entryway to the project site would bisect the undeveloped section of Watershed A. As a result, a 24-inch culvert is proposed to convey the runoff below the main roadway. All proposed piping and substructures on-site would be concrete, and would range from 15 inches to 45 inches in diameter.

The proposed on-site detention basins would be sized to contain the entire runoff volume generated at each outlet for the 100-year storm. The basins would also be sized to have at least a 1.5-foot freeboard when passing the 10-year total runoff at a

pre-condition flow rate, and sufficient capacity to pass a 100-year storm at pre-condition flow rates. Furthermore, as shown in Table 4.7-2, the basin design would ensure that discharge out of the basins would not exceed pre-development peak flows. Therefore, the proposed project would not increase the rate or amount of runoff leaving the project site during the design storm event.

Table 4.7-2
Post-Project Drainage Conditions (cfs)

Discharge Point	Peak Discharge without Detention Basin	Pre- vs. Post-Project Discharge without Detention Basin	Peak Discharge with Detention Basin	Pre- vs. Post-Project Discharge with Detention Basin
B (10-yr)	29.56	9.29	18.80	-1.47
A (10-yr)	129.25	43.05	84.66	-1.54
B (100-yr)	49.10	18.77	28.56	-1.77
A (100-yr)	143.13	14.33	126.42	-2.38

Source: LACO Associates, Inc., 2023.

Based on the above, the proposed project is not anticipated to substantially alter the existing drainage patterns of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or 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. Nevertheless, a final drainage report would be required with the project Improvement Plans to substantiate the preliminary drainage design. Without approval of a final drainage report, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.7-4 *As part of the Improvement Plan submittal process, the preliminary drainage report provided during environmental review shall be submitted in final format. The final drainage report may require more detail than that provided in the preliminary report, and will be reviewed in concert with the Improvement Plans to confirm conformity between the two. The report shall be prepared by a Registered Civil Engineer and shall, at a minimum, include: written text addressing existing conditions; the effects of the proposed improvements; all appropriate calculations; watershed maps; changes in flows and patterns; and proposed on- and off-site improvements to accommodate flows from the project. The report shall identify water quality protection features and methods to be used during construction, as well as long-term post-construction water quality measures. The final drainage report shall be prepared in conformance with the requirements set forth by Butte County at the time of Improvement Plan submittal and shall be*

approved by the County Director of Public Works, and the County Engineer.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

The cumulative setting for impacts related to hydrology and water quality encompasses the Hamlin Slough subwatershed of the larger Butte Creek Watershed. Additional detail regarding the cumulative project setting can be found in Chapter 20, Statutorily Required Sections, of this EIR.

4.7-5 Cumulative impacts related to the violation of water quality standards or waste discharge requirements, and impacts resulting from the alteration of existing drainage patterns. Based on the analysis below, the cumulative impact is *less than significant*.

The cumulative geographic setting for hydrology is the 109 km^2 Hamlin Slough subwatershed, within the Butte Creek Watershed. As previously discussed, the general boundaries of the Hamlin Slough subwatershed consist of Skyway to the north, Butte Creek to the west, McKay Ridge and the Town of Paradise to the east/northeast, and farmland north of Little Dry Creek to the south/southeast. This portion of the subwatershed within the unincorporated County consists of land primarily designated Agriculture (20-160 ac. Minimum) by the 2030 Butte County General Plan. There is no reasonably foreseeable development that would occur within the Agriculture-designated areas of the unincorporated portions of the subwatershed that could combine with the project's runoff to create cumulative hydrology impacts.

The eastern portion of the subwatershed consists of a portion of the Town of Paradise. The Town prepared a Storm Drainage Master Plan (SDMP), dated June 7, 2022.[11] This SDMP provides the Town with a framework to evaluate storm drainage-related recovery efforts from the Camp Fire that destroyed most of the Town in November of 2018. This SDMP evaluates and redefines the limits of expected storm drainage through the Town. Town general plan land use designations were correlated to imperviousness for future build-out conditions. Pre-fire conditions were reviewed to determine which parcels would be expected to become more densely developed in the process of building out to the General Plan. A comparison of build-out to pre-fire peak flows for 10-year and 100-year storms using model results at over fifty locations representative of typical conditions showed peak flow increases of less than one percent.

As also noted in the SDMP, Paradise has been experiencing drainage problems for decades. The existing storm drain system was developed with little or no planning. As

[11] Town of Paradise. *Storm Drainage Master Plan*. June 7, 2022.

land has been developed, the drainage has been diverted downstream to neighboring properties with minimal planning. As part of the SDMP process, the Town's staff identified 16 locations with known flooding problems and/or material deficiencies to be addressed by the SDMP. Each of the locations where deficiencies were identified were evaluated in order to develop master plan-level recommendations for capital improvements that would reduce flooding and address material failures.

In reference to the Town of Paradise, while future development will occur as the Town rebuilds, the Town's 2022 SDMP indicates that peak flow increases would be relatively limited and through implementation of its capital improvement program, various deficiencies in the system would be remedied.

It is also noted that the 2030 Butte County General Plan EIR determined that all impacts related to water quality, groundwater supplies, and alterations of existing drainage patterns would be less-than-significant or less-than-significant with mitigation. In addition, similar to the proposed project, any future development in the subwatershed would be required to comply with the requirements of the CASQA Stormwater BMP Handbook for New Development and Redevelopment, and the CVRWQCB requirements, including, but not limited to, the NPDES Construction General Permit, NPDES Municipal Stormwater Permits, Industrial Stormwater General Permits, Clean Water Act Section 401 and 404 Permits, and Dewatering Permits. Thus, all future development would be required to include appropriate site design measures, source controls, and hydraulically-sized stormwater treatment and flow control measures.

As discussed above, all impacts associated with the proposed project related to hydrology and water quality could be reduced to less-than-significant levels with implementation of the mitigation measures set forth herein and compliance with applicable stormwater regulations.

Based on the above, cumulative impacts to hydrology and water quality would be ***less than significant***.

Mitigation Measure(s)

None required.

4.8. Land Use and Planning/Population and Housing

4.8. LAND USE AND PLANNING/ POPULATION AND HOUSING

4.8.1 INTRODUCTION

The purpose of the Land Use and Planning/Population and Housing chapter of the EIR is to examine the proposed project's compatibility with land uses in the area and identify any incompatibilities with applicable land use plans, policies, and regulations adopted by the County for the purpose of avoiding or mitigating environmental effects, including the 2030 Butte County General Plan.[1] Furthermore, the chapter includes discussion of the potential for the project to induce substantial population growth in the project area, either directly or indirectly. The reader is referred to the various environmental resource evaluations presented in the other technical chapters of this EIR for a discussion of potential physical/environmental effects that may result from the proposed land use changes.

The primary documents referenced to prepare this chapter include the 2030 Butte County General Plan, the 2030 Butte County General Plan EIR,[2] the 2030 Butte County General Plan Supplemental EIR (SEIR),[3] and the Butte County 2022-2030 Housing Element.[4]

Subsequent to circulation of the Notice of Preparation (NOP) for public review, Butte County updated its General Plan, first by adoption of the 2022-2030 Housing Element of the General Plan on February 22, 2023, and secondly by the adoption of the Butte County General Plan 2040 on March 28, 2023. However, at the time of publication of the NOP, the adopted General Plan for Butte County was the 2030 General Plan. Thus, this EIR relies on the 2030 Butte County General Plan for determining whether any inconsistencies would occur between the proposed project and the applicable General Plan.

4.8.2 EXISTING ENVIRONMENTAL SETTING

This section describes the existing land uses on the project site and within the surrounding area, as well as the existing plans and policies that guide the development of the project site. In addition, the Existing Environmental Setting section describes current population and housing trends in the project region.

Project Site Characteristics and Surrounding Land Uses

The project site consists of 163.12 acres of what was formerly the Tuscan Ridge Golf Course, located on the southeast side of Skyway, in unincorporated Butte County, between Chico and Paradise, California. Skyway, which is identified by the 2030 Butte County General Plan as a County-designated scenic route, is the sole roadway in the immediate project vicinity, and runs the entire length of the northwest site boundary. Currently, access is provided through an existing driveway from Skyway near the center of the site, which has boulder accent walls on either side and two metal gates prohibiting public entry. State Route (SR) 99 lies approximately four miles to the west and SR 191 is approximately five miles to the east.

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1 Butte County. *Butte County General Plan 2030.* November 6, 2012.
2 Butte County. *Butte County General Plan 2030 Draft EIR*. April 8, 2010.
3 Butte County. *Butte County GPA & Zoning Ordinance Update Draft Supplemental EIR*. May 31, 2012.
4 Butte County. *Butte County 2022-2030 Housing Element Adoption Draft.* December 2022.

The terrain of the project site is varied from flat to gently sloped, with elevations ranging from approximately 650 feet above mean sea level (amsl) in the west to approximately 925 feet amsl in the east. Vegetation on the site consists primarily of sparse ruderal vegetation, along with scattered oak and pine trees. An existing drainage ravine is located within the northwestern portion of the site, generally parallel with Skyway, and includes a culvert under the main access driveway, as well as under an existing access easement in the western portion of the site. Generally following the alignment of the ravine within the northern portion of the site is an existing meandering path associated with the prior use of the site as a golf course. An existing outfall is located near the westernmost border of the site. A number of easements are present throughout the project site, including the access easement within the western portion of the site for the adjacent agricultural property, as well as power utility easements across the site. The access easement is currently used only occasionally by the adjacent property owner to move small pieces of equipment to and from their property.

Three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Course currently exist on-site: a 2,440-square foot (sf) grill building, an 1,830-sf clubhouse, and a Quonset hut. In addition, an existing potable water well and associated system, as well as an existing wastewater treatment system, including septic tanks, leach field, and disposal ponds, are located in the southwestern portion of the site.

The project site is predominantly bound by Skyway to the north and large undeveloped parcels to the east, south, and west, with the exception of Paradise Rod & Gun Club, which is located adjacent to the northeast border of the site. The Paradise Rod & Gun Club consists of two buildings with associated parking spaces, and two outdoor shooting ranges. Butte Creek is located to the north of, and runs roughly parallel to, Skyway. The Butte Creek Ecological Preserve is also located north of the site, across Skyway, with Butte Creek Canyon located further to the northeast. Butte Creek and the Butte Creek Ecological Preserve are separated from the project site by Skyway and an approximately 380-foot decline in elevation.

The land to the south of the project site is designated Agriculture (AG) in the County's 2030 General Plan and zoned Agriculture (AG) with a minimum parcel size of 40 acres and a maximum of one unit per parcel (AG-40). The land across Skyway, north of the project site, is designated as Foothill Residential (FR) and zoned Foothill Residential with a maximum of one unit per 20-acre parcel (FR-20). The area designated FR is separated from the project site by an approximately 2,700-foot distance and an approximately 434-foot decline in elevation. The Rocky Bluffs subdivision, located approximately 4,100 feet to the southwest of the project site, is designated and zoned Medium Density Residential (MDR), which allows for a maximum density of six dwelling units per acre (du/ac).

Land Use Designations and Zoning Districts

The project site currently has a County of Butte General Plan land use designation of Planned Unit Development (PUD) and is zoned Planned Development (PD). In adopting the Butte County 2030 General Plan, the County prepared an EIR in 2010 and a SEIR in 2012. Both the 2010 EIR and 2012 SEIR assume that the project site will be built out with a golf course and 165 dwelling units (see, e.g., 2010 Draft EIR, pg. 3-49 [Table 3-5]; and 2012 Draft SEIR, pg. 3-45 [Table 3-5].) However, the recently adopted Butte County General Plan 2040 includes the following language regarding the project site:

> The Tuscan Ridge PUD will determine the mix of uses that will occur in a 165-acre area along the Skyway at the site of the former Tuscan Ridge Golf Course. A mix of residential

uses, community commercial uses, and water and/or sanitary sewer facilities provided by a public or private entity may be developed in this area. Additionally, approximately 49 acres of the site would consist of landscaped areas, as well as recreational and open space areas to include bicycle and pedestrian trails.

In addition, Skyway is identified by the 2030 Butte County General Plan as a County-designated scenic route. Although not designated as a Scenic Highway, the area extending 350 linear feet from the centerline of the roadway is considered to be a Scenic Highway (SH) Overlay Zone and is subject to the requirements of Section 24-42 of the Butte County Code of Ordinances.

Table 4.8-1 below provides a summary of the current land use designations and zoning districts of the properties surrounding the project site.

Table 4.8-1
Summary of Adjacent Community Plan Land Use Designations and Zoning Districts

Relationship to Project Site	Present Land Use	Land Use Designation	Zoning District
North of the Project Site Across Skyway	Butte Creek Canyon Ecological Preserve, Butte Creek, Single-Family Residential	FR	FR-20
Southwest of the Project Site	Single-Family Residential	MDR	MDR
South and East of the Project Site	Vacant Land	AG	AG-40

Land Use Designation Definitions

The definitions of the 2030 Butte County General Plan land use designations noted above are summarized as follows:

Planned Unit Development (PUD)

The PUD land use designation identifies future developments that will be considered under a PUD application, as identified in Figure LU-3 of the 2030 Butte County General Plan and Figure LU-2A of the 2040 Butte County General Plan. The intent of the PUD land use designation is to encourage and take advantage of opportunities for more integrated, flexible and superior design than is available through the application of conventional regulation. The Tuscan Ridge PUD is intended to determine the mix of uses that would occur in a 165-acre area along Skyway at the site of the former Tuscan Ridge Golf Course. A mix of residential uses, community commercial uses, and water and/or sanitary sewer facilities provided by a public or private entity may be developed in this area. Additionally, approximately 40.8 acres of the site would consist of landscaped and recreational/open space areas, which would include bicycle and pedestrian trails.

Foothill Residential (FR)

The FR land use designation allows single-family dwellings at rural densities of one to 40 acres per dwelling unit, depending on the zoning. A total of 62,641 acres of land are designated FR in Butte County.

Medium Density Residential (MDR)

The MDR land use designation allows detached and attached single-family dwellings at densities of up to six du/ac. A total of 6,150 acres of land are designated MDR in Butte County.

Agriculture (AG)

The AG land use designation allows the cultivation, harvest, storage, processing, sale, and distribution of all plant crops, especially annual food crops, as well as roadside stands for the sale of agricultural products grown or processed on the property. The AG land use designation also allows livestock grazing, animal husbandry, intense animal uses, and animal matter processing. Alternative energy facilities are allowed in the AG land use designation, subject to permit requirements. Residential uses in the AG land use designation are limited to one single-family dwelling and a second dwelling unit per legal parcel. Farm labor housing is also permitted. The minimum parcel size is between 20 to 160 acres, although existing parcels smaller than the minimum may remain as legal parcels. A total of 474,637 acres of land are designated AG in Butte County.

Zoning Designation Definitions

The following sections provide definitions of the zoning designations noted above, as summarized from the Butte County Zoning Ordinance (Chapter 24 of the Butte County Code).

Planned Development (PD)

The purpose of the PD zone is to allow for high quality development that deviates from standards and regulations applicable to other zones within the County. The PD zone is intended to promote creativity in building design, flexibility in permitted land uses, and innovation in development concepts. The PD zone is also intended to ensure project consistency with the County's 2030 General Plan, sensitivity to surrounding land uses, and the protection of sensitive natural resources. The PD zone provides landowners with enhanced flexibility to take advantage of unique site characteristics to develop projects that will provide public benefits for residents, employees, and visitors to Butte County.

Scenic Highway (-SH) Overlay Zone

The -SH overlay zone establishes standards to preserve the natural aesthetic qualities of areas visible from roadways designated as scenic highways by the State of California or the Butte County Board of Supervisors. Development within the -SH overlay zone is intended to feature high quality architectural design, preserve views from the highway, and maintain existing topographic features on the site.

Foothill Residential (FR-20)

The purpose of the FR-20 zone is to allow for the appropriate development of large-lot single-family homes, small farmsteads, and related uses in the foothill areas of the County. Standards for the FR-20 zone are intended to ensure that the development of homes respond sensitively to the foothill setting. Permitted residential uses in the FR-20 zone include single-family homes, small residential care homes, and second units. The FR-20 zone also conditionally permits non-residential uses compatible with a low-density rural setting, including public and quasi-public uses, mining, animal services, hunting and fishing clubs, nurseries, and commercial stables. Animal grazing, crop cultivation, private stables, on-site agricultural product sales, and other similar agricultural activities are permitted uses in the FR-20 zone. The minimum permitted parcel size in the FR-20 zone is 20 acres. The FR-20 zone implements the 2030 Butte County General Plan FR land use designation.

Medium Density Residential (MDR)

The purpose of the MDR zone is to allow for a mixture of housing types in a medium density setting. Permitted housing types in the MDR zones include single-family homes and second units. Non-residential uses conditionally permitted in the MDR zone include public and quasi-public uses, park and recreational facilities, personal services, medical offices and clinics, and general retail. The maximum permitted residential density in the MDR zone is six du/ac. The MDR zone implements the MDR land use designation in the 2030 Butte County General Plan.

Agriculture (AG-40)

The purpose of the AG-40 zone is to support, protect, and maintain a viable, long-term agricultural sector in Butte County. Standards for the AG-40 zone maintain the vitality of the agricultural sector by retaining parcel sizes necessary to sustain viable agricultural operations, protecting agricultural practices and activities by minimizing land-use conflicts, and protecting agricultural resources by regulating land uses and development intensities in agricultural areas. Permitted uses include crop cultivation, animal grazing, stock ponds, and agricultural processing. More intensive agricultural activities, such as animal processing, dairies, hog farms, stables, forestry and logging, and mining and oil extraction, are permitted with the approval of a Conditional Use Permit. One single-family home and one second unit is permitted on each legally established parcel within the AG-40 zone, and residential uses for agricultural employees are permitted as an accessory use within the AG-40 zone. The minimum permitted parcel size in the AG-40 zone is 40 acres. The AG-40 zone implements the AG land use designation in the 2030 Butte County General Plan.

Population and Housing

Population growth assumptions, average household sizes, and vacancy rates for Butte County are discussed below.

Historical and Current Population

As shown in Table 4.8-2, Butte County's observed population has declined significantly between 2010 and 2022. The population of the unincorporated areas of Butte County has declined by approximately 20,754 residents, which equates to a decline of approximately 24.77 percent relative to 2010 population levels for the unincorporated County population. In addition, Butte County overall has lost approximately 18,392 residents, which equates to a decline of approximately 8.36 percent relative to 2010 population levels for the overall County. The population loss in the unincorporated areas of the County is partially attributable to the annexation of developed areas that were previously unincorporated into various incorporated cities within Butte County; however, the population decline is largely the result of the loss of housing from the 2018 Camp Fire and other destructive wildfires in the region. Due to the project site's proximity to the City of Chico and Town of Paradise, population and household rates for these jurisdictions have been included in Table 4.8-2.

The observed population within the unincorporated areas of County, presented in Table 4.8-2, remains well below the buildout estimates presented in the County's 2030 General Plan EIR, which is discussed in more detail below.

Table 4.8-2
Butte County Population and Household Growth

Area	Year	Population	Housing Units	Persons Per Households	Population Percent Change 2010-2022
City of Chico	2010	86,187	37,050	2.38	16.23%
	2022	102,892	45,793	2.33	
Town of Paradise	2010	26,118	12,981	2.17	-70.49%
	2022	7,705	3,702	2.39	
Butte County Unincorporated Areas	2010	83,758	36,587	2.56	-24.77%
	2022	63,004	30,988	2.25	
Butte County[1]	2010	220,000	95,835	2.45	-8.36%
	2022	201,608	91,549	2.34	

1. Butte County presented in this table includes the unincorporated areas of the County as well as the incorporated cities of Biggs, Chico, Gridley, and Oroville, and the Town of Paradise.

Sources:

- ***California Department of Finance. Report E-5: Population and Housing Estimates, January 1, 2011-2021 with 2010 Benchmark. Released May 1, 2021.***
- ***California Department of Finance. Report E-5: Population and Housing Estimates, January 1, 2021-2022 with 2020 Benchmark. Released May 1, 2022.***
- ***Butte County. Butte County 2022-2030 Housing Element Adoption Draft. December 2022.***
- ***City of Chico. City of Chico 2022-2030 Housing Element. November 22, 2022.***
- ***Town of Paradise. Town of Paradise 2022-2030 Housing Element Update. Revised December 2022.***

Projected Population and Housing Growth

According to the County's 2030 General Plan EIR, the unincorporated County's Planning Area, including the project site, is anticipated to have a total 2030 buildout capacity of 50,700 dwelling units, 2.5 million sf of retail/office uses, 1.5 million sf of industrial uses, and 117,700 residents.[5] The total 2030 buildout includes the total amount of development to be located within the unincorporated County's Planning Area in 2030 and considers both existing development and the addition of expected new development allowed under the 2030 General Plan. The maximum theoretical buildout of the 2030 General Plan is anticipated to occur after year 2030 and would include the development of every parcel within the County with the maximum amount of development allowed under the 2030 General Plan. The maximum theoretical buildout capacity of the 2030 General Plan is anticipated to be 61,100 dwelling units, 19.1 million sf of retail/office uses, 19.4 million sf of industrial uses, and 150,900 residents. However, the 2030 General Plan notes that it is extremely unlikely that the maximum theoretical buildout allowed under 2030 General Plan would ever occur.[6]

Furthermore, the Butte County Association of Governments (BCAG) has anticipated growth within the County through the 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). As of 2022, the population of Butte County was 201,608, and Butte County, including the unincorporated areas within the County, had a total of 91,549 residential units. The medium population growth scenario presented in the 2020 RTP/SCS anticipated that the population of Butte County, including unincorporated areas within the County, would grow by 46,705 people in

5 Butte County. *Butte County General Plan 2030 Draft EIR* [pg. 3-41, Table 3-4]. April 8, 2010.
6 *Ibid* [pg. 3-56].

2030 and 64,356 people in 2040.[7] In addition, the medium housing growth scenario presented in the 2020 RTP/SCS anticipated that the entirety of Butte County, including such communities, will grow by 14,367 housing units by 2030 and 23,686 housing units by 2040.[8] Buildout of the 2030 Butte County General Plan, including the project site, was included in the foregoing RTP/SCS growth estimates.[9] Buildout of Butte County's 2040 General Plan was included in the 2020 RTP/SCS estimates.

Average Household Size

The average size of households is a function of the number of residents living in households within a given area divided by the number of occupied housing units within the given area. As shown in Table 4.8-3, as of 2022, the average household size in California was 2.81 persons per household, which is larger than the average household size within unincorporated Butte County, which was 2.25 persons per household. Within the City of Chico, the average household size in 2022 was 2.33 persons per household and within the Town of Paradise, the average household size in 2022 was 2.39 persons per household.

Table 4.8-3
Average Household Size (Persons Per Household)

Area	2022
California	2.81
Butte County Unincorporated Areas	2.25
Butte County[1]	2.34
City of Chico	2.33
Town of Paradise	2.39

1. "Butte County" presented in this table includes the unincorporated areas of the County, as well as the incorporated cities of Biggs, Chico, Gridley, and Oroville, and the Town of Paradise.

Source:

- ***California Department of Finance. Report E-5: Population and Housing Estimates, January 1, 2021-2022 with 2020 Benchmark. Released May 1, 2022.***

Vacancy Rate

The California Department of Finance reports that in 2022, the overall vacancy rate within unincorporated areas of the County was 10.2 percent.[10]

Regional Housing Needs Plan

The Regional Housing Needs Allocation (RHNA) is a minimum projection of additional housing units needed to accommodate projected household growth of all income levels by the end of the housing element's statutory planning period. Based on BCAG's adopted RHNA, each city and county must update the housing element of their General Plan to demonstrate how the jurisdiction will meet the expected growth in housing need over the planning period.

According to the U.S. Department of Housing and Urban Development (HUD), housing is classified as "affordable" if households do not pay more than 30 percent of income for payment of rent (including utilities) or monthly homeownership costs (including mortgage payments, taxes,

7 Butte County Association of Governments. *2020 Regional Transportation Plan/Sustainable Communities Strategy* [Appendix 6-2, pg. 3]. Adopted December 10, 2020.
8 *Ibid* [pg. 3-5].
9 *Ibid* [Appendix 6-2, pg. 4].
10 California Department of Finance. *Report E-5: Population and Housing Estimates for Cities Counties and the State, January 1, 2021-2022, with 2020 Benchmark*. Released May 1, 2022.

and insurance). BCAG adopted their current Regional Housing Needs Plan (RHNP) on December 10, 2020, which officially assigns the allocations to Butte County and the cities of Biggs, Chico, Gridley, and Oroville, as well as the Town of Paradise. BCAG's RHNA covers the planning period from 2021 to 2030, and defines the lower income unit categories as follows:

- Very Low-Income Unit: is one that is affordable to a household whose combined gross household income is at or lower than 50 percent of the Butte County median income.
- Low-Income Unit: is one that is affordable to a household whose combined gross household income is at or between 51 and 80 percent of the Butte County median income.
- Moderate Income Unit: is one that is affordable to a household whose combined gross household income is at or between 81 and 120 percent of the Butte County median income.
- Above Moderate Income Unit: is one that is affordable to a housing whose combined gross household income is at or greater than 120 percent of the Butte County median income.

In 2020, the median household income for Butte County was $48,433. According to BCAGs RHNP, unincorporated Butte County's RHNA number for combined low- and very-low-income levels is 633 dwelling units (see Table 4.8-4).[11]

Table 4.8-4
Butte County Regional Housing Needs Allocations (2021-2030)

Jurisdiction	Total Units	Very Low Income		Low Income		Moderate		Above Moderate		Combined Low and Very Low	
		#	%	#	%	#	%	#	%	#	%
Butte County Unincorporated Areas	3,788	272	7.2	361	9.5	998	26.3	2,157	57	633	16.7
Butte County Total[1]	15,506	2,081	13.4	1,290	8.3	3,202	20.7	8,933	57.6	3,371	21.7

1. "Butte County" presented in this table includes the unincorporated areas of the County, as well as the incorporated cities of Biggs, Chico, Gridley, and Oroville, and the Town of Paradise.

Source: Butte County Association of Governments, Regional Housing Needs Plan, 2020.

4.8.3 REGULATORY CONTEXT

Federal laws or regulations pertaining to land use and planning or population and housing are not applicable for this analysis. However, the existing State and local laws and regulations are listed below, as applicable.

State Regulations

The following are applicable State regulations related to land use and planning, and population and housing.

Title 14 California Code of Regulations Section 15131

Title 14, California Code of Regulations (CCR) Section 15131, provides that economic or social information may be included in an EIR, but those economic or social effects shall not be considered significant effects on the environment. In an EIR, the lead agency is responsible for

[11] Butte County Association of Governments. *6th Cycle Regional Housing Needs Plan.* Adopted December 2020.

researching economic or social changes resulting from a project, which may eventually lead to physical changes in the environment. Such economic or social changes can be used to determine the significance of physical changes on the environment.

Regional Housing Needs Plan

California General Plan law requires each city and county to have land zoned to accommodate a fair share of the regional housing need. The share is known as RHNA and is based on a RHNP developed by councils of government. The state-mandated RHNA process (Government Code Sections 65580 et seq.) requires BCAG to develop a methodology that determines how to divide and distribute an overall allocation that the region receives from the State.

Pursuant to Butte County Code Article III, Division 13, Section 24-129, affordable housing projects include one or more of the following: at least 10 percent of the units are affordable for low-income households; at least five percent of the units are affordable for very-low-income households; or at least 10 percent of the total dwelling units in a common-interest development must be affordable to moderate-income households, provided that all units are offered to the public for purchase.

Local Regulations

The following are the local regulations and standards relevant to the CEQA review process with respect to land use and planning, and population and housing. Specific goals and policies from the County's 2030 General Plan and Butte Local Agency Formation Commission (LAFCo) are listed in Table 4.8-6 at the end of this chapter.

Butte County Association of Governments

BCAG is responsible for the preparation of, and updates to, the RTP/SCS for the region and the corresponding Regional Transportation Improvement Program (RTIP). The RTIP identifies short-term projects (four-year horizon) in more detail.

Regional Transportation Plan/Sustainable Communities Strategy

The 2020 RTP/SCS was adopted by the BCAG board on December 10, 2020.[12] The 2020 RTP/SCS specifies the policies, projects, and programs necessary over a 20-year period to maintain, manage, and improve the region's transportation system. The Butte County 2020 RTP/SCS covers the 20-year period between 2020 and 2040. The RTP/SCS is required to be updated every four years. The RTP/SCS includes an Air Quality Conformity Analysis and Determination, as well as a Program EIR. The RTP/SCS provides a foundation for transportation decisions by local, regional, and state officials. This foundation is based on a vision of an efficient and environmentally sound multi-modal system. The RTP/SCS also serves as the foundation for the development of the Federal Transportation Improvement Program, Regional Transportation Improvement Program, and Interregional Transportation Improvement Program for Butte County.

The 2018 Camp Fire occurred after the initiation of the development of the 2020 RTP/SCS. BCAG, as the designated Metropolitan Planning Organization (MPO) for the Butte County region, is responsible for developing long term regional growth forecasts and maintaining a regional travel demand model for the Butte County region. Both products assist in the preparation and analysis of regional transportation, housing, land use and air quality plans and the associated environmental documents. The forecasts and models are also used by local agencies in preparing

[12] Butte County Association of Governments. *2020 Regional Transportation Plan/Sustainable Communities Strategy*. Adopted December 10, 2020.

and analyzing transportation and land use plans and projects. Following the Camp Fire, the estimates of current population, housing, land use, and travel were unknown. In addition, the existing long-term forecasts of these planning elements were no longer applicable to the region. As a result, the BCAG prepared the "Post-Camp Fire Regional Population & Transportation Study"[13] to analyze regional population, housing, employment, and traffic data for pre- (2018), post- (2019-2020), and future time periods. The study developed several scenarios for population and travel for the 2025, 2035, and 2045 period(s) based on existing research, empirical data, and existing policies available at the time of study development. In addition, an update of the region's transit and non-motorized transportation plan will be completed with the collected data. The Post-Camp Fire Regional Population and Transportation Study will inform the 2024 RTP/SCS and various land use, transportation, and housing plans and projects beyond the "best available" data used in development of the 2020 RTP/SCS.

4.8.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to land use and planning, and population and housing. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an impact related to land use and planning and/or population and housing is considered significant if the proposed project would:

- Physically divide an established community;
- Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect;
- Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure); or
- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere (see Chapter 5, Effects Not Found to be Significant).

As noted above, issues related to whether the proposed project would result in any of the following impacts are discussed in Chapter 5, Effects Not Found to be Significant, of this EIR:

- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

Method of Analysis

The following section describes the method of analysis used to evaluate potential impacts of the proposed project related to land use and planning, and population and housing.

Land Use and Planning

This chapter analyzes the compatibility of the proposed project with surrounding land uses and compliance of the proposed project with adopted plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. Environmental impacts resulting from the proposed project are discussed in the respective environmental categories. This discussion complies with

[13] Fehr & Peers. *Post Camp Fire Regional Population and Transportation Study Final Report.* April 14, 2021.

Section 15125(d) of the CEQA Guidelines, which requires that EIRs discuss inconsistencies with adopted local plans as part of the environmental setting. The ultimate determination of consistency rests with the Butte County Board of Supervisors.

Compatibility with Existing Uses

The proposed project is evaluated for compatibility with the existing land uses adjacent to the project site. The evaluation considers the existing type and intensity of uses in the project vicinity and those proposed for the project site. The analysis assumes the construction and implementation of the proposed project within the existing environment to determine if the project is compatible with those existing uses surrounding the project site.

Consistency with the Applicable Land Use Regulations

The proposed project is examined for consistency with the 2030 Butte County General Plan based on the relevant policies adopted for the purpose of avoiding or mitigating an environmental effect contained within the document. The project's consistency with the Butte County Zoning Ordinance is also discussed.

Population and Housing

The level of significance of the impacts related to population and housing is determined by evaluating whether the proposed project, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure), would induce substantial unplanned population growth in the project area.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison to existing conditions and the standards of significance presented above.

4.8-1 Physically divide an established community. Based on the analysis below, the impact is *less than significant*.

A project risks dividing an established community if the project would introduce infrastructure or alter land use so as to change the land use conditions in the surrounding community or isolate an existing land use. The proposed project would include subdivision of the project site to develop a total of 165 residential units, commercial development, recreation areas, open space, various on-site road improvements, and a sanitary waste disposal station. The site is currently designated PUD in the 2030 Butte County General Plan and is zoned PD. Three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Course currently exist on-site: a 2,440-square foot (sf) grill building, an 1,830-sf clubhouse, and a Quonset hut. In addition, an existing potable water well and associated system, as well as an existing wastewater treatment system, including septic tanks, leach field, and disposal ponds, are located in the southwestern portion of the site. In addition, with the exception of the Paradise Rod & Gun Club adjacent to the northeast of the site boundaries, the land surrounding the project site is undeveloped. Agricultural land, primarily used for grazing, is located to the south and southwest of the site. The nearest existing residential uses to the project site would be the Rocky Bluffs residential subdivision located approximately 4,100 feet to the southwest, across Skyway, and a number of rural single-family residences located along Honey Run Road, approximately 0.45-mile to the north of the project site, across Skyway.

The proposed project would not obstruct any existing or proposed transportation route that provides connectivity in the surrounding area. Development of the proposed project would not require demolition of any existing residences. Furthermore, development of the project site has been previously anticipated by the 2030 Butte County General Plan. The proposed mixed-use development with 165 dwelling units would be similar to what was originally planned for the project site, the 2030 Butte County General Plan's planned development of the site is indicative that the site has been envisioned as an extension of the existing community. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.8-2 Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Based on the analysis below, the impact is *less than significant*.

The General Plan Guidelines published by the State Office of Planning and Research define consistency as follows, "An action, program, or project is consistent with the general plan if, considering all its aspects, it will further the objectives and policies of the general plan and not obstruct their attainment." Therefore, the standard for analysis used in this EIR is in general agreement with the policy language and furtherance of the policy intent (as determined by a review of the policy context). The determination that the project is consistent or inconsistent with the 2030 Butte County General Plan policies or other County plans and policies is ultimately the decision of the Butte County Board of Supervisors. Furthermore, although CEQA analysis may identify some areas of general consistency with County policies, the County has the ability to impose additional requirements or conditions of approval on a project, at the time of its approval, to bring a project into more complete conformance with existing policies. A discussion of the project's general agreement with policy language and furtherance of policy intent is discussed in further detail below.

The County's Zoning Ordinance carries out the policies of the 2030 Butte County General Plan by classifying and regulating the uses of land and structures within the unincorporated County, consistent with the County's 2030 General Plan. As noted previously, the project site is currently designated PUD in the 2030 Butte County General Plan and is zoned PD. The project would include a Planned Development Rezone, Vesting Tentative Map, a Minor Use Permit for development with the SH Overlay Zone, and an Extraterritorial Service Agreement/Annexation. Approval of the aforementioned entitlements would allow for the development of the site with 165 single-family residential lots, six commercial use lots, 36.7 acres of open space, 4.1 acres of landscaped areas, 20.5 acres of roadway, and 49 acres of special utility district associated with the on-site water and sewer systems, as shown in Table 4.8-5, as well as Figure 3-3 in Chapter 3, Project Description, of this EIR.

As shown in Table 4.8-6, 2030 Butte County General Plan Policy Discussion, at the end of this chapter, the project would be generally consistent with the applicable

policies outlined in the 2030 General Plan. Furthermore, the project is generally consistent with and implements all other applicable plans and policies. However, as discussed in Chapter 4.2, Air Quality, Greenhouse Gas Emissions, and Energy, and Chapter 4.11, Transportation, of this EIR, even with implementation of mitigation measures, the proposed project would result in significant and unavoidable impacts related to the generation of GHG emissions and vehicle miles traveled, respectively. Therefore, as discussed in further detail in Table 4.8-6, the proposed project would not be consistent with Action 6f of the County's Climate Action Plan.

Table 4.8-5
Proposed Land Uses

Proposed Land Use	Acreage
Single-Family Residential	36.9
Commercial	15.9
Landscape	4.1
Open Space	36.7
Roadway	20.5
Special Utility District	49
Total	**163.1**

The land use and zoning designations of the site were approved by the Board of Supervisors as part of the development of the 2030 Butte County General Plan and the 2012 Zoning Map update, respectively, at the request of the property owner. According to Article II, Division 6, Section 24-28 (D) of the Butte County Code, the purpose of the PD zone is to allow for high-quality development that deviates from standards and regulations applicable to other zones within the County. The PD zone is intended to promote creativity in building design, flexibility in permitted land uses, and innovation in development concepts. The PD zone is also intended to ensure project consistency with the General Plan, sensitivity to surrounding land uses, and the protection of sensitive natural resources. The PD zone provides landowners with enhanced flexibility to take advantage of unique site characteristics to develop projects that will provide public benefits for residents, employees, and visitors to Butte County. Accordingly, the PD zone is intended to allow for a variety of uses and development. Pursuant to Article II, Division 6, Section 24-32, *Planned Development Zone Requirements*, and Article VI, Division 4, *Zoning Ordinance Amendments*, of the Butte County Code, the proposed project would require a Planned Development Rezone to specifically allow for the proposed uses. Following approval of the Planned Development Rezone, the proposed project would be required to comply with the adopted Final Development Plan of the PD District for the project site, which would include development standards. It should be noted that the physical impacts of the project are analyzed throughout Chapters 4.1 through 4.13 of this EIR.

The proposed project would also include a request for the approval of a Minor Use Permit to allow for development within the 350-foot SH Overlay Zone from Skyway pursuant to Section 24-42 C, *Scenic highway overlay zone*, of the Butte County Code. While the majority of the proposed development would be set back beyond the 350-foot SH Overlay Zone, the site entrances, as well as portions of the access roads, sound walls, some residential backyards, and limited portions of the commercial development would be located within the SH Overlay Zone. However, single-family residences are exempt from the 350-foot setback requirement, pursuant to Section 24-

42 C and approval of a Minor Use Permit would still be required because the site entrances, as well as portions of the access roads, sound walls, some residential backyards, and limited portions of the commercial development would be located within the SH Overlay Zone. A discussion of the proposed project's impacts associated with development within the SH Overlay Zone is discussed in Chapter 4.1, Aesthetics, of this EIR.

Approval of the Planned Development Rezone, Vesting Tentative Map, Minor Use Permit, and Extraterritorial Service Agreement or Annexation for the proposed project are discretionary actions subject to approval by the Butte County Board of Supervisors. Should the Butte County Board of Supervisors approve the requested entitlements, the project would be rendered consistent with the County's Zoning Ordinance. From a policy perspective, Table 4.8-6 at the end of this chapter demonstrates that the proposed project would be generally consistent with the applicable policies in the 2030 Butte County General Plan adopted for the purpose of avoiding or mitigating an environmental effect.

Based on the above, the proposed project would not cause a significant environmental impact due to conflicts with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect (including the policies discussed in Table 4.8-6), and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.8-3 Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure). Based on the analysis below, the impact is *less than significant*.

Growth can be induced in a number of ways, including through the elimination of obstacles to growth or through the stimulation of economic activity within the region. Examples of projects likely to have growth-inducing impacts include extensions or expansions of infrastructure systems beyond what is needed to serve project-specific demand, and development of new residential subdivisions or office complexes in areas that are currently only sparsely developed or are undeveloped. The following sections describe potential effects related to direct and indirect population growth associated with implementation of the proposed project.

Direct Population Growth

The 165 residential units proposed to be developed on-site would increase the available housing stock within Butte County, which would be expected to increase population in the area. Using the 2.34 persons/household average household size for Butte County (see Table 4.8-3), the proposed 165 residential units would house an estimated 386 residents. As previously discussed, the Butte County 2030 General

Plan EIR and the 2012 SEIR anticipated that the project site would be built out with a golf course and 165 dwelling units.

Development of 165 residential units, and the associated addition of approximately 386 residents would be consistent with the County's 2030 General Plan buildout. The residential units would increase the total current population of the unincorporated areas of Butte County from 63,004 to approximately 63,390, or a 0.6 percent increase. However, as discussed in the Existing Environmental Setting section of this chapter, the 2030 Butte County General Plan projected that the population of unincorporated areas could grow to as much as 117,700 residents by buildout. Thus, the increase in population that could be generated by the proposed project would be within the range of growth projections assumed in the 2030 Butte County General Plan. Impacts associated with the growth anticipated in the unincorporated areas of the County were analyzed in the EIR for the adopted 2030 Butte County General Plan. Additionally, growth in the unincorporated areas within Butte County was anticipated by the Butte County Housing Element. As shown in Table 4.8-4, the County's Housing Element includes allocation for market-rate and below market-rate units within unincorporated portions of the County. The proposed 165 single-family units would be within the Housing Elements' allocation of market-rate units for the unincorporated areas within the County.

In addition to the growth anticipated in the 2030 Butte County General Plan, BCAG also anticipates growth within Butte County, including the incorporated areas within the County. As discussed within the Existing Environmental Setting section of this chapter, BCAG has anticipated that Butte County, including the unincorporated areas within Butte County would grow by 23,686 housing units between 2020 and 2040.[14] The 165 units included in the proposed project would be within BCAG's growth estimates for Butte County, including the incorporated areas within the County by 2030 and 2040.

The proposed project would result in the development of commercial uses at the project site, such as a gas station/convenience store, mini storage facility, and RV and boat storage facility, as well as 76,000 sf of retail space along the primary site entrance. Although the specific uses within the 76,000 sf of retail space are currently unknown, the uses would be limited to the permitted and conditionally permitted uses allowed within the General Commercial (GC) and Neighborhood Commercial (NC) zoning districts. The anticipated gas station/convenience store and mini-storage uses would also be consistent with the allowable uses under the GC and NC zoning districts. Buildout of the on-site commercial uses would provide a limited number of long-term employment opportunities associated with the proposed gas station, mini storage facility, and RV and boat storage facility. In addition, development of the remaining commercial areas could provide additional long-term employment opportunities. However, such on-site employment opportunities would not be anticipated to result in a substantial increase in the permanent population or demand for housing in the vicinity of the project site.

[14] Butte County Association of Governments. *2020 Regional Transportation Plan/Sustainable Communities Strategy* [pg. 3-5]. Adopted December 10, 2020.

Therefore, the population growth generated by the proposed project would be generally consistent with the buildout and growth projections assumed by the County in the 2030 Butte County General Plan for the project area.

Indirect Population Growth

The proposed project would result in an increase of the permanent population on the project site by an estimated 386 residents. The new residential population would patronize local businesses and services in the area, fostering economic growth. Construction of the proposed project would result in increased employment opportunities in the construction field, which could potentially result in increased permanent population and demand for housing in the vicinity of the project site. However, employment patterns of construction workers are such that construction workers would not likely, to any significant degree, relocate their households as a result of the construction-related employment opportunities associated with the proposed project. In addition, the proposed project would include the development of commercial uses, which were not anticipated for the site in the 2030 General Plan, and could provide additional long-term employment opportunities. However, such opportunities would not be anticipated to result in a substantial increase in permanent population or demand for housing in the vicinity of the project site. Therefore, the project would not result in long-term employment growth in the area.

The residential population generated by the proposed project would also result in an increased demand for utility services. However, as discussed in Chapter 4.12, Utilities and Service Systems, the increase in population associated with development of the proposed project and associated demand for utility services could be accommodated by the proposed infrastructure improvements, which have been sized and designed to serve only the proposed project. For example, as discussed under Impact 4.12-2 in the Utilities and Service Systems chapter of this EIR, the existing on-site well and a new, secondary well and water storage tank would ensure adequate water supply is available to serve the proposed project. Furthermore, improvements to the existing on-site wastewater treatment system would be implemented to convey and treat wastewater generated by the proposed project. As shown in Table 4.12-2 under Impact 4.12-3, the on-site wastewater treatment system would have adequate capacity to serve the proposed project. The Paradise Irrigation District (PID) would provide maintenance of the proposed water and sewer lines. The PID's maintenance would be covered by an Extraterritorial Service Agreement or Annexation, following approval of a Sphere of Influence (SOI) Amendment of the project site into the PID service area, which would be subject to approval by the Butte LAFCo. The proposed project's consistency with relevant Butte LAFCo policies is outlined in Table 4.8-6 at the end of this chapter.

Conclusion

Considering the above, the proposed project would include planned development that would result in direct on-site population growth. Population growth resulting from the proposed project would be within the BCAG and Butte County growth estimates for the project area. Furthermore, the infrastructure included in the proposed project would be sized to accommodate only the development of the project. As a result, the proposed project would not be considered to induce substantial unplanned population growth, and a ***less-than-significant*** impact would result. It should be noted that

potential impacts related to growth inducement are discussed further within Chapter 6, Statutorily Required Sections, of this EIR, consistent with Section 15126.2(d) of the CEQA Guidelines.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Additional detail regarding the cumulative setting is included in Chapter 6, Statutorily Required Sections, of this EIR.

4.8-4 Cause a significant cumulative environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Based on the analysis below, the cumulative impact is *less than significant*.

A cumulative analysis of land use is not included because land use plans or policies and zoning generally do not combine to result in cumulative impacts. The determination of significance for impacts related to such issues is whether the project would cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Such a conflict is site-specific, and, thus, is only addressed on a project-by-project basis. As shown in Table 4.8-6 at the end of this chapter, the proposed project would be generally consistent with relevant policies in the 2030 Butte County General Plan.

Therefore, the proposed project would not cause a significant cumulative environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect, and the cumulative impact would be ***less-than-significant***.

Mitigation Measure(s)
None required.

4.8-5 Cumulative substantial unplanned population growth. Based on the analysis below, the cumulative impact is *less than significant*.

Buildout of the 2030 Butte County General Plan was anticipated to result in population growth within the plan area through the buildout of urban and rural developments throughout the County, including the project site. According to the County's 2030

General Plan EIR, the unincorporated County's Planning Area, including the project site, is anticipated to have a buildout capacity of 50,700 dwelling units, 2.5 million sf of retail/office uses, 1.5 million sf of industrial uses, and 117,700 residents.[15]

Since approval of the 2030 Butte County General Plan, the unincorporated areas of Butte County have lost approximately 20,754 residents and Butte County overall has lost approximately 18,392 residents. The population loss in the unincorporated areas of the County is partially attributable to the annexation of developed areas that were previously unincorporated into the incorporated cities within Butte County; however, the population decline is largely the result of the loss of housing from the 2018 Camp Fire and other destructive wildfires in the region.

Because buildout of the 2030 Butte County General Plan area, including the project site, has been anticipated in regional development forecasts, buildout of the proposed project in combination with other approved developments within the project area would not result in a significant cumulative contribution to population growth within the project area or region. Furthermore, the 2030 Butte County General Plan did not anticipate any further development in close proximity to the proposed project.

It should be noted that population growth itself does not constitute a significant physical environmental effect. Rather, the determination of significance is based on whether population growth associated with a project has been previously planned for, and whether such growth could result in indirect impacts from associated development. As such, the cumulative analysis within each technical chapter of this EIR evaluates the physical environmental impacts of cumulative development.

Considering the above, implementation of the proposed project, in combination with future development occurring under buildout of the 2030 Butte County General Plan, would result in a ***less-than-significant*** cumulative impact related to substantial unplanned population growth.

Mitigation Measure(s)

None required.

[15] Butte County. *Butte County General Plan 2030 Draft EIR* [pg. 3-41, Table 3-4]. April 8, 2010.

Table 4.8-6
2030 Butte County General Plan and Butte LAFCo Policy Discussion

Policy		Project Consistency
2030 Butte County General Plan		
Land Use		
LU-P1.3	The County shall minimize potential conflicts between agricultural and urban uses.	As discussed in Chapter 5, Effects Not Found to Be Significant, of this EIR, the project site is designated as Urban and Built-up Land by the California Department of Conservation Farmland Mapping and Monitoring Program. In addition, while the land to the south of the project site is designated as AG in the General Plan and zoned AG-40, development of the proposed project would not preclude use of the land to the to the south of the project site for agricultural activities or grazing. In particular, as part of project approval, the project would be conditioned to record a declaration acknowledging the right to farm, pursuant to Butte County Code Chapter 35, prior to the recordation of the Final Map. Finally, the Butte County General Plan anticipated development of the site with uses similar to those proposed by the project. Therefore, the proposed project would not conflict with Policy LU-P1.3.
LU-P3.2	Newly-developed neighborhoods shall include parks and recreation facilities. Sidewalks, bike paths, and other routes shall provide circulation to surrounding areas.	A total of approximately 36.7 acres of open space is proposed within the project site, which would primarily be located in the southwestern portion of the project site, as well as in areas surrounding the on-site areas anticipated for Special Utility District Uses. The existing meandering path located within the northern portion of the site would be upgraded to a California Department of Transportation (Caltrans) Class I bicycle facility. Furthermore, a number of additional multi-use trails would be located throughout the project site and would provide connectivity between the proposed uses and the Class I trail, as well as allow for passive recreation, such as walking, jogging, and bicycling. Based on the above discussion, the proposed project would be consistent with Policy LU-P3.2.
LU-P9.4	Applicants shall provide evidence of adequate infrastructure capacity to serve the project buildout of proposed development projects.	As discussed under Impacts 4.12-2 and 4.12-3 in the Utilities and Service Systems chapter of this EIR, sufficient water supply and wastewater treatment capacity, respectively, would be available to serve demand for water and sewer services generated by the proposed project. For example, the existing on-site well has a documented usage of between 325,000 and 425,000 gallons per

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		day (gpd). Thus, given the estimated demand associated with the proposed project of 110,042 gpd, the existing on-site well has sufficient water supply to meet the anticipated demands of the project. In addition, the proposed project would include a new, secondary well to provide water system redundancy, in the event that issues arise with the primary well. The new, secondary well would be required to be constructed in accordance with Title 22 of the California Code of Regulations (CCR), Chapter 16 and would require issuance of a Permit to Construct a Small Diameter Well from the Butte County Environmental Health Division (BCEHD). Additionally, the proposed project would be anticipated to generate approximately 96,810 gpd of wastewater flows. The on-site wastewater treatment system has a discharge limit of 100,000 gpd. Thus, the on-site wastewater treatment system would have adequate capacity to serve the proposed project. Therefore, the proposed project would not conflict with Policy LU-P9.4.
LU-P9.5	New development projects shall provide their own infrastructure or tie in to existing infrastructure as it is built.	As discussed under Impacts 4.12-2 in the Utilities and Service Systems chapter of this EIR, the existing on-site well has sufficient water supply to meet the anticipated demands of the project and the new secondary well would provide water system redundancy in the event that issues arise with the primary well. With respect to wastewater conveyance and treatment, the proposed project would include improvements to the existing on-site wastewater treatment system to ensure that flows generated by the proposed uses are treatment and disposed of in compliance with State Water Resources Control Board (SWRCB) General Order 2014-0153-DWQ-R5309. Furthermore, the proposed project would include new connections to an existing on-site electricity connection and new connections to existing telecommunications infrastructure located in the vicinity of the project site within Skyway. Therefore, the proposed project would not conflict with Policy LU-P9.5.
LU-P10.2	New development projects shall pay their fair share of public improvement costs for countywide infrastructure, facilities, and	As part of obtaining the permits necessary to commence project construction, the proposed project would be subject to various development impact fees set forth by the Butte County Code,

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	services, and shall fund needed infrastructure and facilities proportionately to the cost of providing infrastructure and services.	including, but not limited to, Butte County Code Chapter 3, Articles XVIII, XXIII, XIX, and XXI for library facilities, fire facilities and vehicles, general government facilities, and sheriff facilities, vehicles, and equipment, respectively, as well as Chapter 16, Article VII, park facility fees. Revenues generated through the project's payment of impact fees on new development would ensure that the project contributes a fair share for new public improvements deemed necessary by the County. Therefore, the proposed project would not conflict with Policy LU-P10.2.
LU-P10.3	Applicants for new development projects that will not be adequately served by existing infrastructure and facilities and/or through the adopted countywide impact fee program shall prepare a public facilities financing plan that identifies the needed public improvements and establishes a plan to pay for and develop the required public improvements.	As detailed in the discussion on project consistency with General Plan Policy LU-P9.5, the proposed project includes improvements to the existing infrastructure and facilities to ensure that adequate utility services would be available to serve the proposed project. Therefore, the proposed project would not conflict with Policy LU-P10.3.
Agriculture		
AG-P5.5	To protect agricultural areas from flooding, all urban/residential development projects shall provide a drainage plan prepared by a registered civil engineer that, at a minimum, addresses: a. Pre-development drainage conditions for the development site, including peak runoff rates and runoff volumes. b. Post-development drainage conditions, including changes in peak runoff rates and runoff volumes. c. Off-site drainage or flooding impacts and proposed or recommended mitigation measures. d. Mechanisms for maintenance of drainage facilities.	As discussed in Chapter 4.7, Hydrology and Water Quality, of this EIR, a Drainage Report was prepared by LACO for the proposed project. Consistent with Policy AG-P5.5, the Drainage Report included an evaluation of the proposed storm drain system, pre- and post-development drainage conditions for the project site, including peak runoff rates and runoff volumes; off-site drainage impacts; maintenance and inspection of the proposed stormwater control features; and includes recommended mitigation measures. In addition, implementation of Mitigation Measure 4.7-4, included in Chapter 4.7, Hydrology and Water Quality, would require submittal of a final Drainage Report as part of the Improvement Plan submittal process. Based on the above, the proposed project would be consistent with Policy AG-P5.5.
Water Resources		
W-P1.4	Where appropriate, new development shall be Low Impact Development (LID) that minimizes impervious area, minimizes runoff and pollution, and incorporates best management practices.	As discussed in Chapter 4.7, Hydrology and Water Quality, of this EIR, according to the Drainage Report prepared for the proposed project, the proposed project would include an on-site storm drain

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		system composed of post construction stormwater quality measures such as LID components, dedication of landscaping areas, and two on-site detention basins, consistent with the Butte County Post-Construction Stormwater Design Manual. In addition, Mitigation Measure 4.7-2, included in Chapter 4.7, Hydrology and Water Quality, of this EIR, requires preparation of a detailed BMP and water quality maintenance plan. Site design measures, source control measures, hydromodification management, and LID standards, as necessary, would be incorporated into the design and shown on the improvement plans. In addition, as discussed in Chapter 4.5, Geology and Soils, of this EIR, because the proposed project would result in land disturbance of over an acre, the project applicant would be required by the State to comply with the most current National Pollutant Discharge Elimination System (NPDES) Construction General Permit requirements. Pursuant to NPDES requirements, a Stormwater Pollution Prevention Plan (SWPPP) would be prepared for the proposed project, which would include the site plan, drainage patterns and stormwater collection and discharge points, Best Management Practices (BMPs), and a monitoring and reporting framework for implementation of BMPs, as necessary. The SWPPP would serve as the framework for identification, assignment, and implementation of BMPs to ensure that the proposed project's construction activities would not violate water quality standards or waste discharge requirements. Mitigation Measure 4.5-2, included in Chapter 4.5, Geology and Soils, of this EIR, would require preparation of a SWPP for review and approval by the Central Valley Regional Water Quality Control Board (CVRWQCB). Given the above, implementation of Mitigation Measures 4.5-2 and 4.7-2 would ensure the proposed project's consistency with Policy W-P1.4.
W-P2.9	Applicants for new major development projects, as determined by the Department of Development Services, shall demonstrate	As detailed in the discussion on project consistency with General Plan Policy LU-P9.5, the existing on-site well has sufficient water

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	adequate water supply to meet the needs of the project, including an evaluation of potential cumulative impacts to surrounding groundwater uses and the environment.	supply to meet the anticipated demands of the project, as the existing on-site well has a documented usage of between 325,000 and 425,000 gpd and the proposed project would have a demand of 110,042 gpd. In addition, the proposed project would include a new, secondary well to provide water system redundancy, in the event that issues arise with the primary well. The new, secondary well would be required to be constructed in accordance with Title 22 CCR, Chapter 16 and would require issuance of a Permit to Construct a Small Diameter Well from the BCEHD. Furthermore, implementation of Mitigation Measures 4.12-1(a) and 4.12-1(b) would ensure that improvements to the existing on-site water system and construction of the new, secondary well are completed in accordance with the applicable requirements set forth by the State Water Resources Control Board (SWRCB) and BCEHD. Furthermore, the on-site water system would be designed and constructed to serve demand generated by only the proposed project. Therefore, the proposed project would not conflict with Policy W-P2.9.
W-P3.3	The County shall protect groundwater recharge and groundwater quality when considering new development projects.	As discussed in Chapter 4.7, Hydrology and Water Quality, of this EIR, approximately 36.7 acres of the project site would remain as open space, and an additional 4.1 acres of the project site would be reserved for landscaped areas. In addition, the project would include the construction of two detention basins on-site to collect and store runoff from the new impervious surfaces on-site, which would increase infiltration. Consequently, the proposed project would not result in substantial interference with groundwater recharge in the area. Furthermore, as previously discussed, the proposed project would require preparation of a SWPPP, which would serve as the framework for identification, assignment, and implementation of BMPs to ensure that the proposed project's construction activities would not violate water quality standards or waste discharge requirements.

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		Therefore, the proposed project would not conflict with Policy W-P3.3.
W-P4.6	New development projects shall adopt best management practices for water use efficiency and demonstrate specific water conservation measures.	As discussed in Chapter 4.2, Air Quality, GHG Emissions, and Energy, of this EIR, the County regulates water-efficiency requirements in accordance with the California Building Standards Code (CBSC) for internal water usage. The current technology used for water-efficiency is designed to meet the current standards. Technology is not currently available for the proposed project to exceed minimum state water-efficiency requirements for new water fixtures. In addition, the proposed project would be required to comply with the County's Model Water Efficient Landscape Ordinance (MWELO), as required by Section 24-112 of the Butte County Code, which would help to further reduce on-site water usage. Furthermore, the proposed project would be consistent with Action 5g of the County's Climate Action Plan which encourages all properties to adopt water-efficient landscaping strategies, including more efficient irrigation systems and fire-wise, native, and/or drought-tolerant plants with lower water needs. Therefore, the proposed project would comply with Policy W-P4.6.
W-P5.2	New development projects shall identify and adequately mitigate their water quality impacts from stormwater runoff.	See response to Policy W-P1.4 above.
W-P5.4	Temporary facilities shall be installed as necessary during construction activities in order to adequately treat stormwater runoff from construction sites.	As discussed in response to Policy W-P1.4 above, implementation of Mitigation Measure 4.5-2 included in Chapter 4.5, Geology and Soils, of this EIR, would require preparation of a SWPPP. Development of the SWPPP would include plans to treat stormwater runoff in accordance with the standards of the California Stormwater Quality Association Stormwater BMP Handbook for New Development and Redevelopment. A grading and sediment control plan would also need to be prepared, which would include temporary and permanent grading and sediment control measures such as the protection of established vegetation; the revegetation of disturbed areas; drainageway, fill slope, cut slope, and stockpile protection; sediment detention; the disposal of spoil material; and dust control. The installation of the aforementioned measures would adequately treat stormwater

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		runoff from the project during the construction phase. Thus, with implementation of the mitigation measures set forth within this EIR, the proposed project would be consistent with W-P5.4.
Circulation		
CIR-P3.5	New development projects shall consider providing adequate pedestrian, bicycle, and multi-use facilities in a way that integrates circulation and recreational use.	As discussed in Chapter 4.11, Transportation, of this EIR, the proposed project includes a network of multi-use trails around the perimeter of the site, with connector trails between residences and commercial buildings. A portion of a shared-use trail runs roughly parallel to Skyway. Mitigation Measure 4.11-1(a) would require the project applicant to dedicate in fee title a recreational access easement for the on-site east-west trail, located parallel to Skyway along the project site frontage, plus an additional 10 feet on either side, which shall be designed and constructed consistent with Caltrans Class I bicycle facility standards, subject to Butte County Public Works Department review and approval. In addition, Mitigation Measure 4.11-1(b) would require the project applicant to bond for improvements related to construction of bicycle lanes on the internal collector street connecting to the on-site Class I bicycle facility. Sidewalks are also proposed in residential and retail areas. Thus, with implementation of the mitigation measures set forth within this EIR, the proposed project would be consistent with Policy CIR-P3.5.
CIR-P3.6	New neighborhoods shall provide bike and pedestrian connectivity between streets.	See response to Policy CIR-P3.5 above.
CIR-P4.6	New development projects in areas served by existing or planned transit shall provide fix transit facilities, such as bus shelters and pullouts, according to expected demand.	As discussed in Chapter 4.11, Transportation, of this EIR, while the proposed residences would likely cater towards a higher-income group and thus have higher rates of automobile ownership and usage, employees of the retail shops in the development may create demand for fixed route transit to access their workplace. The current project description and site plan do not include transit facilities. Therefore, Mitigation Measure 4.11-2, included in Chapter 4.11, Transportation, of this EIR, would require the project applicant to include an easement to develop the frontage along Skyway for future deceleration and acceleration lanes, as well as a designated location for a bus turnout within the development.

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		Given the above, implementation of Mitigation Measure 4.11-2 would ensure the proposed project's consistency with Policy CIR-P4.6.
CIR-P5.6	Residential development projects shall incorporate internal circulation networks that encourage bicycle use and that connect to the external bicycle circulation system.	See response to Policy CIR-P3.5 above.
CIR-P6.4	Parcels adjacent to highways and significant roadways shall have only limited access to these facilities as a means to accommodate regional traffic and preserve public mobility.	Primary site access is currently provided through an existing driveway (Santa Rosa Road) from Skyway, which is located near the center of the project site. A secondary access point from Skyway was created in the northeastern portion of the site during the site's use as a base camp, but has since been blocked off by boulders and is currently inaccessible. In addition, an existing access easement in the western portion of the project site for the adjacent agricultural property would remain and could serve as additional emergency ingress/egress, if needed. As part of the proposed project, the primary driveway would remain and a new northeastern driveway from Skyway Road would be located at the currently blocked-off access point that was previously used during wildfire response efforts. The northeastern entrance would primarily serve the proposed sanitary waste disposal station and mini storage use proposed in the eastern portion of the site, while also providing secondary access to the residences within the northeastern portion of the site. As discussed in Chapter 4.11, Transportation, of this EIR, implementation of Mitigation Measure 4.11-4(a) would require the project applicant to install a signal at the primary project access point which meets all County design standards and contains appropriate advanced warning signage, pavement markings, and intersection lighting. In addition, Mitigation Measure 4.11-4(b) would require the project applicant to construct a limited right-turn only intersection at the secondary project access that meets all County design standards. The intersection would include a paved emergency vehicle access median cutout along Skyway, as well

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		as a contrasting surface treatment within the triangular area between the right-turn deceleration lane and acceleration lane that delineates space. While the proposed project would include additional access points along Skyway, the improvements would not preclude regional through traffic and would preserve public mobility. Given the above, implementation of Mitigation Measures 4.11-4(a) and 4.11-4(b) would ensure the proposed project's consistency with Policy CIR-P6.4.
CIR-P6.6	Major new development projects and subdivisions, as determined by the Department of Development Services, shall prepare and implement traffic studies to assess and mitigate adverse impacts to local and regional transportation facilities.	At the beginning of 2019, updated California Environmental Quality Act (CEQA) Guidelines went into effect. The new CEQA Guidelines require CEQA lead agencies such as Butte County to transition from using level of service (LOS) to vehicle miles traveled (VMT) as the metric for assessing transportation impacts under CEQA (see Section 15064.3). While LOS may still be used by the County for the purposes of determining consistency with General Plan and community plan goals and policies, LOS is not used for determining significant impacts under CEQA. Because General Plan Policy CIR-P6.6 is a LOS-focused policy, it is anticipated that Butte County will separately review LOS for the project's consistency with General Plan LOS policies. Additionally, Fehr & Peers prepared a Transportation Intersection Operation Memorandum for the proposed project, which determined that all of the existing study intersections operate acceptably under pre-Camp Fire (2018) conditions and existing (2022) conditions. With the additional project traffic, all three existing study intersections would continue to operate acceptably based on City of Chico policies (LOS D or better) during the AM and PM peak hours. The new project intersections along Skyway (signal at Santa Rosa Road and a side-street stop controlled, left-turn restricted secondary driveway) would operate at LOS C or better in both the AM and PM peak hours. Under cumulative conditions, all study intersections would operate acceptably at LOS D or better during the AM and PM peak hours. With the addition of project trips, the new project intersections along Skyway (signalized at Santa Rosa

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		Road and a side-street stop controlled, left-turn restricted secondary driveway) operate acceptably in both the AM and PM peak hours. Fehr & Peers determined that improvements to the study intersections were not needed in order to provide acceptable operations based on local LOS policies. However, Fehr & Peers determined that a high level of uncertainty exists in intersection turning-movement forecasts when forecasting beyond five years, due to the variability of inputs used to develop the forecasts, such as the location and rate of population and employment growth. Therefore, although the proposed project would not conflict with Policy CIR-P6.6, Fehr & Peers recommended that Butte County should continue to monitor traffic operations on Skyway.
Conservation and Open Space		
COS-P1.1	Greenhouse gas emission impacts from proposed development projects shall be evaluated a required by CEQA.	Greenhouse gas (GHG) emission impacts from the proposed project are evaluated in Chapter 4.2, Air Quality, GHG Emissions, and Energy, of this EIR. Therefore, the proposed project complies with Policy COS-P1.1. As discussed therein, even with implementation of mitigation measures, the proposed project would be considered to generate GHG emissions, either directly or indirectly, that would 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 GHGs. Consequently, the project would result in a cumulatively considerable incremental contribution to a significant impact related to GHG emissions or climate change.
COS-P1.2	New development projects shall mitigate greenhouse gas emissions on-site or as close to the site as possible.	As discussed in the response to Policy COS-P1.1 above, the proposed project would result in a significant impact related to GHG emissions and climate change. The proposed project would be consistent with the majority of the applicable actions of the County's Climate Action Plan (CAP) actions, which was established to ensure the County's compliance with the statewide GHG reduction goals required by AB 32 and SB 32. However, because the proposed project would not be considered infill

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	development, be located contiguous to existing developed areas where infrastructure exists to support connectivity, or reduce trip lengths, as the proposed project would result in a significant and unavoidable impact related to VMT, the project would not be considered consistent with Action 6f of the County's CAP. As such, the proposed project would be considered to generate GHG emissions, either directly or indirectly, that would 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 GHGs. Consequently, the project would result in a cumulatively considerable incremental contribution to a significant impact related to GHG emissions or climate change. As discussed further in Chapter 4.11, Transportation, of this EIR, implementation of Mitigation Measure 4.11-3 would reduce project-generated VMT per resident by instituting a Transportation Demand Management (TDM) program to reduce external vehicle trips generated by the proposed project. However, the effectiveness of TDM strategies is uncertain over time. In addition, even with TDM strategy implementation, the project's home-based VMT per resident is expected to still exceed the unincorporated County baseline average. Therefore, due to uncertainties regarding the ability of Mitigation Measure 4.11-3 to reduce VMT by at least 70 percent, which would be required to reduce the impact to a less-than-significant level, VMT impacts associated with the proposed project are considered significant and unavoidable. Consequently, even with implementation of the following mitigation measure, the proposed project would still be considered inconsistent with Action 6f of the County's CAP, and the proposed project's incremental contribution to the cumulatively significant effects of GHG emissions and global climate change would remain cumulatively considerable and significant and unavoidable. Based on the above, the proposed project would be consistent with Policy COS-P1.2.

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COS-P1.4	New development should provide above-ground and natural stormwater facilities and use building designs and materials that promote groundwater recharge.	See responses to Policies W-P1.4 and W-P3.3 above.
COS-P1.7	New commercial and institutional development projects shall provide prioritized parking for electric vehicles, hybrid vehicles, alternative fuel vehicle, and carpools.	As discussed in Chapter 4.2, Air Quality, GHG Emissions, and Energy, of this EIR, the proposed project would be required to comply with Action 8d of the County's CAP, which requires the installation of electric vehicle (EV) charging stations in new commercial, industrial, and large residential development, including multifamily development. The proposed non-residential uses are anticipated to include a total of 172 on-site parking spaces. Based on the 2022 CBSC, for non-residential projects with between 151 and 200 total parking spaces, 35 spaces are required to be EV capable, and nine of the EV capable spaces are required to include electric vehicle service equipment. The proposed project would be required to comply with the EV parking standards included within the 2022 Green Building Standards (CALGreen Code), and, as a result, would include a minimum of nine EV charging stations on-site. Project information regarding parking for carpools is unavailable at this time. Nonetheless, the proposed project would generally be consistent with Policy COS-P1.7.
COS-P2.2	New development shall comply with Green Building Standards adopted by the California Building Standards Commission (CBSC) at the time of building permit application, including requirements about low- or no-toxicity building materials.	As discussed in Chapter 4.2, Air Quality, GHG Emissions, and Energy, of this EIR the proposed project would be required to comply with the efficiency standards set forth in the CBSC and the CALGreen Code. Therefore, the proposed project would comply with Policy COS-P2.2.
COS-P2.4	All new subdivisions and developments should meet green planning standards such as LEED for Neighborhood Design.	As discussed above in response to Policy COS-P2.2, the proposed project would be required to comply with the efficiency standards set forth in the CBSC and the CALGreen Code. The requirements of the CBSC and the CALGreen Code are more stringent than LEED. For example, in order to comply with the 2022 Building Energy Efficiency Standards and the CBSC, the project would be required to install photovoltaic (PV) solar for the non-residential components of the proposed project and each proposed residential unit would be required to include a solar PV system sufficient to meet 100 percent of the unit's electricity demand. Furthermore, as

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		discussed in Chapter 4.2, Air Quality, GHG Emissions, and Energy, of this EIR, the proposed project would be required to comply with the energy efficiency goals and policies outlined in the Butte County 2021 CAP. Therefore, the proposed project would be consistent with Policy COS-P2.4.
COS-P4.3	New developments shall meet the guidelines of the California Energy Star New Homes Program, or equivalent, and demonstrate detailed energy conservation measures.	See Policy COS-P2.2 and Policy COS-P2.4 above.
COS-P4.4	Site and structure designs for new development projects shall maximize energy efficiency.	As discussed in Chapter 4.2, Air Quality, GHG Emissions, and Energy, of this EIR, the proposed project would be required to comply with the efficiency standards set forth in the CBSC, CALGreen Code, Building Energy Efficiency Standards, and by the California Air Resources Board (CARB) and, as a result, would not conflict or obstruct with any State or local plans related to renewable energy. Furthermore, the proposed project would not be considered to result in a wasteful, inefficient, or unnecessary use of energy. Based on the above discussion, the proposed project would comply with Policy COS-P4.4.
COS-P5.2	Developers shall implement best available mitigation measures to reduce air pollutant emissions associated with the construction and operation of development projects.	As discussed in Chapter 4.2, Air Quality, GHG Emissions, and Energy, of this EIR, the proposed project would exceed the applicable Butte County Air Quality Management District (BCAQMD) thresholds for reactive organic gases (ROG) and nitrogen oxides (NO_X) during operations. In order to offset the project's contribution of ROG and NO_X that would exceed the BCAQMD thresholds of significance, implementation of Mitigation Measure 4.2-2 would require the applicant to participate in an Off-Site Mitigation Program coordinated through BCAQMD. All other air pollutant emissions generated by the proposed project during construction and operations would be below BCAQMD's thresholds of significance. Given the above, implementation of Mitigation Measure 4.2-2 would ensure the proposed project's consistency with Policy COS-P5.2.
COS-P5.3	Only EPA Phase II certified wood burning or equivalent devices may be installed in any residential projects.	As discussed in Chapter 4.2, Air Quality, GHG Emissions, and Energy, of this EIR, fireplaces would not be installed in the

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		proposed residences. Thus, the project would be consistent with Policy COS-P5.3.
COS-P5.5	Residential developments and other projects with sensitive receptors shall be located more than 500 feet from stationary air pollutant sources. Residential developments and other projects with sensitive receptors (e.g. housing, schools, child care centers, playgrounds, hospitals, and senior centers) that are located within 500 feet of a high-volume roadway that carries over 50,000 vehicles per day shall incorporate feasible mitigation measures to protect sensitive receptors from harmful concentrations of air pollutants, as recommended in the California Air Resources Board's (CARB's) Air Quality and Land Use Handbook.	The nearest roadway to the project site is Skyway, which is located east of the project site. According to the 2022-2023 Traffic Counts collected by BCAG for the region, the segment of Skyway nearest to the project site is Skyway/east of Notre Dame Boulevard, which experiences an average daily traffic volume of 17,279 vehicles per day. Therefore, the proposed residences would not be located within 500 feet of a high-volume roadway that carries over 50,000 vehicles per day. As discussed in Chapter 4.2, Air Quality, GHG, and Energy, of this EIR, the proposed project is anticipated to include an approximately 3,600-sf gas station/convenience store with up to 16 fuel dispensers, which would be considered a stationary source of toxic air contaminants (TACs). According to the CARB Handbook, projects should avoid siting sensitive land uses within 300 feet of a large gasoline dispensing facilities (GDF), defined as a facility with a throughput of 3.6 million gallons per year or greater. The CARB Handbook recommends a 50-foot separation for typical GDFs, which have a throughput of less than 3.6 million gallons per year or greater. The throughput of the proposed gas station is currently unknown. Given that the nearest existing sensitive receptors are located approximately 0.45-mile north of the project site, across Skyway and the Butte Creek Ecological Preserve, the proposed project would not expose existing sensitive receptors to substantial TAC concentrations. While an analysis of a project's impact on itself is not required under CEQA, the nearest proposed residences would be sited approximately 100 feet from the proposed GDF. Therefore, if the proposed GDF is determined to have a throughput of 3.6 million gallons per year or greater, the proposed project has the potential to expose the new sensitive receptors to substantial TAC

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		concentrations. As such, the County will require the following condition of approval for the proposed project: • Prior to approval of improvement plans for the proposed gas station, the project applicant shall confirm whether the proposed GDF is determined to have a throughput of 3.6 million gallons per year or greater, in which case the proposed project shall avoid siting sensitive land uses within 300 feet of the proposed GDF. Conformance with the foregoing requirement shall be confirmed through review and approval of improvement plans by the Butte County Development Services Department. Compliance with the above condition of approval would ensure the proposed project would not expose new sensitive receptors to substantial TAC concentrations related to the proposed GDF. Based on the above discussion, the proposed project would comply with Policy COS-P5.5.
COS-P5.6	New sources of toxic air pollutants shall comply with the permitting requirements of the Butte County Air Quality Management District and Section 44300 et. seq. of the California Health and Safety Code.	As discussed in Chapter 4.2, Air Quality, GHG Emissions, and Energy, the proposed GDF would be a new source of toxic air pollutants and would be required to comply with the permitting requirements of the BCAQMD and Section 44300 et. seq. of the California Health and Safety Code. As such, the proposed project would comply with Policy COS-P5.6.
COS-P7.4	New development projects shall mitigate their impacts in habitat areas for protected species through on- or off-site habitat restoration, clustering of development, and/or project design and through the provisions of the Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP) within the HCP/NCCP Planning Area, upon the future adoption of the HCP/NCCP.	The Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP) has not yet been adopted. As discussed throughout Chapter 4.3, Biological Resources, of this EIR, all impacts to protected species would be less than significant, or would be mitigated to a less-than-significant level with implementation of mitigation measures included in this EIR, such as Mitigation Measure 4.3-1(a), which would require a qualified botanist to conduct a botanical survey of the project site, and Mitigation Measure 4.3-1(c), which would require on-site restoration and preservation if the project cannot be designed to

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Policy		Project Consistency
		avoid impacts to a rare plant population. In addition, Mitigation Measure 4.3-4(a) would require a detailed bat survey to be conducted by a qualified biologist at the project site within 30 days of tree removal or building demolition and if a non-breeding bat colony is found in the trees or structures to be demolished, the individuals would be humanely evicted using accepted methods. Thus, with implementation of the mitigation measures set forth within this EIR, the proposed project would be consistent with Policy COS-P7.4.
COS-P7.5	No new development projects shall occur in wetlands or within significant riparian habitats, except within the Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP) Planning Area where such development is consistent with the conditions of the HCP/NCCP, upon the future adoption of the HCP/NCCP.	As previously noted, the Butte Regional HCP/NCCP has not been adopted. As discussed in Chapter 4.3, Biological Resources, of this EIR, the project site contains an approximately 0.19-acre ephemeral channel (see Figure 4.3-1). The ephemeral channel is presumed to be a water of the U.S. and water of the State, subject to regulation by the U.S. Army Corps of Engineers (USACE), RWQCB, and the California Department of Fish and Wildlife (CDFW). Although most of the channel is proposed to be avoided, permanent impacts to the channel are anticipated to occur from widening of, and improvements to, the existing access driveway from Skyway, and conversion of the golf course paths to a multi-use trail. Such activities are likely to result in some fill of the channel resulting from replacement of existing culverts, recontouring of the channel banks, or realignment of the channel near the proposed trail. As such, the proposed project has the potential to result in permanent and temporary impacts to the ephemeral channel. As such, implementation of Mitigation Measure 4.3-7 would require the project applicant to submit a formal wetland delineation to the USACE for verification to determine the extent of all hydrological features, their jurisdictional status, and the extent of any impacts of the currently proposed project. The project applicant would be required to submit a summary of the wetland delineation to the Butte County Department of Development Services. If jurisdictional waters are not identified on the site, further mitigation would not be required. However, if the project is unable to avoid features deemed to be

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		under the jurisdiction of either the USACE or RWQCB, the proposed project would be required to comply with all State and federal laws and regulations related to disturbance of such jurisdictional waters, such as obtaining a Section 404 Clean Water Act permit from the USACE, Section 401 water quality certification from the RWQCB, and/or Section 1602 Streambed Alteration Agreement from the CDFW prior to initiating any construction within the identified area of jurisdictional water. Therefore, with implementation of Mitigation Measure 4.3-7, the proposed project would be consistent with Policy COS-P7.5.
COS-P7.6	New development projects shall include setbacks and buffers along riparian corridors and adjacent to habitat for protected species, except where permitted in the Butte Regional HCP/NCCP Planning Area and where such development is consistent with the conditions of the HCP/NCCP, upon the future adoption of the HCP/NCCP.	Mitigation Measure 4.3-7 requires the project applicant to submit a formal wetland delineation to the USACE or verification, prior to the initiation of ground-disturbing activities, to determine the extent of all hydrological features, their jurisdictional status, and the extent of any impacts of the currently proposed project. If the project is unable to avoid features deemed to be under the jurisdiction of either the USACE or RWQCB, the proposed project would be required to comply with all State and federal laws and regulations related to disturbance of such jurisdictional waters, such as obtaining a Section 404 Clean Water Act permit from the USACE, Section 401 water quality certification from the RWQCB, and/or Section 1602 Streambed Alteration Agreement from the CDFW prior to initiating any construction within the identified area of jurisdictional water. While protected plant and wildlife species have not been identified on-site, such species could potentially occur. Therefore, if pre-construction surveys identify any protected species on-site, implementation Mitigation Measures 4.3-1(a), 4.3-4(a), 4.3-5(a) and 4.3-6(a) would require implementation of avoidance measures, such as construction-free and disturbance-free buffers.

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Policy		Project Consistency
		Based on the above, with implementation of Mitigation Measures 4.3-1(a), 4.3-4(a), 4.3-5(a), 4.3-6(a), and 4.3-7, the proposed project would comply with Policy COS-P76.
COS-P7.7	Construction barrier fencing shall be installed around sensitive resources on or adjacent to construction sites. Fencing shall be installed prior to construction activities and maintained throughout the construction period.	See response to Policy COS-P7.6 above.
COS-P7.8	Where sensitive on-site biological resources have been identified, construction employees operating equipment or engaged in any development-associated activities involving vegetation removal or ground disturbing activities in sensitive resource areas shall be trained by a qualified biologist and/or botanist who will provide information on the on-site biological resources (sensitive natural communities, special-status plant and wildlife habitats, nests of special-status birds, etc.), avoidance of invasive plant introduction and spread, and the penalties for not complying with biological mitigation requirements and other State and federal regulations.	Mitigation Measures 4.3-1(b), 4.3-4(b), 4.3-5(b), and 4.3-6(b) included in Chapter 4.3, Biological Resources, of this EIR, require a qualified botanist and/or biologist to conduct environmental awareness training for all construction personnel if special-status plant or wildlife species are identified during pre-construction surveys. The training will include information on the identification of special-status plant and wildlife species, as well as their habitat, other sensitive natural communities, required practices before the start of construction, general measures that are being implemented to conserve the species as they relate to the proposed project, penalties for non-compliance, and boundaries of the development footprint and of the permitted disturbance zones. The botanist and/or biologist will prepare and distribute supporting materials containing training information to construction personnel during the training. Upon completion of training, all construction personnel are required to sign a form stating that they have attended the training and understand all of the measures. Based on the above, implementation of mitigation measures within this EIR would ensure the project's compliance with Policy COS-P7.8.
COS-P7.9	A biologist shall be retained to conduct construction monitoring in and adjacent to all habitats for protected species when construction is taking place near such habitat areas.	Mitigation Measure 4.3-5(a) requires the establishment of a non-disturbance buffer if a nesting migratory bird is detected during pre-construction biological surveys. If it is determined that the size of non-disturbance buffer requires the project biologist to monitor the nest, Mitigation Measure 4.3-5(c) requires the monitoring to

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Policy		Project Consistency
		include observations about the bird's behaviors relative to the construction activities. Therefore, with implementation of Mitigation Measures 4.3-5(a) and 4.3-5(c), the proposed project would be consistent with Policy COS-P7.9.
COS-P8.1	Native plant species shall be protected and planting and regeneration of native plant species shall be encouraged, wherever possible, in undisturbed portions of development sites.	As discussed in Chapter 4.3, Biological Resources, of this EIR, development of the proposed project could result in a significant impact to the Checkerbloom and/or, the veiny monardella if the species were to occur within or immediately adjacent to the grading envelope. Grading and construction impacts could damage or extirpate any occurring plant populations. However, implementation of Mitigation Measure 4.3-1(a) requires a pre-construction botanical survey to be conducted for the project site. If a population of a special-status plant species is identified within 50 feet from the development footprint of the project site, additional avoidance measures and compensation would be required. Furthermore, if the project cannot be designed to avoid impacts to a rare plant population, and if onsite populations within preserved open space are not sufficient to offset the impact, Mitigation Measure 4.3-1(c) requires the utilization of onsite restoration and preservation to establish and preserve an onsite population that is equivalent to or greater in extent than the impacted population. Additionally, a qualified botanist and/or restoration ecologist would need to develop a Habitat Restoration Plan for the species, which would require County approval prior to the start of project construction. Based on the above, with implementation of Mitigation Measures 4.3-1(a) and 4.3-1(c), the proposed project would comply with Policy COS-P8.1.
COS-P9.1	A biological resources assessment shall be required for any proposed development project where special-status species or critical habitat may be present. Assessments shall be carried out under the direction of Butte County. Additional focused surveys shall be conducted during the appropriate season if necessary.	As discussed in Chapter 4.3, Biological Resources, of this EIR, a Biological Resources Assessment was prepared by Live Oak Associates for the proposed project. The report included a literature review and field surveys of the project site. The field surveys included the identification of onsite habitats, plant

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	Policy	Project Consistency
	Upon adoption of the Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP), assessment requirements of the HCP/NCCP shall be implemented for development projects within the HCP/NCCP area.	communities, and/or land uses. Furthermore, implementation of Mitigation Measures 4.3-1(a), 4.3-4(a), 4.3-5(a), and 4.3-6(a) requires focused special-status species surveys to be conducted during the appropriate season if necessary. Based on the above discussion, the proposed project complies with Policy COS-P9.1.
COS-P9.2	If special-status plant or animal species are found to be located within a development site, proponents of the project shall engage in consultation with the appropriate federal, State and regional agencies and mitigate project impacts in accordance with State and federal law. Upon adoption of the Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP), mitigation requirements of the HCP/NCCP shall be implemented for development projects within the HCP/NCCP area. Examples of mitigation may include: a. Design the proposed project to avoid and minimize impacts. b. Restrict construction to specific seasons based on project specific special-status species issues (e.g. minimizing impacts to special-status nesting birds by constructing outside of the nesting season). c. Confine construction disturbance to the minimum area necessary to complete the work. d. Mitigate for the loss of special-status species by purchasing credits at an approved conservation bank (if a bank exists for the species in question), funding restoration or habitat improvement projects at existing preserves in Butte County, or purchasing or donating mitigation lands of substantially similar habitat. e. Maintain a minimum 100-foot buffer on each side of all riparian corridors, creeks and streams for special-status and common wildlife. f. Establish setbacks from the outer edge of special-status species habitat areas. g. Construct barriers to prevent compaction damage by foot or vehicular traffic.	Please see responses to Policy COS-P7.4, Policy COS-P7.5, Policy COS-P7.6, Policy COS-P7.7, Policy COS-P7.8, Policy COS-P7.9, Policy COS-P8.1, and Policy COS-P9.1.

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Policy		Project Consistency
COS-P14.2	As part of CEQA and National Environmental Policy Act (NEPA) projects, evaluations of surface and subsurface cultural resources in the county shall be conducted. Such evaluations should involve consultation with the Northeast Information Center.	As discussed in Chapter 4.4, Cultural and Tribal Cultural Resources, of this EIR, an Archaeological Inventory Survey was prepared for the proposed project by Genesis Society and included a cultural resources literature search at the Northeast Information Center; archival research; consultation with the Native American Heritage Commission, including a Sacred Lands File search; and a field survey of the approximately 163-acre project site. Based on the above, the proposed project would comply with Policy COS-P14.2.
COS-P15.1	Areas found during construction to contain significant historic or prehistoric archaeological artifacts shall be examined by a qualified consulting archaeologist or historian for appropriate protection and preservation. Historic or prehistoric artifacts found during construction shall be examined by a qualified consulting archaeologist or historian to determine their significance and develop appropriate protection and preservation measures.	Mitigation Measure 4.4-2, included in Chapter 4.4, Cultural and Tribal Cultural Resources, of this EIR, requires that in the event that subsurface deposits, believed to be cultural or human in origin, are discovered during construction, all work shall halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for precontact and historic archaeologist, shall be retained to evaluate the significance of the find, and shall have the authority to modify the no-work radius as appropriate, using professional judgment. Therefore, with implementation of Mitigation Measure 4.4-2, the proposed project would be consistent with Policy COS-P15.1.
COS-P15.2	Any archaeological or paleontological resources on a development project site shall be either preserved in their sites or adequately documented as a condition of removal. When a development project has sufficient flexibility, avoidance and preservation of the resource shall be the primary mitigation measure.	As discussed in response to Policy COS-P15.1 above, implementation of Mitigation Measure 4.4-2, included in Chapter 4.4, Cultural and Tribal Cultural Resources, of this EIR, would be required for the proposed project. In the event that subsurface deposits, believed to be cultural or human in origin, are found during construction, all construction activities would halt within a 100-foot radius of the discovery. If it is determined by a professional archaeologist that the deposit represents a cultural resource from any time period or cultural affiliation, Butte County and the applicable landowner will be notified immediately. The Office of Historic Preservation (OHP) shall be consulted on a finding of eligibility and appropriate treatment measures shall be implemented, if the find is determined to be a Historical Resource under CEQA, as defined in Section 15064.5(a) of the CEQA

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		Guidelines. Appropriate treatment measures that preserve or restore the character and integrity of a find may be, but are not limited to, processing materials for reburial, minimizing handling of historical objects, leaving objects in place within the landscape, construction monitoring of further construction activities, and/or returning objects to a location within the project area where they will not be subject to future impacts. Therefore, with implementation of Mitigation Measure 4.4-2, the proposed project would comply with Policy COS-P15.2.
COS-P16.2	Impacts to the traditional Native American landscape shall be considered during CEQA or NEPA review of development proposals.	As discussed in Chapter 4.4, Cultural and Tribal Cultural Resources, as part of Assembly Bill (AB) 52 and Senate Bill (SB) 18 requirements, the County sent project notification letters to the tribes in the project area on January 26, 2022. The County did not receive any responses or requests for tribal consultation. In addition, a records search of the Native American Heritage Commission (NAHC) Sacred Lands File did not indicate the presence of tribal cultural resources within the project site. Considering the results of the literature search, prehistory and history of the area, and prior disturbance of the site, the project site was determined to have a low probability for the presence of prehistoric or historic cultural resources, which would include tribal cultural resources. Nonetheless, Mitigation Measure 4.4-2, included in Chapter 4.4, Cultural and Tribal Cultural Resources, of this EIR, would be required as part of the proposed project to ensure that a substantial adverse change in significance to a tribal cultural resource would not occur if found. Therefore, if such resources are discovered on-site during ground disturbing activities, proposed project would comply with Policy COS-P16.2.
COS-P16.3	Human remains discovered during implementation of public and private development projects shall be treated with dignity and respect. Such treatment shall fully comply with the federal Native American Graves Protection and Repatriation Act and other appropriate laws.	As discussed in Chapter 4.4, Cultural and Tribal Cultural Resources, of this EIR, Mitigation Measure 4.4-2 also requires that if human remains, or remains that are potentially human, are found on-site during construction, the professional archaeologist shall ensure reasonable protection measures are taken to protect the

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		discovery from disturbance. The archaeologist shall notify Butte County and the Butte County Coroner. The provisions of Section 7050.5 of the California Health and Safety Code, Section 5097.98 of the California Public Resources Code (PRC), and AB 2641 shall be implemented. If the Coroner determines the remains are Native American and not the result of a crime scene, the Coroner shall notify the NAHC, which then shall designate a Native American Most Likely Descendant (MLD) for the proposed project (Section 5097.98 of the PRC). The designated MLD shall have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC shall mediate (Section 5097.94 of the PRC). If an agreement is not reached, the landowner shall rebury the remains where they shall not be further disturbed (Section 5097.98 of the PRC). The burial shall also include either recording the site with the NAHC or the appropriate information center, using an open space or conservation zoning designation or easement, or recording a reinternment document with Butte County (AB 2641). Work shall not resume within the no-work radius until the County, through consultation as appropriate, determines that the treatment measures have been completed to their satisfaction. Therefore, implementation of Mitigation Measure 4.4-2 would ensure the proposed project's compliance with Policy COS-P16.3.
COS-P16.4	If human remains are located during any ground disturbing activity, work shall stop until the County Coroner has been contacted, and, if the human remains are determined to be of Native American origin, the NAHC and most likely descendant have been consulted.	See response to Policy COS-P16.3 above.
Health and Safety		
HS-P1.1	New development projects proposed in areas that exceed the land use compatibility standards in Tables HS-2 and HS-3 shall require mitigation of noise impacts.	As discussed in Chapter 4.9, Noise, of this EIR, noise associated with operation and construction of the proposed project would not exceed the noise standards outlined in Table HS-2 (Table 4.9-4 of this EIR) and Table HS-3 (Table 4.9-5 of this EIR). Therefore, the proposed project was determined to result in a less-than-significant

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		impact with regard to permanent and temporary increases in ambient noise levels and mitigation measures are not required. Based on the above, the proposed project would comply with Policy HS-P1.1.
HS-P1.2	Noise from transportation sources shall not exceed land use compatibility standards in Table HS-2.	See response to Policy HS-P1.1 above.
HS-P1.3	New noise-sensitive land uses shall not be located within the 55 L_{dn} contour of airports, roadways, and other noise-generating uses, with the exception of the Chico Municipal Airport.	It should be noted that impacts of the environment on a project (as opposed to impacts of a project on the environment) are beyond the scope of required CEQA review. Therefore, impacts related to noise-generating uses on the proposed project are outside of the purview of CEQA. Nonetheless, for informational purposes, Chapter 4.9, Noise, of this EIR considers both the proposed project's contribution to on- and off-site noise levels, as well as exposure of future residents of the proposed project to potential effects associated with the existing and post-construction noise environment, in order to demonstrate compliance with the 2030 Butte County General Plan. As discussed in Chapter 4.9, Noise, of this EIR, the project site is not located within the 55 L_{dn} noise contour of any nearby airports, including Chico Municipal Airport. According to the noise measurements conducted by Bollard Acoustical Consultants (BAC) for the proposed project, the project site is not located within the 55 dB DNL noise contour for Honey Run Road/Skyway, Bruce Road/Skyway, and Notre Dame Boulevard/Skyway. However, as shown in Table 4.9-24, future Skyway traffic noise levels at the outdoor activity areas (backyards) of the nearest proposed residences would exceed the 2030 Butte County General Plan 60 dB DNL exterior noise level standard for residential uses. As previously discussed, such noise effects are not environmental issues required for analysis under CEQA. Nonetheless, the proposed project would be subject to the following condition of approval as part of project approval to reduce future Skyway traffic noise level exposure on future on-site

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		residences in compliance with the General Plan's 60 dB DNL exterior noise level standard: • The proposed project shall construct six-foot-tall traffic noise barriers at the locations shown on Figure 4.9-3. The construction of six-foot-tall noise barriers at the locations on Figure 4.9-3 is calculated to reduce future Skyway traffic noise level exposure to approximately 56 dB DNL or less at the nearest proposed backyards to the roadway, which would satisfy the applicable 2030 Butte County General Plan 60 dB DNL exterior noise level standard. The traffic noise barriers could take the form of a masonry wall, earthen berm, or combination of the two. Other materials may be acceptable but should be reviewed by an acoustical consultant prior to construction. The conditions of approval outlined above are generally consistent with Policy HS-P1.3. Therefore, the proposed project would not conflict with Policy HS-P1.3.
HS-P1.4	New noise-sensitive land uses shall not be located within the 60 Ld_n contour of the Chico Municipal Airport.	As discussed in Chapter 4.9, Noise, of this EIR, the project site is not located within the 60 L_{dn} noise contour of the Chico Municipal Airport; therefore, the proposed project would not conflict with Policy HS-P1.4.
HS-P1.6	Applicants proposing a new noise-producing development project near existing or planned noise-sensitive uses shall provide a noise analysis prepared by an acoustical specialist with recommendations for design mitigation.	As discussed in Chapter 4.9, Noise, of this EIR, an Environmental Noise & Vibration Assessment was prepared by BAC for the proposed project. BAC measured background and ambient noise to estimate future traffic noise, construction noise and vibration associated with the project, parking lot operational noise levels, and outdoor amplified music levels during project operation. Furthermore, the proposed project was determined to result in a less-than-significant impact with regard to permanent increases in ambient noise levels and mitigation measures are not required. Based on the above, the proposed project would comply with Policy HS-P1.6.

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HS-P1.9	The following standard construction noise control measures shall be required at construction sites in order to minimize construction noise impacts: a. Equip all internal combustion engine driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment. b. Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction project area. c. Utilize quiet air compressors and other stationary noise-generating equipment where appropriate technology exists and is feasible.	As discussed in Chapter 4.9, Noise, of this EIR, on-site construction noise would result in a less-than-significant impact. Nevertheless, to reduce the potential for annoyance at nearby noise-sensitive uses to the maximum extent feasible, the County would require the following conditions of project approval to ensure consistency with Butte County Code Section 41A-9: 1. The following criteria shall be included in the improvement plans for the proposed project. Exceptions to allow expanded construction activities shall be reviewed on a case-by-case basis as determined by the Development Services Director. • All on-site noise-generating construction activities shall occur between the hours and days specified in Butte County Code Section 41A-9; • The construction noise control measures specified in Butte County General Plan Policy HS-P1.9 shall be implemented; • All noise-producing project construction equipment and vehicles using internal-combustion engines shall be equipped with manufacturer-recommended mufflers and maintained in good working condition; • All mobile or fixed noise-producing equipment used on-site that is regulated for noise output by a federal, State, or local agency shall comply with such regulations while in the course of project construction activities; • Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible; • Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located

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		as far as practicable from noise-sensitive uses; and • Work area speed limits shall be established and enforced during the construction period. The conditions of approval outlined above are generally consistent with Policy HS-P1.9; therefore, the proposed project would be consistent with Policy HS-P1.9.
HS-P3.2	Applicants for new development projects shall provide plans detailing existing drainage conditions and specifying how runoff will be detained or retained on-site and/or conveyed to the nearest drainage facility and shall provide that there shall be no increase in the peak flow runoff to said channel or facility.	As discussed in Chapter 4.7, Hydrology and Water Quality, of this EIR, a Drainage Report was prepared for the proposed project by LACO. The Drainage Report includes a preliminary drainage plan and hydraulic design for the proposed project, and discusses the project's compliance with the County's stormwater runoff requirements. According to the Drainage Report, the proposed project would include an on-site storm drain system composed of post construction stormwater quality measures such as LID components, dedication of landscaping areas, and two on-site detention basins, consistent with the Butte County Post-Construction Stormwater Design Manual. As discussed under Impact 4.7-4, and shown in Table 4.7-2, of this EIR, the proposed on-site detention basins would be designed to ensure that discharge out of the basins would not exceed pre-development peak flows. In addition, implementation of Mitigation Measure 4.7-4 would require submittal of a final Drainage Report as part of the Improvement Plan submittal process. The final Drainage Report would include written text addressing existing conditions, the effects of the proposed improvements, all appropriate calculations, watershed maps, changes in flows and patterns, and proposed on- and off-site improvements to accommodate flows from this project. The report would also identify water quality protection features and methods to be used during construction, as well as long-term post-construction water quality measures. Based on the above, the proposed project would comply with Policy HS-P3.2.

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HS-P3.3	All development projects shall include stormwater control measures and site design features that prevent any increase in the peak flow runoff to existing drainage facilities.	See responses to Policy W-P1.4 and Policy HS-P3.2 above.
HS-P7.1	Site-specific geotechnical investigations shall be required to assess landslide potential for private development and public facilities projects in areas rated "Moderate to High" and "High" in Figure HS-4 or the most current available mapping.	The proposed project is not located within an area rated Moderate to High or High on Figure HS-4 of the County's General Plan. Furthermore, as discussed in Chapter 4.5, Geology and Soils, of this EIR, the project site is not mapped in a landslide zone and the site does not contain any slopes that could be subject to landslide risks. Therefore, development of the proposed project would not result in on- or off-site landslide hazards and the proposed project would not conflict with Policy HS-P7.1.
HS-P8.1	Site-specific geotechnical investigations shall be required to assess erosion potential for private development projects and public facilities in areas rated "Very High" in Figure HS-7 or the most current available mapping.	The proposed project is not located within an area rated Very High on Figure HS-7 of the County's General Plan. Furthermore, as discussed in Chapter 4.5, Geology and Soils, of this EIR, development of the proposed project would not result in substantial soil erosion or the loss of topsoil with the implementation of an SWPPP in accordance with the NPDES General Construction Permit and preparation of a grading and sediment control plan in accordance with the County Code. Preparation of a SWPPP would be required by Mitigation Measure 4.5-2. Based on the above, the proposed project would not conflict with Policy HS-P8.1.
HS-P9.1	Site-specific geotechnical investigations shall be required to assess risks from expansive soils for private development projects and public facilities in areas rated "High" in Figure HS-8 or the most current available mapping.	The proposed project is not within an area rated High on Figure HS-8 of the County's General Plan. In addition, according to the Geotechnical Engineering Report prepared by Wallace Kuhl & Associates for the proposed project, the near-surface sandy clays and clayey gravels encountered during project site explorations are low-plasticity materials with low expansion characteristics, and the lahar bedrock underlying the project site is non-expansive. Based on the findings by the Geotechnical Engineering Report, the proposed project would not be subject to substantial risks associated with expansive soils and would not conflict with Policy HS-P9.1.
HS-P11.2	Create communities that are resistant to wildfire by supporting the implementation of community wildfire protection plans and wildfire fuel load reduction measures in coordination with the appropriate	As discussed in Chapter 4.13, Wildfire, of this EIR, the project site was developed with the Tuscan Ridge Golf Course before being destroyed by the 2018 Camp Fire. As such, the project site has

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	government, community group, or non-profit organization and California Department of Forestry and Fire Protection (CAL FIRE).	been subject to previous disturbance, and a substantial portion of the on-site vegetation was removed, either in the process of developing the Tuscan Ridge Golf Course, or as fuel for the Camp Fire. As part of the EIR, a Fire Risk Reduction Plan (FRRP) was prepared by Reax Engineering for the project site. The primary objective of the FRRP was to develop a quantitative fire behavior analysis and risk reduction plan for the proposed project. Furthermore, Mitigation Measure 4.13-2 requires the applicant to prepare and implement a Vegetation Management Plan (VMP) prior to the approval of the Improvement Plan and submit the VMP to the Butte County Fire, the Butte County Cooperative Fire Agencies (BCCFA), and the Butte County Department of Development Services for review and approval. The applicant would be required to submit proof of compliance with the VMP annually to the Butte County Fire In the event that the proposed project includes overhead power lines, PRC Section 4292 requires ongoing maintenance of vegetation to keep clear spaces from any power lines. Furthermore, Mitigation Measures 4.13-3(a) requires the project applicant to comply with PRC Section 4292 and maintain around and adjacent to any pole or tower to create a firebreak. Mitigation Measure 4.13-3(b) requires the project applicant to comply with PRC Section 4293 and maintain a sufficient distance of the towers or power lines from all vegetation. Based on the above, with implementation of Mitigation Measures 4.13-2, 4.13-3(a), and 4.13-3(b), the proposed project would support Policy HS-P11.2.
HS-P11.4	New development projects shall meet current fire safe ordinance standards for adequate emergency water flow, emergency vehicle access, signage, evacuation routes, fuel management, defensible space, fire safe building construction and wildfire preparedness.	As discussed in Chapter 4.13, Wildfire, Chapter 7A of the California Building Code (CBC) includes definitions and standards for building materials, systems, and/or assemblies to be used for the exterior design and construction of new buildings located within a

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	wildland-urban interface (WUI) zone or any Fire Hazard Severity Zone (FHSZ) in a State Responsibility Area (SRA). Chapter 7A establishes minimum standards for the protection of life and property by increasing the ability of a building located in any FHSZ within SRAs or any WUI zone to resist the intrusion of flames or burning embers projected by a vegetation fire, thereby systematically reducing conflagration-related losses. Examples of the Chapter 7A standards include use of ignition-resistant materials, fire-intrusion design of roofing and vents, and use of glazed exterior windows and doors. As the project site is located within a High FHSZ in an SRA, the proposed project would be subject to CBC Chapter 7A standards. Furthermore, Section 38A-6 of the Butte County Code of Ordinances sets forth defensible space and hazardous vegetation management standards for improved parcels with which the proposed project would be required to comply. As part of compliance, the project would be required to maintain a 100-foot firebreak around all proposed structures. In addition, all on-site landscaping would be required to comply with Section 24-116(A) of the Butte County Code of Ordinances, which requires the development of water-efficient irrigation systems, which would ensure the proposed vegetation is sufficiently watered to not result in excessively dry fuel sources. The proposed project would also be required to comply with California PRC Section 4291, which requires the following: • Defensible space must be maintained 100 feet from the side, front and rear of a structure, or up to the property line where the property line is less than 100 feet from the structure; • Any tree, shrub, or other plant adjacent to or overhanging a building must be free of dead or dying wood; • The roof of any structure must be free of leaves, needles, or other vegetative materials;

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Policy	Project Consistency
	• Prior to constructing a new building, the owner shall obtain a certification from the local building official that the dwelling or structure, as proposed to be built, complies with all applicable State and local building standards; and • Prior to final inspection approval of any building, the fire department must inspect the building and the fire suppression facilities to certify that the fire suppression improvements comply with the CBC and fire department service requirements. While the proposed project would underground existing on-site utility lines, the possibility exists for the proposed project to replace or expand the existing aboveground utility lines, which have the potential to exacerbate wildfire risk if the lines come in contact with tree limbs or other overhanging vegetation. As discussed above with regard to Policy HS-P11.2, in the event that the proposed project includes overhead power lines, the proposed project would be required to comply with PRC Section 4292, which requires ongoing maintenance of vegetation to keep clear spaces from any power lines. The proposed project would be required to comply with all applicable State and local standards and regulations associated with prevention of wildfire hazards, including Chapter 38A of the Butte County Code of Ordinances, which serves to adopt and amend, as applicable, the California Fire Code (CFC). The proposed project would also be required to comply with the applicable requirements of Section 903 of the CFC regarding automatic fire sprinkler and/or fire extinguishing system requirements. It should be noted that while all non-residential structures require fire flow, they do not all require automatic fire sprinklers. As such, even a modestly sized non-residential building with a high enough fire flow could cause a significant increase in storage, if a fire were to last for a long enough duration. However, as discussed in Chapter 4.12, Utilities and Service Systems, of this EIR, fire flow for the proposed project would be provided by the

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Policy		Project Consistency
		proposed water system, including a 487,000-gallon water storage tank, that would be developed on-site. During wildfire events, emergency responders would be able to access the project site to combat fires, which would serve to reduce the hazardous conditions that precipitate the need for evacuation of patrons and employees. Therefore, the proposed project would provide adequate emergency access to the project site and would not be expected to conflict with any potential evacuation routes. Furthermore, as discussed in Chapter 4.11, Transportation, implementation of Mitigation Measures 4.11-4(a) and 4.11-4(b) would be required. Mitigation Measure 4.11-4(a) would require the applicant to install a signal at the primary project access with appropriate advanced warning signage, pavement markings, and intersection lighting, meeting all County design standards. Mitigation Measure 4.11-4(b) would require the applicant to also construct a limited right-turn only intersection at the secondary project access, which meets all County design standards. The right-turn only intersection shall include a paved emergency vehicle access median cutout along Skyway, as well as a contrasting surface treatment within the triangular area between the right-turn deceleration lane and acceleration lane that delineates space. Based on the above, the proposed project would comply with Policy HS-P11.4.
HS-P12.2	Fuel breaks shall be required along the edge of developing areas in High and Very High Fire Hazard Severity Zones, as shown in Figure HS-9 or the most current data available from CAL FIRE.	As discussed in Chapter 4.13, Wildfire, of this EIR, the project site is located with a High FHSZ. According to the FRRP prepared for the proposed project, the majority of the project site is barren, which would not contribute to the spread of wildfire. However, the project site also contains grasses, shrubs, and multiple types of vegetative litter that have moderate to very high fire rate of speed (ROS) and flame lengths. As such, development of the site with the proposed uses would reduce the risk of wildland fire to surrounding areas, because site improvements, such as the

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Policy		Project Consistency
		internal roadway network and irrigated on-site landscaping, would reduce readily combustible vegetation and act as a fuel break. Additionally, wildfire risks would not be anticipated to be exacerbated during project operation, as residential and commercial uses typically do not involve operation components that would increase the risk of wildfire. Furthermore, Section 38A-6 of the Butte County Code of Ordinances sets forth defensible space and hazardous vegetation management standards for improved parcels with which the proposed project would be required to comply. As part of compliance, the project would be required to maintain a 100-foot firebreak around all proposed structures. In addition, all on-site landscaping would be required to comply with Section 24-116(A) of the Butte County Code of Ordinances, which requires the development of water-efficient irrigation systems, which would ensure the proposed vegetation is sufficiently watered to not result in excessively dry fuel sources. As discussed above, the proposed project would support Policy HS-P12.2.
HS-P12.3	Fire resistant landscaping and fuel breaks shall be required in residential areas.	See response to Policy HS-P12.2 above.
HS-P12.4	All development projects in wildland urban interface areas in High or Very High Fire Hazard Severity Zones shall provide, at a minimum, small-scale water systems for fire protection.	As discussed in Chapter 4.13, Wildfire, of this EIR, the project site is located with a High FHSZ. The proposed project would be required to comply with all applicable State and local standards and regulations associated with prevention of wildfire hazards, including Chapter 38A of the Butte County Code of Ordinances, which serves to adopt and amend, as applicable, the CFC. The proposed project would also be required to comply with the applicable requirements of Section 903 of the CFC regarding automatic fire sprinkler and/or fire extinguishing systems. As discussed in Chapter 4.12, Utilities and Service Systems, of this EIR, fire flow for the proposed project would be provided by the proposed water system that would be developed on-site. An

Table 4.8-6
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Policy		Project Consistency
		approximately 487,000-gallon water storage tank would also be located in the northeast portion of the project site, adjacent to the proposed mini-storage facility. The tank would be approximately 72 feet in diameter and 16 feet in height. The proposed water storage tank is designed to meet both the maximum day demand plus fire flow in storage and meet the peak hour demand through the well and distribution system for all pressure zones, pursuant to Title 22 CCR, Chapter 16, Section 64554(a)(3). Under the reasonable assumption that the proposed commercial uses would meet requirements established by the CBC, the required fire flow storage would be 180,000 gallons. In addition, it should be noted that while all non-residential structures require fire flow, they do not all require automatic fire sprinklers. As such, even a modestly sized non-residential building with a high enough fire flow could cause a significant increase in storage, if a fire were to last for a long enough duration. Nonetheless, by adding the maximum day demand for domestic use of 220,083 gallons (see the discussion under Impact 4.12-2) to the estimated fire flow storage requirement, the total storage requirement would be 400,083CBC gallons. Thus, the tank's oversize of 487,000 gallons of total storage volume and 457,000 gallons of active storage volume for domestic water usage when one foot of freeboard is maintained at the top of the tank would be sufficient to meet the total storage requirement. Any additional water tanks needed to support the proposed project would be constructed using materials that meet appropriate California Department of Forestry and Fire Protection (CAL FIRE) standards. Furthermore, implementation of Mitigation Measure 4.12-1(c) would ensure that the proposed water storage tank meets the requirements established by Title 22 CCR, Chapter 16, Section 64554(a)(3). Therefore, the proposed project would be consistent with Policy HS-P12.4.
HS-P13.1	New development in High or Very High Fire Hazard Severity Zones, as shown in Figure HS-9, shall identify access and egress routes and make improvements or contribute to a fund to develop, upgrade and maintain these routes.	As discussed in Chapter 4.13, Wildfire, of this EIR, the project site is located with a High FHSZ. Primary access to the project site would be provided by two entrances from Skyway, on the northern border of the project site. In addition, the existing access easement

Table 4.8-6
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Policy		Project Consistency
		in the western portion of the project site for the adjacent agricultural property would remain and could serve as additional emergency ingress/egress, if needed. Skyway would serve as the primary evacuation route during a wildfire event. During wildfire events, emergency responders would be able to access the project site to combat fires, which would serve to reduce the hazardous conditions that precipitate the need for evacuation of patrons and employees. Accordingly, the proposed project would provide adequate emergency access to the project site and would not be expected to conflict with any potential evacuation routes. Based on the above, the proposed project would comply with Policy HS-P13.1.
Public Facilities and Services		
PUB-P6.3	New residential development shall be assessed for Quimby Act fees to support park development in coordination with parks and recreation districts	As discussed in Chapter 4.10, Public Services and Recreation, of this EIR, consistent with goals and policies in the 2030 Butte County General Plan, Chapter 16, Article IV, Park Facility Fees in the Chico Urban Area, of the Butte County Code requires new development located within the Chico Urban Area to pay park facility fees to the Chico Area Recreation and Park District (CARD) for the provision of new and expanded park facilities within the CARD area. The purpose of the park and recreation facilities impact fee is to provide funding for expansion of park land and recreation facilities required to serve new development in the CARD area. The proposed project would be required to pay such fees, and, thus, would comply with Policy PUB-P6.3.
PUB-P6.5	Where appropriate, new residential developments should include permanently-protected and maintained open space using mechanisms such as, but not limited to, conservation easements and development agreements.	The proposed project would provide a total of approximately 36.7 acres of open space within the project site. Throughout the open space, predominantly within the northern portion of the project site, multi-use trails would be developed to allow for passive recreation, such as walking, jogging, and bicycling. Therefore, the proposed project would be consistent with Policy PUB-P6.5.

Table 4.8-6
2030 Butte County General Plan and Butte LAFCo Policy Discussion

Policy		Project Consistency
Butte LAFCo Policies		
Reviews, Amendments, and Updates of Spheres of Influence		
Policy 3.4.3	Amendments Required. An amendment to the Sphere of Influence Plan and/or Municipal Service Review will be required in the following circumstances: • When an agency seeks to add new territory to its sphere or remove territory from its sphere; • When a district seeks to provide a new or different function or class of service; and • When a significant change in an agency's plan for services makes the current sphere plan impractical.	Should the project seek annexation into the PID service area, an amendment to the PID SOI would be required for the proposed project because the project site is currently outside of the PID SOI area. As part of the proposed project, it is anticipated that PID would provide maintenance for the proposed water and sewer lines at the project site. Therefore, consistent with Butte LAFCo Policy 3.4.3, approval of an amendment to the PID SOI would be required for the proposed project. Alternatively, the project could receive services through an Extraterritorial Services Agreement, in which case an amendment to the SOI would not be required.
Policy 3.4.5	Precedence of Amendments Over Annexations. Sphere of influence amendments shall procedurally precede the Commission's considerations of proposals for change of annexation or reorganization.	If the project pursues annexation into PID's service area, the process would be carried out in accordance with Butte LAFCo policies, which would require an SOI Amendment prior to annexation, consistent with Butte LAFCo Policy 3.4.5.
Policy 3.4.6	Consistency Required. Amendment proposals must be consistent with an updated Sphere of Influence Report and Municipal Service Review.	The project applicant would coordinate with Butte LAFCo to prepare a Municipal Service Review and an updated Sphere of Influence Report to support the application for the SOI Amendment. The updated Sphere of Influence Report and Municipal Service Review would be used to demonstrate consistency with the proposed SOI Amendment. Therefore, the proposed project would be consistent with Butte LAFCo Policy 3.4.6.
Policy 3.4.7	Demonstrated Need Required. An application for an amendment to a sphere of influence must demonstrate a projected need or (in the case of reduction of the sphere) lack of need for service.	The proposed project would introduce 165 residential units and 76,000 sf of commercial uses, which would generate demand for water and sewer services and require ongoing maintenance. The SOI Amendment application would demonstrate the need for the PID to provide maintenance of the proposed water and sewer lines at the project site. Therefore, the SOI Amendment application for the proposed project is anticipated to be consistent with Butte LAFCo Policy 3.4.7.
Policy 3.4.9	Inconsistent Sphere Amendments Prohibited. LAFCo will not approve requests for sphere of influence amendments if the	As demonstrated throughout Table 4.8-6, if the SOI Amendment is approved, the proposed project would be consistent with Butte

Table 4.8-6
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Policy		Project Consistency
	amendment will result in a sphere that is inconsistent with other LAFCo policies and standards.	LAFCo standards. Therefore, the proposed project would not conflict with Butte LAFCo Policy 3.4.9.
Policy 3.4.10	Adverse Impacts on Other Agencies or Service Recipients. LAFCo will generally deny proposals that would result in significant unmitigable adverse effects upon other service recipients or other agencies serving the affected area unless the approval is conditioned to a level acceptable to the Commission.	Based on the discussions in Chapter 4.12, Utilities and Service Systems, of this EIR it is anticipated that the requested SOI Amendment would not adversely affect existing service recipients and other agencies. Furthermore, PID provided a letter to the project team on June 15, 2021 in support of managing and maintaining the proposed water and wastewater systems, subject to the preparation of cost estimates and rate studies approved by the PID Board of Directors, Butte LAFCo approval of annexation of the project site into the PID service area, and approval of any associated permits required by the RWQCB for Waste Discharge or Water Treatment Requirements. Therefore, the proposed project would be consistent with Butte LAFCo Policy 3.4.10.
General Standards for Annexation and Detachment		
Policy 4.1.1	Consistency with Spheres and Municipal Service Reviews. The annexation or detachment must be consistent with the sphere of influence. The annexation must also be consistent with the applicable Municipal Service Review. An annexation or detachment shall be approved only if the Municipal Service Review and the Sphere of Influence Plan of the affected agency(s) demonstrates that adequate services will be provided within the time frame needed by the inhabitants of the annexed or detached area. If a detachment occurs, the sphere will be modified.	Please see response to Policy 3.4.6.
Policy 4.1.2	Plan for Services Required. Every proposal must include a Plan for Services that addresses the items identified in Section 56653 of the Government Code. This Plan for Service must be consistent with the Municipal Service Review of the agency.	A Plan for Services would need to be prepared for the proposed project at time of application submittal to Butte LAFCo, which would demonstrate that the proposed project would provide infrastructure necessary for the delivery of safe and reliable public services including water and sewer improvements to enhance PID's infrastructure systems. The infrastructure systems installed as part of the proposed project would be sized to meet demands created by the proposed project. A more detailed discussion regarding public services and utilities for the project can be found in Chapter 4.12, Utilities and Service Systems, of this Draft EIR. As determined in Chapter 4.12, the proposed project's impacts related

Table 4.8-6
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Policy		Project Consistency
		to utilities would be less than significant with implementation of the required mitigation measures where appropriate. Therefore, the proposed project would be consistent with Butte LAFCo Policy 4.1.2.
Policy 4.1.3	Contiguity. If required by the statute, or if necessary to ensure efficient service provision, territory proposed for annexation must normally be contiguous to the annexing city or district. Territory is not contiguous if its only connection is a strip of land more than 300 feet long and less than 200 feet wide, the width exclusive of roadways.	The project site is not contiguous to the SOI limits of the PID. However, following approval of the SOI Amendment, the project site would be contiguous with the PID SOI. Additionally, following approval of the project site's annexation into the PID service area, the PID would not be required to extend water and sewer infrastructure through intervening land in order to provide services to the project site. The proposed project would include the installation of self-contained water and sewer systems and PID would only be required to maintain the project's infrastructure. Thus, the proposed project would be consistent with Butte LAFCo Policy 4.1.3.
Policy 4.1.4	Piece-Meal Annexation Prohibited. LAFCO requires annexations and detachments to be consistent with the schedule for annexation of sphere territory that is contained in the agency's Sphere of Influence Plan. LAFCO will modify small, piece-meal annexations, to include additional territory in order to promote orderly annexation and logical boundaries, while maintaining a viable proposal.	The County understands that LAFCo will typically require piece-meal annexations to include additional territory in order to promote orderly annexation and logical boundaries. As discussed above in Policy 4.1.3, this proposal is somewhat unique in that there is no need to extend infrastructure to the project site through intervening unincorporated County lands where services are not currently provided. The project would install self-contained water and sewer systems and PID would only be required to maintain the project's infrastructure. Therefore, the proposed annexation would fall within the typical understanding of piece-meal annexation. Notwithstanding, annexation of the intervening territory could be considered and doing so would be anticipated to have a negligible effect on growth, and the analysis in this EIR, as the intervening lands are within unincorporated Butte County and are designated Agriculture (20-160 ac. minimum), Foothill Residential (with zoning allowing up to 1 du/20 ac.), and Rural Residential (up to 1 du/5ac.) by the Butte County General Plan.
Policy 4.1.5	Annexations to Eliminate Islands. Proposals to annex islands and to otherwise correct illogical distortion of boundaries will be	The project site is not an existing island within PID SOI boundaries. Therefore, Butte LAFCo Policy 4.1.5 is not applicable to the proposed project.

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Policy		Project Consistency
	approved unless they would violate another provision of these standards.	
Policy 4.1.6	Annexations that Create Islands. An annexation will not normally be approved if it will result in the creation of islands of incorporated or unincorporated territory or otherwise cause or further the distortion of existing boundaries. The Commission may nevertheless approve the annexation where if, Butte LAFCo finds the annexation, as proposed, is necessary for orderly growth and that reasonable effort has been made to include the island in the annexation, but that inclusion is not feasible at this time.	Please see response to Policy 4.1.3.
Policy 4.1.9	Service Requirements. An annexation or detachment shall not be approved merely to facilitate the delivery of one or a few services to the detriment of the delivery of a larger number of services or services more basic to public health and welfare.	As discussed in Chapter 4.12, Utilities and Service Systems, of this EIR, annexation of the project site into the PID would allow the PID to conduct maintenance on the water lines within the project site. In addition, as previously discussed, PID has submitted a letter in support of managing and maintaining the proposed water and wastewater systems. Such maintenance is not anticipated to adversely affect the delivery of a larger number of services or services. Therefore, the proposed project would be consistent with the Butte LAFCo Policy 4.1.9.
Policy 4.1.10	Adverse Impacts of Annexation on Other Agencies or Service Recipients. LAFCO will deny annexation proposals that would result in significant adverse effects upon other service recipients or other agencies serving the affected area unless the approval is conditioned to mitigate such impacts as determined by the Commission.	Based on the discussions in Chapter 4.12, Utilities and Service Systems, of this EIR it is anticipated that the annexation of the project site into the PID service area would not adversely affect existing service recipients and other agencies. In addition, as previously discussed, PID has submitted a letter in support of managing and maintaining the proposed water and wastewater systems. Therefore, the proposed project would be consistent with Butte LAFCo Policy 4.1.10.
Extended Services by Contract or Agreement		
Policy 4.5.4A(2)	Extension of Services Outside Sphere. The Commission shall authorize a city or special district's request to provide new or extended services outside their jurisdictional boundary and sphere of influence only in response to an existing or future threat to public health or safety in accordance with Government Code Section 56133(c).	As previously discussed, the project site is outside of PID's jurisdictional boundary and SOI. Instead of pursuing annexation into the PID service area, the project could receive services through an Extraterritorial Services Agreement with the PID, in which case, an amendment to the SOI would not be required Should Butte LAFCo authorize the annexation of the project site into the PID service area, PID would be allowed to maintain the

Table 4.8-6
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Policy		Project Consistency
		infrastructure of the proposed water lines at the project site. In such case, Butte LAFCo would only approve the project site's annexation into PID's service area in response to existing or future threats to public health or safety in accordance with Government Code Section 56133(c). Thus, in the event that annexation is approved, the proposed project would be consistent with Butte LAFCo Policy 4.5.4A(2).
Provision of New Services by Districts		
Policy 5.3.2	Plan for Services Required. A proposal must include a Plan for Services that addresses the items identified in Section 56653 of the Government Code.	Please see response to Policy 4.1.2.
Policy 5.3.3	New Services Not Subsidized. LAFCo will not approve a proposal for the provision of new service where it is reasonably likely that existing ratepayers and/or taxpayers will have to subsidize the new service.	The PID's maintenance of the proposed water and sewer lines at the project site would not require existing ratepayers and/or taxpayers to subsidize the new service. The proposed project would be consistent with Butte LAFCo Policy 5.3.3.

4.9. Noise

4.9 NOISE

4.9.1 INTRODUCTION

The Noise chapter of the EIR describes the existing noise environment in the project vicinity, and identifies potential impacts and mitigation measures related to noise and vibration associated with construction and operation of the proposed project. The methods by which the potential impacts are analyzed are discussed, followed by the identification of potential impacts and the recommended mitigation measures designed to reduce significant noise and vibration impacts to less-than-significant levels, if required. The Noise chapter is primarily based on the Environmental Noise & Vibration Assessment (Noise Assessment) prepared for the proposed project by Bollard Acoustical Consultants, Inc. (BAC) (see Appendix H of this EIR).[1] Other sources of information used in this chapter include the 2030 Butte County General Plan,[2] the 2030 Butte County General Plan EIR,[3] and the 2030 Butte County General Plan Supplemental EIR (SEIR).[4]

4.9.2 EXISTING ENVIRONMENTAL SETTING

The Existing Environmental Setting section provides background information on noise and vibration, a discussion of acoustical terminology and the effects of noise on people, existing sensitive receptors in the project vicinity, existing sources and noise levels in the project vicinity, and groundborne vibration.

Fundamentals of Acoustics

Decibels (dB) are logarithmic units that compare the wide range of sound intensities to which the human ear is sensitive. The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the typical range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by filtering the frequency response of a sound level meter by means of the standardized A-weighting network. A-weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and the use of A-weighted sound level, expressed as dBA, has become the standard tool of environmental noise assessment. Noise levels associated with common noise sources are provided in Figure 4.9-1.

Several time-averaged scales represent noise environments and consequences of human activities. Community Noise Equivalent Level (CNEL), which can be used to compare the noise level of neighborhoods, is the weighted average noise level over time, presented in dB. Community noise is also commonly described in terms of the ambient noise level, which is defined as the overall noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}). The L_{eq} is the foundation of the day-night average noise descriptor (L_{dn} or DNL), and represents a correlation with community response to noise.

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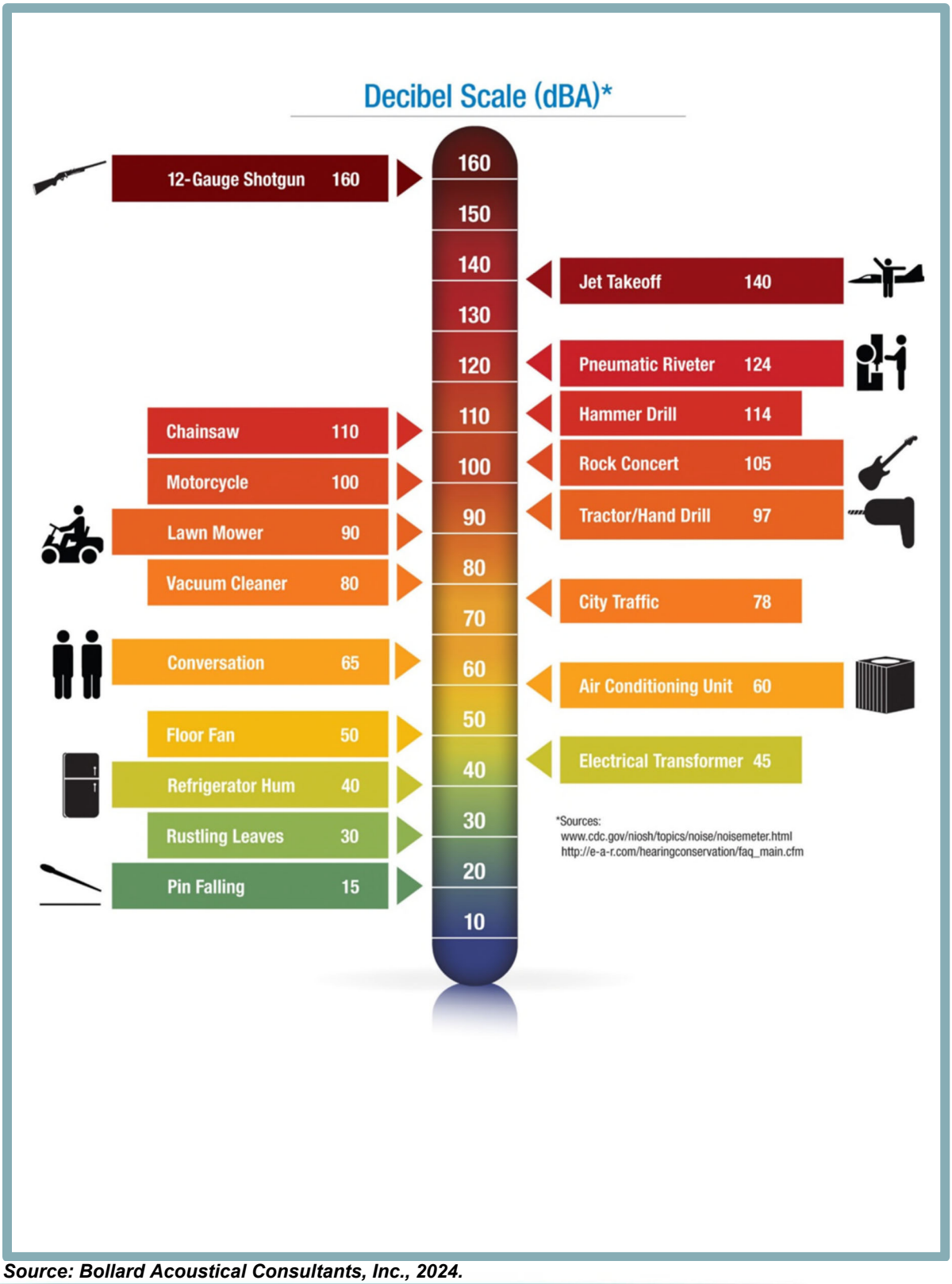
1 Bollard Acoustical Consultants, Inc. *Environmental Noise & Vibration Assessment: Tuscan Ridge, Butte County, California.* February 26, 2024.
2 Butte County. *Butte County General Plan 2030.* November 6, 2012.
3 Butte County. *Butte County General Plan 2030 Draft EIR*. April 8, 2010.
4 Butte County. *Butte County GPA & Zoning Ordinance Update Draft Supplemental EIR*. May 31, 2012.

Figure 4.9-1
Noise Levels Associated with Common Noise Sources



Source: Bollard Acoustical Consultants, Inc., 2024.

The L_{dn} is based on the average noise level over a 24-hour period, with an additional 5.0 dB weight applied to noise that occurs during the evening hours (7:00 PM to 10:00 PM) (CNEL only) and a 10 dB weight applied to noise that occurs during nighttime hours (10:00 PM to 7:00 AM) (both L_{dn} and CNEL). The 10 dB nighttime penalty is applied to account for the assumption that people are more sensitive to nighttime noise exposures as compared to daytime noise exposures. The highest root-mean-square (RMS) sound level measured over a given period of time is expressed as L_{max}.

Stationary noise sources, including construction equipment, attenuate at a rate of 6.0 to 7.5 dB per doubling of distance from the source depending on ground absorption. Soft sites attenuate at 7.5 dB per doubling of distance, as such sites have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. Hard sites have reflective surfaces (e.g., parking lots or smooth bodies of water) and, therefore, have less attenuation (6.0 dB per doubling of distance). Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, increase the efficacy of noise attenuation that occurs by distance alone.

Finally, Sound Exposure Level (SEL) is the constant sound level that has the same amount of energy in one second as the original noise event and allows sound exposures of different durations to be related to one another in terms of total acoustic energy.

Existing Sensitive Receptors

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the primary intended use of the land. Places where people live, sleep, recreate, worship, and study are generally considered to be sensitive to noise, because intrusive noise can be disruptive to such activities. Sensitivity to ambient noise levels is also related to the amount of noise exposure (in terms of both exposure time and shielding from noise sources). Noise-sensitive land uses typically include residences, schools, child care centers, hospitals, long-term health care facilities, convalescent centers, retirement homes, and recreation areas.

The existing noise-sensitive land uses in the project vicinity consist of rural residences located north and west of the project site, across Skyway, in Butte Creek Canyon and are identified as Receivers 1 through 5 on Figure 4.9-2. It should be noted that existing recreation, commercial (Paradise Rod & Gun Club), and agricultural land uses are also located within the project vicinity; however, such uses are typically not considered to be noise-sensitive, but rather, noise-generating.

Existing Ambient Noise Environment

The existing ambient noise environment in the project vicinity is defined primarily by noise from roadway traffic on Skyway, and by intermittent shooting range activities at the Paradise Rod & Gun Club located to the east of the site (see Figure 4.9-2). To quantify existing ambient noise levels within the project area, BAC conducted long-term (48-hour) ambient noise level measurements from a location within the project site from January 19 to January 21, 2022, during the hours of operation of the Paradise Rod & Gun Club. The equipment and approach used to evaluate existing noise levels are discussed in the Method of Analysis section of this chapter. The long-term noise survey locations are shown on Figure 4.9-2. The results of the long-term ambient noise survey are summarized in Table 4.9-1. As shown therein, CNEL, L_{eq}, and L_{max} noise levels were consistent during the 48-hour monitoring period (i.e., relatively small range of values).

Figure 4.9-2
Project Site, Nearby Sensitive Receptors, and Noise and Vibration Survey Sites

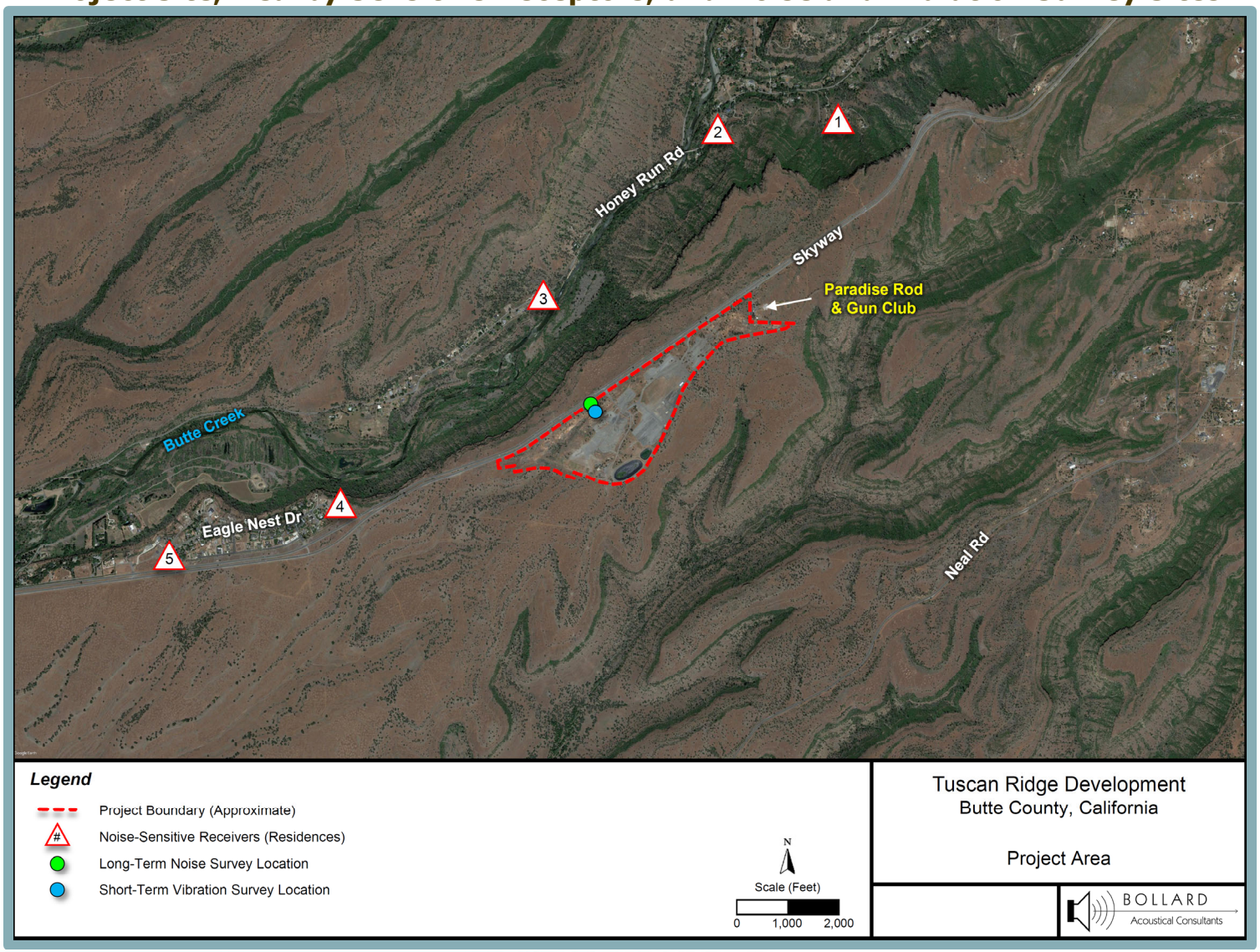


Table 4.9-1
Long-Term Ambient Noise Survey Results[1]

Site Description[2]	Date	CNEL (dB)	Average Measured Hourly Noise Levels (dB)[3]					
			Daytime		Evening		Nighttime	
			L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}
Approximately 120 feet from Skyway centerline	1/19/22 to 1/20/22	68	67	81	62	81	60	75
	1/20/22 to 1/21/22	68	67	82	62	77	59	74

1 Detailed summaries of the noise monitoring results are provided in Appendices D and E of the Noise Assessment (included as Appendix H of this EIR).
2 Long-term ambient noise monitoring location is identified in Figure 4.9-2.
3 Daytime: 7:00 AM to 7:00 PM; Evening: 7:00 PM to 10:00 PM; and Nighttime: 10:00 PM to 7:00 AM.

Source: Bollard Acoustical Consultants, Inc., 2024.

Existing Traffic Noise Levels

The Federal Highway Administration (FHWA) Traffic Noise Model (FHWA-RD-77-108) was used to develop existing noise contours, expressed in DNL, for major roadways within the project vicinity. The approach used to evaluate existing traffic noise levels is discussed in the Method of Analysis section of this chapter. Traffic data for existing conditions were obtained from the project traffic consultant, Fehr & Peers.

The traffic noise level at 100 feet from the centerlines of selected roadway segments in the project vicinity to the 60 dB DNL, 65 dB DNL, and 70 dB DNL contours are summarized in Table 4.9-2.

The actual distances to noise level contours may vary from the distances predicted by the FHWA Model. Factors such as roadway curvature, roadway grade, shielding by way of local topography or structures, elevated roadways, or elevated receivers may affect actual sound propagation. In addition, existing sensitive land uses within the project vicinity are located at varying distances from the centerlines of the local roadway network. A 100-foot reference distance is used to provide a reference position at which changes in existing and future traffic noise levels resulting from the proposed project can be evaluated.

Fundamentals of Vibration

Vibration is similar to noise in that both involve a source, a transmission path, and a receiver. However, while noise is generally considered to be pressure waves transmitted through air, vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration depends on their individual sensitivity, as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of velocity in inches per second (in/sec) peak particle velocity (PPV) or RMS (VdB). Standards pertaining to perception, as well as damage to structures, have been developed for vibration in terms of PPV and RMS velocities. As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes decrease with increasing distance.

Table 4.9-2
Existing Traffic Noise Modeling Results

Segment #	Segment	DNL 100 Feet from Roadway	Distance to Contour (Feet)		
			70 dB DNL	65 dB DNL	60 dB DNL
1	North of Honey Run Road/Skyway Intersection	46	2	5	11
2	South of Honey Run Road/Skyway Intersection	--	--	--	--
3	East of Honey Run Road/Skyway Intersection	66	55	119	256
4	West of Honey Run Road/Skyway Intersection	66	55	119	256
5	North of Bruce Road/Skyway Intersection	62	27	59	126
6	South of Bruce Road/Skyway Intersection	53	7	15	32
7	East of Bruce Road/Skyway Intersection	65	46	100	215
8	West of Bruce Road/Skyway Intersection	65	46	98	211
9	North of Notre Dame Boulevard/Skyway Intersection	61	25	54	116
10	South of Notre Dame Boulevard/Skyway Intersection	59	20	43	92
11	East of Notre Dame Boulevard/Skyway Intersection	66	53	114	246
12	West of Notre Dame Boulevard/Skyway Intersection	68	72	154	332

Note: Blank cell occurs where traffic data was not provided.

Source: Bollard Acoustical Consultants, Inc., 2024.

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases. Operation of construction equipment and construction techniques generate ground vibration. Roadway traffic can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. However, traffic rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.

Existing Ambient Vibration Environment

During a site visit on January 19, 2022, BAC staff noted that vibration levels were below the threshold of perception within the project vicinity. Nonetheless, to quantify existing vibration levels in the project vicinity, BAC conducted a short-term (15-minute) vibration survey on January 19, 2022 at the location identified on Figure 4.9-2. The results are summarized in Table 4.9-3 and are consistent with BAC field observations.

Table 4.9-3
Short-Term Ambient Vibration Survey Results

Survey Location	Time	Measured Maximum Vibration Level, PPV (in/sec)
Approximately 200 feet from Skyway centerline	1:11 PM	<0.001

Source: Bollard Acoustical Consultants, Inc., 2024.

4.9.3 REGULATORY CONTEXT

In order to limit exposure to physically and/or psychologically damaging noise levels, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise. Applicable federal laws or regulations pertaining to noise or vibration that would directly apply to the proposed project do not exist. The following provides a general overview of the existing State and local regulations that are relevant to the proposed project.

State Regulations

The following are the State environmental laws and policies relevant to noise and vibration.

California Building Code

The California Building Code (Title 24, Part 2 of the California Code of Regulations [CCR]) establishes uniform minimum noise insulation performance standards to protect persons within new buildings that house people, including hotels, motels, dormitories, apartment houses, and dwellings other than single-family dwellings.

Title 24 mandates that interior noise levels attributable to exterior sources shall not exceed 45 dB L_{dn} or CNEL in any habitable room. Title 24 also requires that for structures containing noise-sensitive uses to be located where the L_{dn} or CNEL exceeds 60 dB, an acoustical analysis must be prepared to identify mechanisms for limiting exterior noise to the prescribed allowable interior levels. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior environment.

Local Regulations

The following are the local environmental goals and policies relevant to noise and vibration.

2030 Butte County General Plan

The following goals and policies from the 2030 Butte County General Plan related to noise and vibration are applicable to the proposed project.

Goal HS-1 Maintain an acceptable noise environment in all areas of the county.

Policy HS-P1.1 New development projects proposed in areas that exceed the land use compatibility standards in Tables HS-2 and HS-3 (see Table 4.9-4 and Table 4.9-5) shall require mitigation of noise impacts.

Policy HS-P1.2 Noise from transportation sources shall not exceed land use compatibility standards in Table HS-2 (see Table 4.9-4).

Table 4.9-4
Maximum Allowable Noise Exposure to Transportation Noise Sources

Land Use	Exterior Noise Level Standard for Outdoor Activity Areas[1]		Interior Noise Level Standard	
	L_{dn}/CNEL (dB)	L_{eq} (dBA)[2]	L_{dn}/CNEL (dB)	L_{eq} (dB)[2]
Residential	60[3]	--	45	--
Transient lodging	60[3]	--	45	--
Hospitals, nursing homes	60[3]	--	45	--
Theaters, auditoriums, music halls	--	--	--	35
Churches, meeting halls	60[3]	--	--	40
Office buildings	--	--	--	45
Schools, libraries, museums	--	70	--	45
Playgrounds, neighborhood parks	--	70	--	--

Note: '--' = not applicable

1 Where the location of outdoor activity areas is unknown, the exterior noise-level standard shall be applied to the property line of the receiving land use.

2 As determined for a typical worst-case hour during periods of use.

3 Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed, provided that available exterior noise-level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: Butte County General Plan 2030, 2012.

Table 4.9-5
Maximum Allowable Noise Exposure to Non-Transportation Sources

Noise Level Description	Daytime (7 AM to 7 PM)		Evening (7 PM to 10 PM)		Night (10 PM to 7 AM)	
	Urban	Non-Urban	Urban	Non-Urban	Urban	Non-Urban
Hourly L_{eq}, dB	55	50	50	45	45	40
Maximum Level, dB	70	60	60	55	55	50

Notes:

1. "Non-Urban designations: are Agriculture, Timber Mountain, Resource Conservation, Foothill Residential and Rural Residential. All other designations are considered "urban designations" for the purposes of regulating noise exposure.
2. Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g. caretaker dwellings).
3. The County can impose noise level standards which are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site.
4. In urban areas, the exterior noise level standard shall be applied to the property line of the receiving property. In rural areas, the exterior noise level standard shall be applied at a point 100 feet away from the residence. The above standards shall be measured only on property containing a noise sensitive land use. This measurement standard may be amended to provide for measurement at the boundary of a recorded noise easement between all affected property owners and approved by the County.

Source: Butte County General Plan 2030, 2012.

Policy HS-P1.3 New noise-sensitive land uses shall not be located within the 55 L_{dn} contour of airports, roadways, and other noise-generating uses, with the exception of the Chico Municipal Airport.

Policy HS-P1.5 Noise from new recreational activities and events shall not exceed 60 dB at the nearest noise sensitive land use.

Policy HS-P1.6 Applicants proposing a new noise-producing development project near existing or planned noise-sensitive uses shall provide a noise analysis prepared by an acoustical specialist with recommendations for design mitigation.

Policy HS-P1.7 Applicants for discretionary permits shall be required to limit noise-generating construction activities located within 1,000 feet of residential uses to daytime hours between 7:00 a.m. and 6:00 p.m. on weekdays and non-holidays.

Policy HS-P1.8 Noise from generators shall be regulated near existing and future residential uses.

Policy HS-P1.9 The following standard construction noise control measures shall be required at construction sites in order to minimize construction noise impacts:

a. Equip all internal combustion engine driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
b. Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction project area.
c. Utilize quiet air compressors and other stationary noise-generating equipment where appropriate technology exists and is feasible.

Policy HS-P1.10 To reduce impacts from groundborne vibration associated with rail operations, residences or other vibration-sensitive buildings shall be sited at least 100 feet from the centerline of the nearest railroad track whenever feasible. Development of vibration-sensitive buildings, such as those containing precision medical and industrial equipment or television, radio and recording studios, within 100 feet from the centerline of the nearest railroad track shall require a study demonstrating that groundborne vibration issues associated with rail operations have been adequately addressed through building siting or construction techniques.

Butte County Code

The applicable regulations from Butte County Code Chapter 41A, Noise Control, are presented below.

41A-7 – Exterior Noise Standards

Butte County Code Section 41A-7 sets forth the following exterior noise standards.

(a) The following noise standards, unless otherwise specifically indicated in this chapter, shall apply to all noise sensitive exterior areas within Butte County (see Table 4.9-6).

Table 4.9-6
Butte County Code Exterior Noise Standards

Noise Level Description	Daytime (7 AM to 7 PM)		Evening (7 PM to 10 PM)		Nighttime (10 PM to 7 AM)	
	Designation					
	Urban	Non-Urban	Urban	Non-Urban	Urban	Non-Urban
Hourly Average (L_{eq})	55	50	50	45	45	40
Maximum (L_{max})	70	60	60	55	55	50

Source: Butte County General Plan 2030, 2012.

(b) It is unlawful for any person at any location within the County to create any noise which causes the noise levels on an affected property, when measured in the designated exterior location, to exceed the noise standards specified above.

(c) Each of the noise limits specified in subdivision (a) of this section shall be reduced by five (5) dBA for recurring impulsive noise, simple or pure tone noise, or for noises consisting of speech or music.

(d) Noise level standards, which are up to five (5) dBA less than those specified above, based upon determination of existing low ambient noise levels in the vicinity of the project site may be imposed.

(e) In urban areas, the exterior noise level standard shall be applied to the property line of the receiving property. In non-urban areas, the exterior noise level standard shall be applied at a point one hundred (100) feet away from the residence or at the property line if the residence is closer than one hundred (100) feet. The above standards shall be measured only on property containing a noise sensitive land use.

41A-8 – Interior Noise Standards

Butte County Code Section 41A-8 sets forth the following interior noise standards.

(a) The following noise standards, unless otherwise specifically indicated in this chapter, shall apply to all noise sensitive interior areas within Butte County (see Table 4.9-7).

Table 4.9-7
Butte County Code Interior Noise Standards

Noise Level Description	Daytime (7 AM to 7 PM)	Evening (7 PM to 10 PM)	Nighttime (10 PM to 7 AM)
Hourly Average (L_{eq})	45	40	35
Maximum (L_{max})	60	55	50

Source: Butte County Code, 2023.

(b) It is unlawful for any person at any location within the County to create any noise which causes the noise levels on an affected property, when measured in the designated interior noise sensitive area, to exceed the noise standards specified above.
(c) Each of the noise limits specified in subdivision (a) of this section shall be reduced by five (5) dBA for recurring impulsive noise, simple or pure tone noise, or for noises consisting of speech or music.

41A-9 – Exemptions

Butte County Code Section 41A-9 sets forth the following exemptions to the County's noise standards.

The following activities shall be exempted from the provisions of this chapter:

(a) School bands, school athletic and school entertainment events between the hours of 7 a.m. to 10 p.m.;
(b) Temporary activities such as Outdoor gatherings, public dances, shows and sporting and entertainment events, provided said events are conducted pursuant to a license or permit by the County, between the hours of 7 a.m. to 10 p.m. unless otherwise set forth in the license or permit;
(c) Uses permitted in the Sports and Entertainment (SE) zone and Recreation Commercial Overlay (-REC) zone between the hours of 7 a.m. to 10 p.m.;
(d) Activities conducted on parks, public playgrounds and school grounds, provided such parks, playgrounds and school grounds are owned and operated by a public entity or private school between the hours of 7 a.m. to 10 p.m.;
(e) Any mechanical device, apparatus or equipment related to or connected with emergency activities or emergency work;
(f) Noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property or public works project located within one thousand (1,000) feet of residential uses, provided said activities do not take place between the following hours:
    - Sunset to sunrise on weekdays and non-holidays;
    - Friday commencing at 6:00 p.m. through and including 8:00 a.m. on Saturday, as well as not before 8:00 a.m. on holidays;
    - Saturday commencing at 6:00 p.m. through and including 10:00 a.m. on Sunday; and
    - Sunday after the hour of 6:00 p.m.

    Provided, however, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work into the hours delineated above and to operate machinery and equipment necessary to complete the specific work in progress until that specific work can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner;
(g) Noise sources associated with agricultural and timber management operations in zones permitting agricultural and timber management uses;
(h) All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of adverse weather conditions or when the use of mobile noise sources is necessary for pest control;
(i) Noise sources associated with maintenance of residential area property, provided said activities take place between 7:00 a.m. to sunset on any day except Saturday, Sunday, or a holiday, or between the hours of 9:00 a.m. and 5:00 p.m. on Saturday,

Sunday, or a holiday; and, provided machinery is fitted with correctly functioning sound suppression equipment;

(j) Any activity, to the extent provisions of Chapter 65 of Title 42 of the United States Code, and Articles 3 and 3.5 of Chapter 4 of Division 9 of the Public Utilities Code of the State of California preempt local control of noise regulations and land use regulations related to noise control of airports and their surrounding geographical areas, any noise source associated with the construction, development, manufacture, maintenance, testing or operation of any aircraft engine, or of any weapons system or subsystems which are owned, operated or under the jurisdiction of the United States, or any other activity to the extent regulation thereof has been preempted by state or federal law or regulation;

(k) Any noise sources associated with the maintenance and operation of aircraft or airports which are owned or operated by the United States;

(l) Private recreational activities (including off-road vehicle operation and gunfire occurring while hunting or target practice consistent with all State laws on private property) taking place during daytime hours (9:00 am to sunset) that does not exceed an L_{eq} of sixty-five (65) dBA when measured at any point on the property line over any thirty (30) minute period.

4.9.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to noise and vibration. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Impacts of the environment on a project (as opposed to impacts of a project on the environment) are beyond the scope of required CEQA review. "[T]he purpose of an EIR is to identify the significant effects of a project on the environment, not the significant effects of the environment on the project." (*Ballona Wetlands Land Trust v. City of Los Angeles,* [2011] 201 Cal.App.4th 455, 473 [*Ballona*]). The California Supreme Court has held that "CEQA does not generally require an agency to consider the effects of existing environmental conditions on a proposed project's future users or residents. What CEQA does mandate… is an analysis of how a project might exacerbate existing environmental hazards." (*California Building Industry Assn. v. Bay Area Air Quality Management Dist.* [2015] 62 Cal.4th 369, 392; see also *Mission Bay Alliance v. Office of Community Investment & Infrastructure* [2016] 6 Cal.App.5th 160, 197 ["identifying the effects on the project and its users of locating the project in a particular environmental setting is neither consistent with CEQA's legislative purpose nor required by the CEQA statutes"], quoting *Ballona*, *supra*, 201 Cal.App.4th at p. 474). Therefore, for the purposes of the CEQA analysis, the relevant inquiry is not whether the proposed project's future residents would be exposed to existing or post-construction environmental noise-related effects, but instead whether project-generated noise would exacerbate the existing conditions. Nonetheless, for informational purposes, this chapter considers both the proposed project's contribution to on- and off-site noise levels, as well as exposure of future residents of the proposed project to potential effects associated with the existing and post-construction noise environment, in order to demonstrate compliance with the 2030 Butte County General Plan.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an impact related to noise is considered significant if the proposed project would:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generation of excessive groundborne vibration or groundborne noise levels; or
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels (see Chapter 5, Effects Not Found to be Significant).

As noted above, issues related to whether the proposed project would result in the following are discussed in Chapter 5, Effects Not Found to be Significant, of this EIR:

- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

Summary of Applicable Noise Standards

Applicable noise level standards from the 2030 Butte County General Plan and the Butte County Code are summarized below.

Construction Noise Criteria

Pursuant to Butte County Code Section 41A-9, noise associated with construction, repair, remodeling, demolition, paving, or grading of any real property or public works project located within 1,000 feet of residential uses is exempt from the County's noise regulations, provided that such activities occur within the allowable hours established therein. In terms of determining the temporary noise increase due to project-related construction activities, an impact would occur if construction activity would noticeably increase ambient noise levels above background levels. The threshold of perception of the human ear is approximately 3.0 to 5.0 dB. A 5.0 dB change is considered to be clearly noticeable. Thus, consistent with the FICON criteria discussed further below, a noticeable increase in ambient noise levels is assumed to occur when noise levels increase by 5.0 dB or more over existing ambient noise levels, where the existing ambient noise level is less than 60 dB DNL.

Transportation Noise Criteria

Policy HS-P1.2 of the 2030 Butte County General Plan applies 60 dB L_{dn}/CNEL exterior and 45 dB L_{dn}/CNEL interior noise level standards for residential uses affected by transportation noise sources. The County may conditionally allow exterior noise levels between 60 and 65 dB L_{dn} for residential uses, provided that available exterior noise-level reduction measures have been implemented and interior noise levels remain in compliance with the 45 dB L_{dn} interior standard.

Non-Transportation Noise Criteria

Policy HS-P1.1 of the 2030 Butte County General Plan and Butte County Code Section 41A-7 establish exterior noise levels limits for non-transportation noise sources affecting noise-sensitive uses that are identical to each other. Section 41A-8 of the County Code also establishes interior noise level limits for non-transportation noise sources affecting the interior areas of noise-sensitive uses. Thus, compliance with the County Code exterior and interior noise level limits presented in Table 4.9-5, Table 4.9-6, and Table 4.9-7 of this chapter would ensure satisfaction of the 2030 General Plan noise criteria. It should be noted that the County's interior noise level

standards shown in Table 4.9-7 are 5.0 to 10 dB lower than the County's exterior noise level limits shown in Table 4.9-5 and Table 4.9-6.

The primary on-site noise sources associated with the proposed project have been identified as activities associated with the commercial uses that could be facilitated by the proposed project, which, consistent with project trip generation information provided by Fehr & Peers, is reasonably assumed to include a combination gas station/convenience store, a shopping center with retail uses, a mini-storage use, and a sanitary waste disposal station. Specifically, the commercial operations analyzed in this chapter include on-site truck circulation, truck delivery activities, on-site passenger vehicle circulation, parking area movements, and heating, ventilation, and air conditioning (HVAC) equipment. It should be noted that the future commercial tenants and associated hours of operation are not known at this time; however, pursuant to the professional experience of BAC, which includes the preparation of noise studies for similar commercial developments, retail uses typically operate during daytime hours only (7:00 AM to 7:00 PM). Convenience store/gas station combinations often have 24-hour operations.

Finally, according to the Butte County geographical information systems (GIS) online parcel viewer, the existing residential receptors identified on Figure 4.9-2 are zoned Foothill Residential (FR) (Receivers 1 to 3) and Medium Density Residential (MDR) (Receivers 4 and 5). Butte County Code Section 24-18 considers the FR zoning district to be a "non-urban" designation, while the MDR zoning district is considered to be "urban." In "urban" areas, the County's exterior noise level standards are applied at the property line of the parcel containing a noise-sensitive use (i.e., residence). In "non-urban" areas, the County's exterior noise limits are applied at a point 100 feet away from the noise-sensitive use (i.e., residence).

Based on the above and pursuant to criteria established by the Butte County Code, the County's exterior noise level standards presented in Table 4.9-5 are applied to proposed on-site commercial activities and assessed at existing residential uses.

Substantial Increase Criteria

Generally, a project may have a significant effect on the environment if it substantially increases the ambient noise levels for adjoining areas or exposes people to measurably severe noise levels. In practice, a noise impact may be considered significant if project-generated noise would conflict with local project criteria or ordinances, or substantially increase noise levels at noise sensitive land uses. The potential increase in transportation noise associated with the proposed project is a factor in determining significance.

Butte County, like many jurisdictions, does not have an adopted policy regarding significant increases in ambient noise due to traffic. A common practice in many jurisdictions is to use a 3.0 to 5.0 dB increase as a threshold of significance. However, a limitation of using a single noise level increase value to evaluate noise impacts is that pre-project noise conditions are not accounted for through such an approach.

Table 4.9-8 below was developed by the Federal Interagency Committee on Noise (FICON) as a means of developing thresholds for identifying project-related noise level increases. The rationale for the graduated scales is that test subjects' reactions to increases in noise levels varied depending on the starting level of noise. Specifically, with lower ambient noise environments, such as those below 60 dB L_{dn}, a larger increase in noise levels was required to achieve a negative reaction than was necessary in environments where noise levels were already elevated.

Therefore, because the County does not have defined thresholds for what would be considered a substantial increase in traffic noise levels, the FICON noise level increase criteria presented in Table 4.9-8 is used for this analysis.

Table 4.9-8
Significance of Changes in Cumulative Noise Exposure (dB DNL)

Ambient Noise Level Without Project	Increase Required for Significant Impact
<60	+5.0 or more
60 to 65	+3.0 or more
>65	+1.5 or more

Source: Federal Interagency Committee on Noise, 2000.

The approach to assessing the significance of increases in off-site traffic noise is consistent with the industry-standard approach, in general. The use of the FICON standards is considered conservative relative to thresholds used by other agencies in the State. For example, the California Department of Transportation (Caltrans) requires a project-related traffic noise level increase of 12 dB for a finding of significance, and the California Energy Commission (CEC) considers project-related noise level increases between 5.0 to 10 dB significant, depending on local factors. Therefore, the use of the FICON standards, which set the threshold for finding of significant noise impacts as low as 1.5 dB, provides a conservative approach to impact assessment for the proposed project.

To determine potential impacts related to noise level increases due to on-site noise sources, an impact would occur if those sources would noticeably increase ambient noise levels above background levels. The threshold of perception of the human ear is approximately 3.0 to 5.0 dB. A 5.0 dB change is considered to be clearly noticeable. For the analyses of on-site noise sources, a noticeable increase and significant impact in ambient noise levels is assumed to occur where noise levels increase by 5.0 dB or more over existing ambient noise levels at Receivers 1 through 5.

Vibration

Butte County does not currently have adopted standards for groundborne vibration that would be applicable to the proposed project. Vibration levels associated with construction activities and project operations are addressed as potential vibration impacts associated with project implementation. Human and structural responses to different vibration levels are influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Construction operations have the potential to result in varying degrees of temporary ground vibration depending on the specific construction equipment used and operations involved. Table 4.9-9 and Table 4.9-10 present the Caltrans guidance criteria for building structure vibration and vibration annoyance potential, respectively.

A significant impact would be identified if project construction activities or proposed on-site operations would expose sensitive receptors to excessive groundborne vibration levels. Specifically, an impact would be identified if groundborne vibration levels due to such sources would exceed the Caltrans vibration impact criteria of 0.5 PPV in/sec for damage to residential structures and 0.24 PPV in/sec for annoyance potential.

Table 4.9-9
Caltrans Guidance Criteria for Building Structure Vibration

Structure and Condition	Limiting PPV (in/sec)
Historic and Some Old Buildings	0.5
Residential Structures	0.5
New Residential Structures	1.0
Industrial Buildings	2.0
Bridges	2.0

Source: Caltrans Transportation and Construction Vibration Guidance Manual, Table 14, 2020.

Table 4.9-10
Caltrans Guidance Criteria for Vibration Annoyance Potential

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Severe/Very Disturbing	2.0	0.4 to 3.6
Strongly Perceptible	0.9	0.1
Distinctly Perceptible	0.24	0.035
Barely/Slightly Perceptible	0.035	0.012

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers and vibratory compaction equipment.

Source: Caltrans Transportation and Construction Vibration Guidance Manual, Tables 4 & 6, 2020.

Method of Analysis

Below are descriptions of the methodologies used in the Noise Assessment (see Appendix H of this EIR) to measure background and ambient noise and estimate future traffic noise, construction noise and vibration associated with the project, noise associated with on-site truck circulation and deliveries, on-site passenger vehicle circulation, parking area noise, and noise associated with HVAC equipment. Further modeling details and calculations are provided in Appendix H of this EIR. The results of the noise and vibration impact analyses were compared to the standards of significance discussed above in order to determine the associated level of impact.

On-Site Existing Ambient Noise Levels

To quantify existing ambient noise levels within the project site, BAC conducted long-term (48-hour) ambient noise level measurements within the project site (see Figure 4.9-2) from January 19 to January 21, 2022. A Larson Davis Laboratories (LDL) Model LxT precision integrating sound level meter was used to complete the long-term noise level survey. The meter was calibrated immediately before use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all specifications of the American National Standards Institute requirements for Type 1 sound level meters (ANSI S1.4). The results of the long-term ambient noise survey are shown numerically and graphically in Appendices D and E of the Noise Assessment, respectively, and are summarized in Table 4.9-1 above.

Project Construction Noise and Vibration Levels

Construction noise and vibration was analyzed using data compiled for various pieces of construction equipment at a representative distance of 50 feet. Construction noise is discussed relative to the applicable noise policies and standards presented above.

Project Traffic Noise Level Increases

The FHWA-RD-77-108 traffic noise model was used to develop existing noise contours, expressed in DNL, for major roadways within the project vicinity. The FHWA Model predicts hourly L_{eq} values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from L_{eq} values.

Traffic data in the form of AM and PM peak hour turning movements for existing and cumulative conditions were obtained from the project traffic consultant, Fehr & Peers. ADT volumes were conservatively estimated by applying a factor of five to the sum of AM and PM peak hour conditions. Existing and cumulative traffic noise levels were calculated using the aforementioned data and the FHWA Model. The existing traffic noise level at 100 feet from the roadway centerline and distances from the centerlines of selected roadways to the 60 dB DNL, 65 dB DNL, and 70 dB DNL contours are summarized in Table 4.9-2. The FHWA Model was used with traffic input data to predict project traffic noise level increases relative to existing and cumulative conditions. A complete listing of the FWHA Model inputs is provided in Appendix B of the Noise Assessment.

In many cases, the actual distances to noise level contours may vary from the distances predicted by the FHWA Model. Factors such as roadway curvature, roadway grade, shielding by way of local topography or structures, elevated roadways, or elevated receivers may affect actual sound propagation. In addition, existing sensitive land uses within the project vicinity are located at varying distances from the centerlines of the local roadway network. The 100-foot reference distance is used in the Noise Assessment to provide a reference position at which changes in existing and future traffic noise levels resulting from the proposed project can be evaluated.

On-Site Truck Circulation and Delivery Activity Noise Levels

For noise generated by on-site commercial activities, such as on-site truck circulation, the County's exterior noise level standards shown in Table 4.9-5 were applied and assessed at Receivers 1 through 5. The County's exterior noise level standards are applied at a point 100 feet away from the residences in "non-urban" areas (Receivers 1 through 3). In "urban" areas, the County's exterior noise limits are applied at the property line of a parcel (Receivers 4 and 5).

For the purpose of predicting hourly average noise levels for comparison against the County's L_{eq} noise level standard, the commercial portion of the proposed project (i.e., convenience store/gas station and entire shopping center) was conservatively assumed to have a total of four heavy-duty and eight medium-duty truck deliveries during the same worst-case hour. With respect to delivery activity noise levels, BAC file data indicate that noise levels associated with medium- (including side-step vans) and heavy-duty truck deliveries are approximately 65 dB L_{max} and 76 dB SEL at a distance of 100 feet.

On-Site Passenger Vehicle Circulation Noise Levels

With respect to noise related to on-site passenger vehicle circulation, noise levels were estimated based on worst-case peak hour trip generation (697 trips during the PM peak hour) and an on-site vehicle speed of 25 miles per hour (mph). To quantify commercial on-site passenger vehicle circulation noise at the proposed residences for the shopping center component of the project (convenience store/gas station and retail), the Noise Assessment assumed that 50 percent of estimated commercial PM peak hour vehicle trips (349 vehicle trips) could occur within either of the shopping center areas north and south of the main entry road. For the mini-storage facility use, all worst-case peak hour vehicle trips (8 PM peak hour trips) were assumed to reasonably

occur at the northeast access point to the development located nearest to the facility. An on-site vehicle speed through the shopping center parking aisles was assumed to be less than 25 mph.

Project Operation Parking Area Noise Levels

To determine potential noise exposure from project commercial parking lot activities, BAC used specific parking lot noise level measurements previously conducted by BAC. Specifically, a series of individual noise measurements were conducted of multiple vehicle types arriving and departing a parking area, including engines starting and stopping, car doors opening and closing, and people conversing as they entered and exited the vehicles. The results of those measurements revealed that individual parking lot movements generated mean noise levels of approximately 70 dB SEL at a reference distance of 50 feet. The maximum noise level associated with parking lot activity typically did not exceed 65 dB L_{max} at the same reference distance.

To compute L_{eq} noise levels generated by parking lot activities, the approximate number of hourly operations in any given area and distance to the effective noise center of those activities is required. Based on a review of the project development plan, BAC estimated that approximately 200 parking spaces would be constructed within the project's commercial component (convenience store/gas station – 35 spaces; shopping center south of main entry – 60 spaces; shopping center north of main entry – 100; mini-storage facility – 10 spaces). BAC conservatively assumed that all spaces within the proposed parking areas could fill or empty during a given peak hour (worst-case scenario). The hourly average noise level generated by parking lot movements was computed using the following formula:

$$Peak\ Hour\ L_{eq} = 70+10*log\ (N) – 35.6$$

Where 70 is the mean SEL for an automobile parking lot arrival or departure, N is the number of parking lot operations in a given hour, and 35.6 is 10 times the logarithm of the number of seconds in an hour. Using the information above, the provided site plans, and assuming standard spherical spreading loss (-6.0 dB per doubling of distance), commercial parking area noise exposure at Receivers 1 through 5 was calculated.

Heating, Ventilation, and Air Conditioning Equipment Noise

To determine potential noise exposure due to rooftop mechanical equipment, BAC used reference file data collected for previous studies, which indicated that a 12.5-ton packaged unit would be expected to generate a sound power level of 85 dBA.

Paradise Rod & Gun Club Noise

To quantify noise level exposure associated with shooting activities at the project site, BAC used sound level data obtained from measurements of Paradise Rod & Gun Club shooting activities previously conducted at the shooting range. Specifically, BAC conducted noise level measurements at various locations and distances during a scheduled simulation at the facility in June 1998. The simulation consisted of 11 firearm types, including handguns, shotguns, and rifles.

The BAC reference noise measurement level was then used with the SoundPLAN Version 8.2 noise prediction model to project firearm noise level exposure from the Paradise Rod & Gun Club range to the nearest proposed residential use of the proposed project. The SoundPLAN projections were calculated using a standard spherical spreading loss of -6.0 dB per doubling of distance from a stationary source. Elevation data for the entire project site was input into the

SoundPLAN model to create a three-dimensional base map. Using aerial imagery and the project development plan, the SoundPLAN model inputs for both hard surfaces, soft surfaces, and vegetated areas were applied. The modeling also included consideration of proposed sound walls along the eastern border of the site, adjacent to the Paradise Rod & Gun Club, assumed to be six feet in height.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison with the baseline and standards of significance identified above.

4.9-1 Generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Based on the analysis below, the impact is *less than significant.*

During project construction, heavy equipment would be used for grading, excavation, paving, and building construction, all of which would increase ambient noise levels in the project vicinity when in use. Noise levels would vary depending on the type of equipment used, how the equipment is operated, and how well the equipment is maintained. Noise exposure at any single point outside the project work area would also vary depending on the distance from the source.

Table 4.9-11 includes the range of maximum noise levels for equipment commonly used in general construction activities at full-power operation at a distance of 50 feet; however, not all of the listed construction activities would be required of the proposed project. Table 4.9-11 also includes predicted maximum equipment noise levels at Receivers 1 through 5, which assumes a standard spherical spreading loss of 6.0 dB per doubling of distance from the noise source.

Butte County Code Section 41A-9 exempts noise sources associated with construction activities that occur within 1,000 feet of residential uses, provided that such activities do not occur between the specific hours and days detailed therein. Although existing residential uses are not identified within 1,000 feet of where the proposed construction activities would occur, for the purposes of this analysis, all noise-generating project construction activities are reasonably anticipated to occur in accordance with County Code Section 41A-9, and thereby, would be exempt from the County noise standards.

While project construction is reasonably assumed to comply with the times and days established by Butte County Code Section 41A-9, noise from heavy equipment operations during on-site construction activities would, nevertheless, add to the noise environment in the immediate project vicinity. In terms of determining the temporary noise increase due to project-related construction activities, an impact would occur if construction activity would noticeably increase ambient noise levels above background levels.

Table 4.9-11
Construction Equipment Reference and Predicted Noise Levels[1]

Equipment Description	Reference Noise Level at 50 feet, L_{max} (dB)	Predicted Noise Level at Receiver, L_{max} (dB)[2]				
		R1[3]	R2[3]	R3[3]	R4[3]	R5[3]
Air Compressor	80	30	32	36	40	35
Backhoe	80	30	32	36	40	35
Ballast Equalizer	82	32	34	38	42	37
Ballast Tamper	83	33	35	39	43	38
Compactor	82	32	34	38	42	37
Concrete Mixer	85	35	37	41	45	40
Concrete Pump	82	32	34	38	42	37
Concrete Vibrator	76	26	28	32	36	31
Crane, Mobile	83	33	35	39	43	38
Dozer	85	35	37	41	45	40
Excavator	85	35	37	41	45	40
Generator	82	32	34	38	42	37
Grader	85	35	37	41	45	40
Impact Wrench	85	35	37	41	45	40
Loader	80	30	32	36	40	35
Paver	85	35	37	41	45	40
Pneumatic tool	85	35	37	41	45	40
Pump	77	27	29	33	37	32
Saw	76	26	28	32	36	31
Scarifier	83	33	35	39	43	38
Scraper	85	35	37	41	45	40
Shovel	82	32	34	38	42	37
Spike Driver	77	27	29	33	37	32
Tie Cutter	84	34	36	40	44	39
Tie Handler	80	30	32	36	40	35
Tie Inserter	85	35	37	41	45	40
Truck	84	34	36	40	44	39
Low		26	28	32	36	31
High		35	37	41	45	40
Average		33	34	39	43	37

1 The application of the County's exterior noise level criteria is applied at a point of 100 feet away from the residences in "non-urban" areas (Receivers 1 through 3) and at the property line of a parcel in "urban" areas (Receivers 4 and 5).

2 Distances scaled from closest point in project area where construction activities would likely occur to receiver using provided site plans and Butte County GIS viewer. Predicted construction equipment noise levels at Receivers 1 through 3 include consideration of screening that would be provided by intervening topography and have been adjusted by -10 dB.

3 The distances from the closest point of construction activities for Receivers 1 through 5 are, respectively, as follows: (1) 4,800 feet; (2) 3,900 feet; (3) 2,400 feet; (4) 4,800 feet; and (5) 8,600 feet.

Source: Bollard Acoustical Consultants, Inc., 2024.

The threshold of perception of the human ear is approximately 3.0 to 5.0 dB. A 5.0 dB change is considered to be clearly noticeable. Thus, consistent with the FICON criteria shown in Table 4.9-8, a noticeable increase in ambient noise levels is assumed to

occur when noise levels increase by 5.0 dB or more over existing ambient noise levels, where the existing ambient noise level is less than 60 dB DNL.

Table 4.9-1 summarizes the results from the long-term ambient noise survey. The Long-Term Noise Survey Location was located on-site, approximately 120 feet from the centerline of Skyway (see Figure 4.9-2). Receivers 4 and 5 are also located adjacent to Skyway, ranging in distances of 100 to 300 feet from the centerline of the roadway. Given the proximity of Receivers 4 and 5 to Skyway, and after a comparison of local conditions present at Receivers 4 and 5 and the Long-Term Noise Survey Location (i.e., adjacent topography and roadway grade), BAC determined that the ambient noise level data is generally representative of the ambient noise environments at Receivers 4 and 5. However, the ambient noise level data obtained at the Long-Term Noise Survey Location would not be considered to be representative of the ambient noise level environments at Receivers 1 through 3, which are farther removed from the project site and shielded from Skyway in Butte Creek Canyon. Thus, to quantify the noise level increases at Receivers 1 through 3 that would occur due to on-site construction noise sources, BAC assumed the ambient noise level environments at Receivers 1 through 3 to be 5.0 dB less than the County's daytime, evening, and nighttime noise level standards for "non-urban" areas shown in Table 4.9-5.

Using the lowest average measured hourly daytime evening and nighttime ambient noise levels presented in Table 4.9-1, the assigned ambient noise levels for Receivers 1 through 5 discussed above, and the highest predicted construction equipment maximum noise levels shown in Table 4.9-11, ambient plus project construction equipment noise level increases were calculated at Receivers 1 through 5. The results indicate that increases in ambient noise levels from project construction activities would range from less than 0.1 to 0.2 dB L_{max} at Receivers 1 through 5 during daytime hours. Therefore, the calculated range of ambient plus project noise level increases at Receivers 1 through 5 would be below the applied FICON increase significance criterion of 5.0 dB DNL.

Nevertheless, to reduce the potential for annoyance at nearby noise-sensitive uses to the maximum extent feasible, the County would require the following condition of project approval to ensure consistency with Butte County Code Section 41A-9:

1. The following criteria shall be included in the improvement plans for the proposed project. Exceptions to allow expanded construction activities shall be reviewed on a case-by-case basis as determined by the Development Services Director.

    - All on-site noise-generating construction activities shall occur between the hours and days specified in Butte County Code Section 41A-9;
    - The construction noise control measures specified in Butte County General Plan Policy HS-P1.9 shall be implemented;
    - All noise-producing project construction equipment and vehicles using internal-combustion engines shall be equipped with manufacturer-recommended mufflers and maintained in good working condition;

- All mobile or fixed noise-producing equipment used on-site that is regulated for noise output by a federal, State, or local agency shall comply with such regulations while in the course of project construction activities;
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible;
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses; and
- Work area speed limits shall be established and enforced during the construction period.

Based on the above, maximum noise levels associated with on-site construction activities would not result in a significant noise level increase to the nearest receptors. Therefore, the proposed project would not generate a substantial temporary increase in ambient noise levels in the project vicinity in excess of applicable standards, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.9-2 Generation of a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Based on the analysis below, the impact is *less than significant.*

Noise sources associated with operation of the proposed project would consist of noise from project-generated traffic along roadways in the project vicinity, sanitary waste disposal station activity, on-site truck circulation, truck deliveries, passenger vehicle circulation, parking areas, and commercial HVAC equipment. The noise generated by each of the aforementioned components could result in impacts to existing noise-sensitive receptors in the project vicinity. Each of the foregoing noise sources is discussed in further detail below.

In addition, as previously discussed, this chapter considers exposure of future residents of the proposed project to potential effects associated with the existing and post-construction noise environment, in order to demonstrate compliance with the 2030 Butte County General Plan. While not an environmental issue required for analysis under CEQA, the County would condition the proposed project to address identified noise effects on future residents of the project as part of project approval.

Traffic Noise at Existing Noise-Sensitive Receptors

Using the methodology described above in the Method of Analysis section, traffic noise levels under Existing Plus Project conditions were estimated as part of the Noise Assessment and are shown in Table 4.9-12, in comparison to existing conditions. The estimated noise levels are provided in terms of DNL at a standard distance of 100 feet from the centerline of the selected roadways. In addition, the table includes an

assessment of predicted traffic noise level increases relative to the FICON noise level increase significance criteria presented in Table 4.9-8.

Table 4.9-12
Project-Related Traffic Noise Level Increases: Existing Versus Existing Plus Project

Segment #	Segment	Noise Levels at 100 Feet, DNL (dB)			Substantial Increase
		E	E+P	Increase	
1	North of Honey Run Road/Skyway Intersection	45.8	45.8	0.0	No
2	South of Honey Run Road/Skyway Intersection	--	--	--	--
3	East of Honey Run Road/Skyway Intersection	66.1	67.3	1.2	No
4	West of Honey Run Road/Skyway Intersection	66.1	67.3	1.2	No
5	North of Bruce Road/Skyway Intersection	61.5	62.0	0.5	No
6	South of Bruce Road/Skyway Intersection	52.6	53.0	0.4	No
7	East of Bruce Road/Skyway Intersection	65.0	66.2	1.2	No
8	West of Bruce Road/Skyway Intersection	64.9	65.9	1.0	No
9	North of Notre Dame Boulevard/Skyway Intersection	60.9	61.0	0.1	No
10	South of Notre Dame Boulevard/Skyway Intersection	59.5	59.5	0.0	No
11	East of Notre Dame Boulevard/Skyway Intersection	65.9	66.6	0.7	No
12	West of Notre Dame Boulevard/Skyway Intersection	67.8	68.3	0.5	No

Note: Blank cells indicate traffic data was not provided.

Source: Bollard Acoustical Consultants, Inc., 2024.

As indicated in Table 4.9-12, traffic generated by the proposed project would not result in a substantial increase of traffic noise levels on the local roadway network relative to the applicable FICON increase significance criteria. Based on the analysis above, the increase in ambient noise levels in the project vicinity due to increases in traffic from development of the proposed project would be less than significant.

Sanitary Waste Disposal Station Activity Noise at Existing Noise-Sensitive Receptors

With respect to the sanitary waste disposal station, the primary noise source associated with sewage waste disposal activities is anticipated to be the removal of

sewage from the waste storage area (truck vacuum pump operations). According to BAC, the National Institute for Occupational Safety & Health (NIOSH) cites that measured noise levels of sewage truck vacuum pumps are typically around 90 dB at one foot from the equipment; however, many newer sewage pump trucks currently have quieter vacuum pumps. Additionally, according to other online literature (sewage removal company websites), sewage tank removal times for residential and recreational vehicle (RV) park tanks are cited to range from 15 to 45 minutes, depending on tank size. Conservatively assuming that sewage tank removal activities could occur for 60 minutes of a given daytime, evening, or nighttime hour, and based on the aforementioned reference noise level data and operations assumptions, as well as a standard spherical spreading loss of 6.0 dB per doubling of distance, the proposed sanitary waste disposal station activity noise exposure at Receivers 1 through 5 was calculated. The results are presented in Table 4.9-13.

Table 4.9-13
Predicted Sanitary Waste Disposal Station Activity Noise at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Distance from Disposal Station (feet)[2]	Predicted Noise Level, L_{eq} (dB)[3]	Applied County Standards, L_{eq} (dB)[4]		
			Day	Evening	Night
1	5,900	<20	50	45	40
2	4,700	<20	50	45	40
3	3,300	<20	50	45	40
4	8,300	<20	55	50	45
5	12,100	<20	55	50	45

1 Receiver locations are shown on Figure 4.9-2.
2 Distances scaled from waste disposal station to a given receiver using site plans and Butte County GIS viewer.
3 The predicted sewage waste disposal station activity noise levels at Receivers 1 through 3 include consideration of screening associated with intervening topography and have been adjusted by -10 dB.
4 Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

As shown in Table 4.9-13, sanitary waste disposal station activity noise (i.e., vacuum pump truck operations) would comply with the applicable Butte County daytime, evening, and nighttime L_{eq} exterior noise level standards at Receivers 1 through 5 by a wide margin. Using the lowest average measured hourly daytime, evening, and nighttime ambient noise levels presented in Table 4.9-1 and the predicted sanitary waste disposal station activity noise levels, the proposed project was determined to result in ambient noise level increases due to sanitary waste disposal station activity noise of less than 0.1 dB L_{eq} at Receivers 1 through 5 during daytime, evening, and nighttime hours, which would be below the applicable FICON increase significance criterion of 5.0 dB. Therefore, noise exposure from sanitary waste disposal station activity at nearest residences would result in a less-than-significant impact.

On-Site Operational Noise at Existing Noise-Sensitive Receptors

The primary on-site noise sources are associated with the proposed commercial uses and include on-site truck circulation and deliveries associated with the gas station/convenience store and shopping center; passenger vehicle circulation; parking areas; and HVAC equipment noise. Each of the foregoing noise sources, as well as potential impacts at the nearest existing noise-sensitive receptors associated with the combined on-site commercial noise sources, are discussed further below. As previously discussed, for the analyses of on-site noise sources in this chapter, a noticeable increase in ambient noise levels is assumed to occur where noise levels increase by 5.0 dB or more over existing ambient noise levels at Receivers 1 through 5.

It should be noted that the proposed project would additionally include a mini-storage facility in the eastern portion of the project site. The nearest existing off-site sensitive receptors to the mini-storage facility are located approximately 3,330 to 5,500 feet away (Receivers 1 through 3 in Butte Creek Canyon). Given the distances from the proposed mini-storage facility, and after consideration of the significant degree of shielding that would be provided by intervening topography, noise levels associated with the mini-storage facility operations are anticipated to result in a less-than-significant noise impact at the closest off-site sensitive receivers.

On-Site Truck Circulation Noise at Existing Noise-Sensitive Receptors

Pursuant to the expertise of BAC, product deliveries at convenience stores and retail uses generally occur at the front of the store with medium-duty vendor trucks/vans. The proposed shopping center would also receive deliveries from both medium-duty and heavy trucks. Based on the conceptual site layout and factoring in site constraints related to lot and building sizes, the proposed design is not anticipated to be able to accommodate loading docks for heavy trucks, which typically are located at the back of shopping center buildings. Given this assumption, the Noise Assessment reasonably assumed medium- and heavy-duty trucks would deliver products at the front of the store. Additionally, the proposed gas station would receive deliveries from heavy-duty fuel trucks for the purposes of refilling the underground storage tanks (USTs).

According to the Noise Assessment, on-site truck passbys are expected to be relatively brief and would occur at low speeds. To predict noise levels generated by on-site truck circulation, file data obtained from measurements previously conducted by BAC of heavy- and medium-duty truck passbys was used. Single-event heavy truck passby noise levels are approximately 74 dB L_{max} and 83 dB SEL at a reference distance of 50 feet. BAC file data also indicate that single-event medium truck passby noise levels are approximately 66 dB L_{max} and 76 SEL at a reference distance of 50 feet.

Based on conservative assumptions of four heavy-duty and eight medium-duty truck deliveries during the same worst-case hour and SELs of 83 and 76 dB per passby, respectively, the combined hourly average noise level generated by on-site truck circulation would be 55 dB L_{eq} at a reference distance of 50 feet from the passby route during the worst-case hour of deliveries (maximum noise level of 74 dB L_{max}). Assuming a standard spherical spreading loss of 6.0 dB per doubling of distance, BAC

calculated the worst-case project on-site truck circulation noise exposure at Receivers 1 through 5, which is shown in Table 4.9-14 and Table 4.9-15.

Table 4.9-14
Predicted On-Site Truck Circulation Noise Levels at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Distance from On-Site Route (feet)[2]	Predicted Noise Level, L_{eq} (dB)[3]	Applicable County Standards, L_{eq} (dB)[4]		
			Day	Evening	Night
1	7,500	<20	50	45	40
2	6,000	<20	50	45	40
3	2,300	<20	50	45	40
4	6,200	<20	55	50	45
5	10,000	<20	55	50	45

1 Receiver locations are shown on Figure 4.9-2. The application of the County's exterior noise level criteria is applied at a point of 100 feet away from the residences in "non-urban" areas (Receivers 1 through 3) and at the property line of a parcel in "urban" areas (Receivers 4 and 5).
2 Distances scaled from nearest on-site truck route to receivers using site plans and the Butte County GIS viewer. Delivery trucks were reasonably assumed to enter the project site through the main entry point.
3 The predicted on-site truck circulation noise levels at Receivers 1 through 3 include consideration of screening that would be provided by intervening topography and have been adjusted by -10 dB.
4 Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

Table 4.9-15
Predicted On-Site Truck Circulation Noise Levels at Existing Residential Uses – Maximum L_{max}

Receiver[1]	Distance from On-Site Route (feet)[2]	Predicted Noise Level, L_{max} (dB)	Applicable County Standards, L_{max} (dB)[3]		
			Day	Evening	Night
1	7,500	20	60	55	50
2	6,000	22	60	55	50
3	2,300	31	60	55	50
4	6,200	32	70	60	55
5	10,000	28	70	60	55

1 Receiver locations are shown on Figure 4.9-2.
2 Distances scaled from nearest on-site truck route to receivers using site plans and the Butte County GIS viewer. Delivery trucks were reasonably assumed to enter the project site through the main entry point.
3 Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

It should be noted that the future commercial tenants of the proposed project would be unlikely to all have the same hours of operation and would be subject to the applicable County noise level criteria during daytime, evening, and nighttime hours, as applicable. Nonetheless, as shown in Table 4.9-14 and Table 4.9-15, on-site truck circulation noise exposure would comply with the applicable Butte County daytime, evening, and nighttime L_{eq} and L_{max} exterior noise level standards at Receivers 1 through 5 by a wide margin.

Using the lowest average measured hourly daytime, evening, and nighttime ambient noise levels presented in Table 4.9-1 and the predicted on-site truck circulation noise levels, the proposed project was determined to result in an increase in ambient noise levels due to on-site truck circulation noise of less than 0.1 to 0.2 dB for both L_{eq} and L_{max} at Receivers 1 through 5 during daytime, evening, and nighttime hours, which would be below the applicable FICON increase significance criterion of 5.0 dB. Therefore, noise exposure from on-site truck circulation at nearby residences would result in a less-than-significant impact.

On-Site Truck Delivery Noise at Existing Noise-Sensitive Receptors

The primary noise sources associated with delivery activities are trucks stopping (air brakes), alarms notifying that trucks are reversing (back-up alarms), and trucks pulling away from the unloading area (engine revving). As previously discussed, based on the conceptual site layout and factoring in site constraints related to lot and building sizes, the proposed design is not anticipated to be able to accommodate loading docks for heavy trucks. As such, the Noise Assessment reasonably assumed medium- and heavy-duty trucks would deliver products at the front of the store. BAC file data indicate that noise levels associated with medium- (including side-step vans) and heavy-duty truck deliveries are approximately 65 dB L_{max} and 76 dB SEL at a distance of 100 feet. Similar to the analysis of on-site truck circulation noise, the commercial portion of the proposed project was conservatively assumed to have a total of four heavy-duty and eight medium-duty truck deliveries during the same worst-case hour. Based on such assumptions and an SEL of 76 dB, the hourly average noise level would be 51 dB L_{eq} at a reference distance of 100 feet during the worst-case hour of deliveries (maximum noise level of 65 dB L_{max}).

Assuming a standard spherical spreading loss of 6.0 dB per doubling of distance, BAC calculated the worst-case project truck delivery noise exposure at Receivers 1 through 5, which is shown in Table 4.9-16 and Table 4.9-17. The data shown in Table 4.9-16 and Table 4.9-17 indicate that project truck delivery activity noise exposure would comply with the applicable Butte County daytime, evening, and nighttime L_{eq} and L_{max} exterior noise level standards at Receivers 1 through 5 by a wide margin. Using the lowest average measured hourly daytime, evening, and nighttime ambient noise levels presented in Table 4.9-1 and the predicted truck delivery activity noise levels, the proposed project was determined to result in an increase in ambient noise levels due to on-site truck delivery noise of less than 0.1 dB to a maximum of 0.1 dB for both L_{eq} and L_{max} at Receivers 1 through 5 during daytime, evening, and nighttime hours, which would be below the applicable FICON increase significance criterion of 5.0 dB. Therefore, noise exposure from on-site truck deliveries at nearby residences would result in a less-than-significant impact.

Table 4.9-16
Predicted Truck Delivery Activity Noise Levels at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Distance from Nearest Delivery Area (feet)[2]	Predicted Noise Level, L_{eq} (dB)[3]	Applicable County Standards, L_{eq} (dB)[4]		
			Day	Evening	Night
1	7,300	<20	50	45	40
2	5,800	<20	50	45	40
3	2,500	<20	50	45	40
4	6,200	<20	55	50	45
5	10,000	<20	55	50	45

1 Receiver locations are shown on Figure 4.9-2.
2 Distances conservatively scaled from nearest truck delivery area using site plans and Butte County GIS viewer.
3 The predicted truck delivery activity noise levels at Receivers 1 through 3 include consideration of screening associated with intervening topography and have been adjusted by -10 dB.
4 Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

Table 4.9-17
Predicted Truck Delivery Activity Noise Levels at Existing Residential Uses – Maximum L_{max}

Receiver[1]	Distance from Nearest Delivery Area (feet)[2]	Predicted Noise Level, L_{max} (dB)	Applicable County Standards, L_{max} (dB)[3]		
			Day	Evening	Night
1	7,300	<20	60	55	50
2	5,800	20	60	55	50
3	2,500	27	60	55	50
4	6,200	29	70	60	55
5	10,000	25	70	60	55

1 Receiver locations are shown on Figure 4.9-2.
2 Distances conservatively scaled from nearest truck delivery area using site plans and Butte County GIS viewer.
3 Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

On-Site Passenger Vehicle Circulation Noise at Existing Noise-Sensitive Receptors

As discussed in the Project Description chapter of this EIR, the project proposes two primary vehicle access points to the project site: (1) a main entry point centrally located off Skyway; and (2) a secondary entry point located off Skyway near the northeast end of the project site.

Using the methodology described above in the Method of Analysis section, upon buildout, the proposed commercial uses were estimated to generate approximately 9,451 daily vehicle trips, including 393 AM peak hour and 697 PM peak hour vehicle trips. Based on worst-case peak hour trip generation (697 trips during a PM peak hour) and assuming an on-site vehicle speed of 25 mph, BAC calculated commercial on-site

passenger vehicle circulation noise exposure at Receivers 1 through 5, which is shown in Table 4.9-18 and Table 4.9-19.

Table 4.9-18
Predicted On-Site Passenger Vehicle Circulation Noise Levels at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Distance from On-Site Route (feet)[2]	Predicted Noise Level, L_{eq} (dB)[3]	Applicable County Standards, L_{eq} (dB)[4]		
			Day	Evening	Night
1	5,800	<20	50	45	40
2	4,500	<20	50	45	40
3	2,300	22	50	45	40
4	6,300	26	55	50	45
5	10,100	23	55	50	45

1 Receiver locations are shown on Figure 4.9-2.
2 Distances scaled from nearest on-site vehicle circulation route using site plans and the Butte County GIS viewer. The worst-case peak hour commercial passenger vehicle traffic was conservatively assumed to enter the project site through either the main or secondary entry points.
3 The predicted commercial on-site passenger vehicle circulation noise levels at Receivers 1 through 3 include consideration of screening associated with intervening topography and have been adjusted by -10 dB.
4 Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

Table 4.9-19
Predicted On-Site Passenger Vehicle Circulation Noise Levels at Existing Residential Uses – Maximum L_{max}

Receiver[1]	Distance from On-Site Route (feet)[2]	Predicted Noise Level, L_{max} (dB)[3]	Applicable County Standards, L_{max} (dB)[4]		
			Day	Evening	Night
1	5,800	26	60	55	50
2	4,500	28	60	55	50
3	2,300	32	60	55	50
4	6,300	36	70	60	55
5	10,100	33	70	60	55

1 Receiver locations are shown on Figure 4.9-2.
2 Distances scaled from nearest on-site vehicle circulation route using site plans and the Butte County GIS viewer. The worst-case peak hour commercial passenger vehicle traffic was conservatively assumed to enter the project site through either the main or secondary entry points.
3 Predicted L_{max} noise levels conservatively estimated to be 10 dB higher than predicted L_{eq} noise levels.
4 Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

As indicated in Table 4.9-18 and Table 4.9-19, commercial on-site passenger vehicle circulation noise exposure would comply with the applicable Butte County daytime, evening, and nighttime L_{eq} and L_{max} exterior noise level standards at Receivers 1 through 5 by a wide margin. Using the lowest average measured hourly daytime, evening, and nighttime ambient noise levels presented in Table 4.9-1 and the predicted on-site passenger vehicle circulation noise levels, the proposed project was

determined to result in an increase in ambient noise levels due to on-site commercial passenger vehicle circulation noise of less than 0.1 to 0.2 dB for both L_{eq} and L_{max} at Receivers 1 through 5 during daytime, evening, and nighttime hours, which would be below the applicable FICON increase significance criterion of 5.0 dB. Therefore, noise exposure from on-site commercial passenger vehicle circulation at nearby residences would result in a less-than-significant impact.

It should be noted that BAC did not calculate on-site passenger vehicle circulation noise associated with the proposed residences at Receivers 1 through 5, as the large setbacks from on-site traffic circulation routes to existing receivers are anticipated to prevent potential impacts. Additionally, based on trip generation estimates provided by Fehr & Peers, the commercial component of the proposed project is estimated to generate significantly higher daily vehicle trips and peak hour trips than the residential component. Thus, given that on-site commercial passenger vehicle circulation noise would be less than significant at Receivers 1 through 5, noise generated by on-site residential passenger vehicles would similarly comply with applicable FICON increase significance criteria at Receivers 1 through 5.

Parking Area Noise at Existing Noise-Sensitive Receptors

Using the methodology described above in the Method of Analysis section, the project site plans, and assuming standard spherical spreading loss of 6.0 dB per doubling of distance, BAC calculated the commercial parking area noise exposure at Receivers 1 through 5, which is shown in Table 4.9-20 and Table 4.9-21.

Table 4.9-20
Predicted Worst-Case Parking Area Noise Levels at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Predicted Combined Noise Level from All Parking Areas, L_{eq} (dB)[2]	Applicable County Standards, L_{eq} (dB)[3]		
		Day	Evening	Night
1	<20	50	45	40
2	<20	50	45	40
3	<20	50	45	40
4	<20	55	50	45
5	<20	55	50	45

1 Receiver locations are shown on Figure 4.9-2.
2 Predicted combined hourly average noise level from all parking areas with concurrent operations. The predicted on-site parking area noise levels at Receivers 1 through 3 include consideration of screening due to intervening topography and have been adjusted by -10 dB.
3 Applicable County exterior noise levels standards for “non-urban” and “urban” areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

The data presented in Table 4.9-20 and Table 4.9-21 indicate that project commercial parking area noise exposure would comply with the applicable Butte County daytime, evening, and nighttime L_{eq} and L_{max} exterior noise level standards at Receivers 1 through 5 by a wide margin. Using the lowest average measured hourly daytime, evening, and nighttime ambient noise levels presented in Table 4.9-1 and the predicted worst-case parking area noise levels, the proposed project was determined to result in a maximum increase in ambient noise levels due to parking area noise of

less than 0.1 dB for both L_{eq} and L_{max} at Receivers 1 through 5 during daytime, evening, and nighttime hours, which would be below the applicable FICON increase significance criterion of 5.0 dB. Therefore, noise exposure from commercial parking areas at nearby residences would result in a less-than-significant impact.

Table 4.9-21
Predicted Worst-Case Parking Area Noise Levels at Existing Residential Uses – Maximum L_{max}

Receiver[1]	Predicted Highest Noise Level from All Parking Areas, L_{max} (dB)[2]	Applicable County Standards, L_{max} (dB)[3]		
		Day	Evening	Night
1	<20	60	55	50
2	<20	60	55	50
3	21	60	55	50
4	23	70	60	55
5	<20	70	60	55

1 Receiver locations are shown on Figure 4.9-2.
2 Predicted highest maximum noise level from all parking areas.
3 Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

Heating, Ventilation, and Air Conditioning Equipment Noise at Existing Noise-Sensitive Receptors

HVAC requirements for the proposed commercial uses are anticipated to be met using packaged roof-mounted systems. Because mechanical equipment operation typically generates sustained, steady noise levels, potential impacts of project rooftop mechanical equipment are assessed relative to the County's L_{eq} noise level standards, and predicted L_{max} noise levels associated with the proposed HVAC equipment is not included in the analysis. Using the sound power data above and assuming standard spherical spreading loss 6.0 dB per doubling of distance, BAC calculated commercial HVAC equipment noise exposure at Receivers 1 through 5, which is shown in Table 4.9-22.

As indicated in Table 4.9-22, commercial HVAC equipment noise exposure would comply with the applicable Butte County daytime, evening, and nighttime L_{eq} exterior noise level standards at Receivers 1 through 5 by a wide margin. Using the lowest average measured hourly daytime, evening, and nighttime ambient noise levels presented in Table 4.9-1 and the predicted commercial HVAC noise levels, the proposed project was determined to result in ambient noise level increases due to commercial HVAC equipment noise of less than 0.1 dB for both L_{eq} and L_{max} at Receivers 1 through 5 during daytime, evening, and nighttime hours, which would be below the applicable FICON increase significance criterion of 5.0 dB. Therefore, noise exposure from commercial HVAC equipment at nearby residences would result in a less-than-significant impact.

Table 4.9-22
Predicted Commercial HVAC Equipment Noise Levels at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Distance from Nearest Shopping Center Building (feet)[2]	Predicted Noise Level, L_{eq} (dB)[3]	Applicable County Standards, L_{eq} (dB)[4]		
			Day	Evening	Night
1	7,400	<20	50	45	40
2	5.900	<20	50	45	40
3	2,700	<20	50	45	40
4	6,200	<20	55	50	45
5	10,100	<20	55	50	45

1 Receiver locations are shown on Figure 4.9-2.
2 Distances scaled from effective noise center of all proposed commercial buildings within the nearest shopping center area to a given receiver using site plans and Butte County GIS viewer.
3 Predicted combined HVAC equipment noise exposure from all proposed commercial buildings within the nearest shopping center area at a given receiver. The predicted HVAC equipment noise levels at Receivers 1 through 3 include consideration of screening provided by intervening topography and have been adjusted by -10 dB.
4 Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

Total Combined On-Site Commercial Operations Noise at Existing Noise-Sensitive Receptors

The total combined L_{eq} and highest predicted L_{max} noise levels from all analyzed on-site commercial noise sources at Receivers 1 through 5 are shown in Table 4.9-23 and Table 4.9-24. Due to the logarithmic nature of the decibel scale, the sum of two noise values that differ by 10 dB equates to an overall increase in noise levels of 0.4 dB. When the noise sources are equivalent, the sum would result in an overall increase in noise levels of 3.0 dB.

The data presented in Table 4.9-23 and Table 4.9-24 indicate that the total combined and highest noise levels from on-site commercial operations would comply with the applicable Butte County daytime, evening, and nighttime L_{eq} and L_{max} exterior noise level standards at Receivers 1 through 5 by a wide margin. Using the lowest average measured hourly daytime, evening, and nighttime ambient noise levels presented in Table 4.9-1 and the total combined on-site commercial operations noise levels, the proposed project was determined to result in an increase in ambient noise levels due to on-site commercial operations noise of less than 0.1 to 0.3 dB L_{eq} and less than 0.1 to 0.2 dB L_{max} at Receivers 1 through 5 during daytime, evening, and nighttime hours, which would be below the applicable FICON increase significance criterion of 5.0 dB. Therefore, noise exposure from the total combined on-site commercial noise sources at nearby residences would result in a less-than-significant impact.

Traffic Noise at Proposed Noise-Sensitive Receptors

Using the methodology described above in the Method of Analysis section, future Skyway traffic noise levels were estimated at the at the outdoor activity areas (backyards) of the proposed residences and are shown in Table 4.9-25.

Table 4.9-23
Total Combined On-Site Commercial Operations Noise Levels at Existing Residential Uses – Hourly L_{eq}

Receiver	Predicted Noise Levels, L_{eq} (dB)					Combined, L_{eq} (dB)[1]	Applicable County Standard, L_{eq} (dB)[2]		
	Truck Circulation	Truck Deliveries	Passenger Vehicle Circulation	Parking Area	HVAC Equipment		Day	Evening	Night
1	<20	<20	<20	<20	<20	<20	50	45	40
2	<20	<20	<20	<20	<20	<20	50	45	40
3	<20	<20	22	<20	<20	24	50	45	40
4	<20	<20	26	<20	<20	27	55	50	45
5	<20	<20	23	<20	<20	24	55	50	45

[1] Calculated cumulative hourly average noise levels based on predicted noise levels discussed above for on-site commercial operations noise.
[2] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

Table 4.9-24
Total Combined On-Site Commercial Operations Noise Levels at Existing Residential Uses – Maximum L_{max}

Receiver	Predicted Noise Levels, L_{max} (dB)					Combined, L_{max} (dB)[1]	Applicable County Standard, L_{max} (dB)[2]		
	Truck Circulation	Truck Deliveries	Passenger Vehicle Circulation	Parking Area	HVAC Equipment		Day	Evening	Night
1	20	<20	26	<20	--	26	60	55	50
2	22	20	28	<20	--	28	60	55	50
3	31	27	32	21	--	32	60	55	50
4	32	29	36	23	--	36	70	60	55
5	28	25	33	<20	--	33	70	60	55

[1] Highest predicted noise levels based on results discussed above for on-site commercial operations noise.
[2] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

Table 4.9-25
Future Exterior Traffic Noise Levels at Proposed Residential Uses[1]

Roadway	Receiver Description	Offset (dB)[2]	Future Exterior DNL (dB)
Skyway	Nearest Backyards	-	62
	Nearest First-Floor Building Facades	-	61
	Nearest Upper-Floor Building Facades	+2	63

[1] A complete listing of FHWA model inputs is provided in Appendix F of the Noise Assessment.
[2] A +2.0 dB offset was applied at upper floors for reduced ground absorption at elevated locations.

Source: Bollard Acoustical Consultants, Inc., 2024.

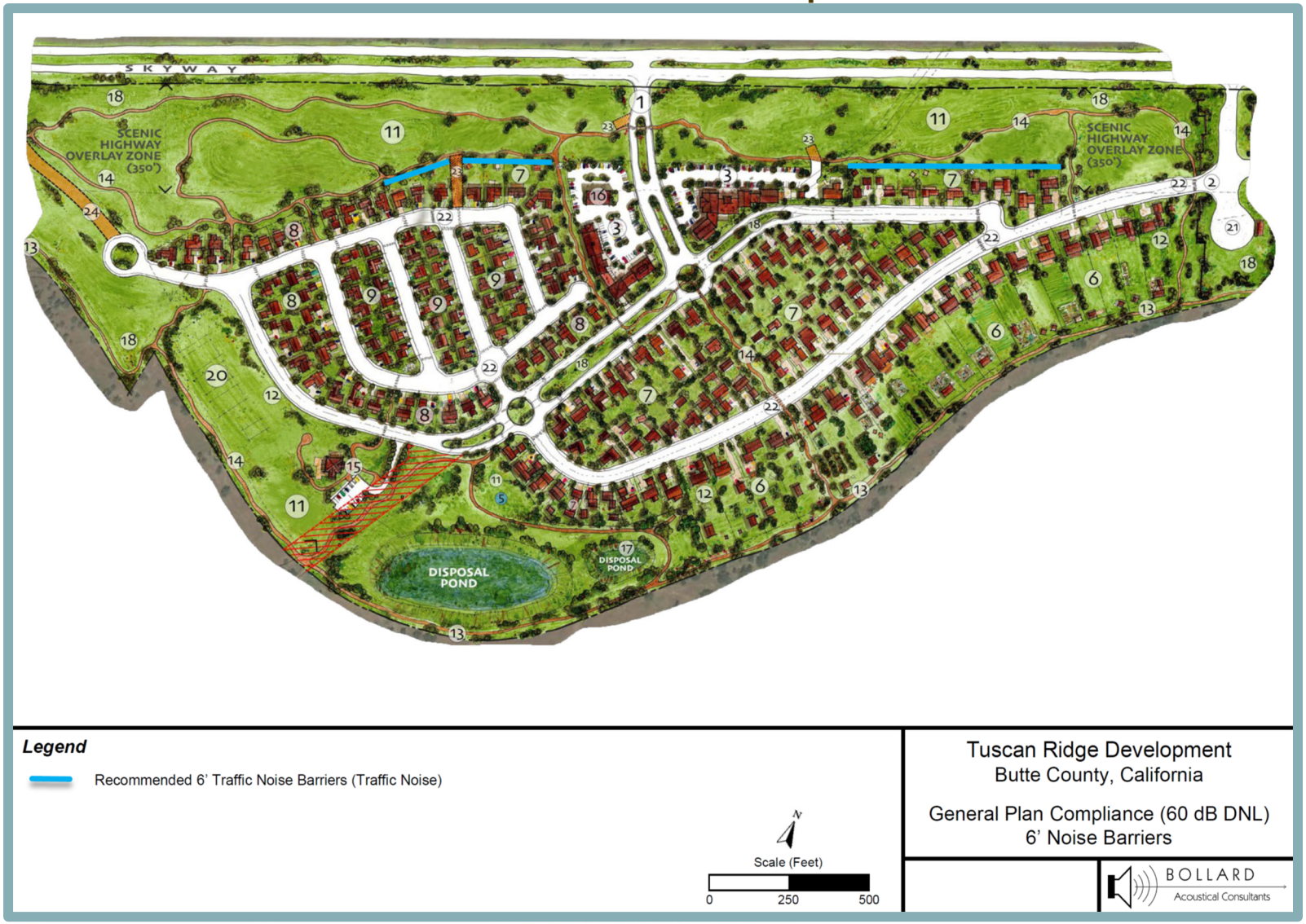
As shown in Table 4.9-25, future Skyway traffic noise levels at the outdoor activity areas (backyards) of the nearest proposed residences would exceed the 2030 Butte County General Plan 60 dB DNL exterior noise level standard for residential uses. As previously discussed, such noise effects are not environmental issues required for analysis under CEQA. Nonetheless, the County would require the following condition of approval as part of project approval to reduce future Skyway traffic noise level exposure on future on-site residences in compliance with the 2030 General Plan's 60 dB DNL exterior noise level standard:

- The proposed project shall construct six-foot-tall traffic noise barriers at the locations shown on Figure 4.9-3. The construction of six-foot-tall noise barriers at the locations on Figure 4.9-3 is calculated to reduce future Skyway traffic noise level exposure to approximately 56 dB DNL or less at the nearest proposed backyards to the roadway, which would satisfy the applicable 2030 Butte County General Plan 60 dB DNL exterior noise level standard. The traffic noise barriers could take the form of a masonry wall, earthen berm, or combination of the two. Other materials may be acceptable but should be reviewed by an acoustical consultant prior to construction.

  It should be noted that lot grading plans were not available at the time of the Noise Assessment's preparation. The recommended six-foot-tall barrier height assumes that the difference in elevations between Skyway and the nearest adjacent proposed residential lots are within approximately two feet. Should differences in elevations be greater than approximately two feet, an additional analysis would be warranted. Nonetheless, the six-foot-tall barrier height is relative to lot or roadway elevation, whichever is greater.

With construction of the six-foot-tall traffic noise barriers necessary to satisfy the 2030 Butte County General Plan 60 dB DNL exterior noise level standard at the project site, future Skyway traffic noise levels would be approximately 57 dB DNL or less at the first-floor exterior facades of the residences constructed nearest to the road. Due to reduced ground absorption at elevated positions and lack of shielding by the noise barriers, future traffic noise levels would be approximately 63 dB DNL at the upper-floor facades of those nearest residences. To satisfy the 2030 Butte County General Plan 45 dB DNL interior noise level standard, minimum noise reductions of 12 dB and 18 dB would be required of the first- and upper-floor building facades, respectively, of the residences constructed adjacent to the Skyway.

Figure 4.9-3
Recommended Traffic Noise Barriers for Proposed Residential Uses



Standard building construction (i.e., stucco siding, Sound Transmission Class-27 [STC-27] windows, door weather-stripping, exterior wall insulation, composition plywood roof), typically results in an exterior-to-interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. As mentioned above, if the interior allowable noise levels are met by requiring that windows be kept closed, the design for the structures must also specify a ventilation or air conditioning system to provide a habitable interior environment. Thus, mechanical ventilation (air conditioning) shall be provided to all residences of the development to allow occupants to close doors and windows as desired for additional acoustical isolation. Therefore, standard construction practices and the inclusion of mechanical ventilation would be adequate to ensure interior noise levels at the future on-site residences nearest to Skyway would comply with the 45 dB DNL interior noise level standard.

Sanitary Waste Disposal Station Activity Noise at Proposed Noise-Sensitive Receptors

Using the methodology described above in the Method of Analysis section and under the discussion of sanitary waste disposal station activity noise levels at the nearest proposed residences were predicted and are shown in Table 4.9-26.

Table 4.9-26
Predicted Sanitary Waste Disposal Station Activity Noise Levels at Proposed Residential Uses – Hourly L_{eq}

Receiver[1]	Distance from Station (feet)[2]	Predicted Noise Level, L_{eq} (dB)[2]	Applied County Standards, L_{eq} (dB)[3]		
			Day	Evening	Night
Nearest Proposed Residence	230	38	50	45	40

1 Distance scaled from sewage waste disposal station to property line of nearest proposed residential use using development plan.
2 Predicted noise level includes a -5 dB offset to account for a six-foot-tall intervening sound wall at the location in Figure 4.9-3.
3 County exterior noise level standards for "urban" areas.

Source: Bollard Acoustical Consultants, Inc., 2024.

As shown in Table 4.9-26, the proposed sanitary waste disposal station activity noise levels would comply with the Butte County exterior daytime, evening, and nighttime L_{eq} noise level standards, as applied at the nearest proposed residential uses. Based on the analysis and results presented above, additional consideration of noise-attenuating design measures would not be necessary to ensure compliance with applicable Butte County noise level criteria.

On-Site Operational Noise at Proposed Noise-Sensitive Receptors

Future noise levels at the proposed residences generated by on-site commercial operations, including on-site truck circulation, truck delivery activities, on-site passenger vehicle circulation, parking area movements, and HVAC equipment are discussed in further detail below. For noise generated by on-site commercial activities, the County's exterior noise level standards for "urban" areas shown in Table 4.9-6 are

applied and assessed at the property line of the proposed residential uses. As previously discussed, such noise effects are not environmental issues required for analysis under CEQA.

On-Site Truck Circulation Noise at Proposed Noise-Sensitive Receptors

Using the methodology described above in the Method of Analysis section, on-site commercial truck circulation noise levels at the nearest proposed residences were calculated and are shown in Table 4.9-27 and Table 4.9-28.

As shown in Table 4.9-27, on-site commercial truck circulation noise levels would comply with the Butte County exterior daytime, evening, and nighttime L_{eq} noise level standards, as applied at the nearest proposed residential uses. However, as shown in Table 4.9-28, on-site commercial truck circulation noise levels associated with the proposed combination gas station/convenience store, as well as the proposed shopping center would exceed the applicable Butte County exterior evening and nighttime L_{max} noise level standards at the nearest proposed residences to the south of the main site entrance (Receiver Res-S). Furthermore, although not exceeding the standard, on-site commercial truck circulation noise levels associated with the proposed combination gas station/convenience store would be equivalent to the County's 70 dB L_{max} threshold.

Table 4.9-27
Predicted On-Site Truck Circulation Noise Levels at Proposed Residential Uses – Hourly L_{eq}

Nearest Receiver[1,2]	Shopping Center Component[2]	Distance from Truck Route (feet)[3]	Predicted Noise Level, L_{eq} (dB)[4]	Applicable County Standards, L_{eq} (dB)[5]		
				Day	Evening	Night
Res-S	C-Store/Gas Station	80	45	55	50	45
	Shopping Plaza-S	140	37	55	--	--
Res-N	Shopping Plaza-N	175	30	55	--	--

1 Locations of receivers and shopping area components are identified in Figure 4.9-4.
2 Please refer to Figure 4.9-4 for locations of Res-S, Res-N, C-Store/Gas Station, Shopping Plaza-S, and Shopping Plaza-N.
3 Distances scaled from component on-site truck route to receiver property lines using provided site plan.
4 Predicted noise levels include a -5.0 dB offset in cases where proposed intervening structures would provide screening of truck circulation route.
5 County exterior noise levels standards for "urban" areas. Applied noise level standards based on assumed hours of operations for shopping center components, as discussed in the Noise Assessment.

Source: Bollard Acoustical Consultants, Inc., 2024.

Table 4.9-28
Predicted On-Site Truck Circulation Noise Levels at Proposed Residential Uses – Maximum L_{max}

Nearest Receiver[1,2]	Shopping Center Component[2]	Distance from Truck Route (feet)[3]	Predicted Noise Level, L_{max} (dB)[4]	Applicable County Standards, L_{max} (dB)[5]		
				Day	Evening	Night
Res-S	C-Store/Gas Station	80	70	70	60	55
	Shopping Plaza-S	140	65	70	--	--
Res-N	Shopping Plaza-N	175	58	70	--	--

1 Locations of receivers and shopping area components are identified in Figure 4.9-4.
2 Please refer to Figure 4.9-4 for locations of Res-S, Res-N, C-Store/Gas Station, Shopping Plaza-S, and Shopping Plaza-N.
3 Distances scaled from component on-site truck route to receiver property lines using provided site plan.
4 Predicted noise levels include a -5.0 dB offset in cases where proposed intervening structures would provide screening of truck circulation route.
5 County exterior noise levels standards for "urban" areas. Applied noise level standards based on assumed hours of operations for shopping center components, as discussed in the Noise Assessment.

Source: Bollard Acoustical Consultants, Inc., 2024.

As previously discussed, such noise effects are not environmental issues required for analysis under CEQA. Nonetheless, the County would require the following conditions of approval as part of project approval to reduce noise levels associated with on-site truck circulation in compliance with the 2030 Butte County General Plan exterior evening and nighttime L_{max} noise level standards. In addition, out of an abundance of caution, the proposed project shall be conditioned to construct an eight-foot-tall noise barrier to reduce the potential for an exceedance of the Butte County exterior daytime L_{max} noise level standard.

- To avoid the potential for exceedance of the Butte County exterior evening and nighttime L_{max} noise level standard, all on-site commercial truck circulation shall be limited to daytime hours only (7:00 AM to 7:00 PM).
- To reduce the potential for an exceedance of the Butte County exterior daytime L_{max} noise level standard at the closest proposed residential uses, the project design shall include the construction of an eight-foot-tall noise barrier (masonry wall, earthen berm, or combination of the two; other materials may be acceptable but should be reviewed by an acoustical consultant prior to construction) at the location shown in Figure 4.9-4.

On-Site Truck Delivery Noise at Proposed Noise-Sensitive Receptors

Using the methodology described above in the Method of Analysis section, on-site commercial truck delivery noise levels at the nearest proposed residences were calculated and are shown in Table 4.9-29 and Table 4.9-30.

Figure 4.9-4
Recommended Commercial Noise Barrier for Proposed Residential Uses

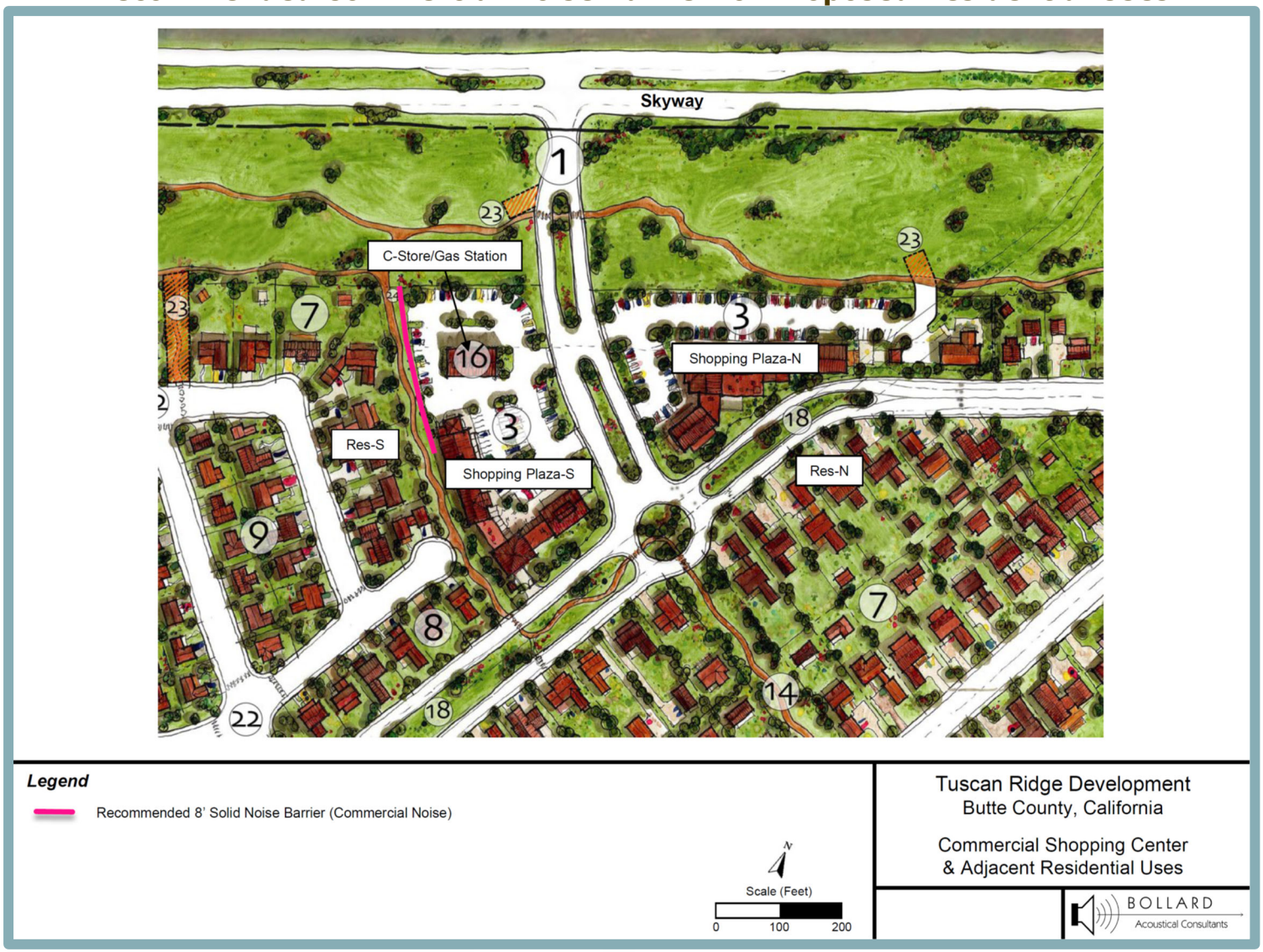


Table 4.9-29
Predicted On-Site Truck Delivery Noise Levels at Proposed Residential Uses – Hourly L_{eq}

Nearest Receiver[1]	Shopping Center Component	Distance from Delivery Area (feet)[2]	Predicted Noise Level, L_{eq} (dB)[3]	Applicable County Standards, L_{eq} (dB)[4]		
				Day	Evening	Night
Res-S	C-Store/Gas Station	130	43	55	50	45
	Shopping Plaza-S	150	37	55	--	--
Res-N	Shopping Plaza-N	200	34	55	--	--

1 Locations of receivers and shopping area components are identified in Figure 4.9-4.
2 Distances scaled from component delivery area to receiver property lines using provided site plan.
3 Predicted noise levels include a -5.0 dB offset in cases where proposed intervening structures would provide screening of delivery areas.
4 County exterior noise levels standards for "urban" areas. Applied noise level standards based on assumed hours of operations for shopping center components, as discussed in the Noise Assessment.

Source: Bollard Acoustical Consultants, Inc., 2024.

Table 4.9-30
Predicted On-Site Truck Delivery Noise Levels at Proposed Residential Uses – Maximum L_{max}

Nearest Receiver[1]	Shopping Center Component	Distance from Delivery Area (feet)[2]	Predicted Noise Level, L_{max} (dB)[3]	Applicable County Standards, L_{max} (dB)[4]		
				Day	Evening	Night
Res-S	C-Store/Gas Station	130	63	70	60	55
	Shopping Plaza-S	150	56	70	--	--
Res-N	Shopping Plaza-N	200	54	70	--	--

1 Locations of receivers and shopping area components are identified in Figure 4.9-4.
2 Distances scaled from component delivery area to receiver property lines using provided site plan.
3 Predicted noise levels include a -5.0 dB offset in cases where proposed intervening structures would provide screening of delivery areas.
4 County exterior noise levels standards for "urban" areas. Applied noise level standards based on assumed hours of operations for shopping center components, as discussed in the Noise Assessment.

Source: Bollard Acoustical Consultants, Inc., 2024.

According to Table 4.9-29, commercial truck delivery noise levels would comply with the Butte County exterior daytime, evening, and nighttime L_{eq} noise level standards, as applied at the nearest proposed residential uses. However, as shown in Table 4.9-30, truck delivery noise levels associated with the combination gas station/convenience store would exceed the applicable Butte County exterior evening

and nighttime L_{max} noise level standards at the nearest proposed residences to the south of the main entry road (Receiver Res-S). As previously discussed, such noise effects are not environmental issues required for analysis under CEQA. Nonetheless, the County would require the following condition of approval as part of project approval to reduce noise levels associated with commercial truck deliveries in compliance with the applicable 2030 Butte County General Plan exterior evening and nighttime L_{max} noise level standards.

- To avoid the potential for exceedance of the Butte County exterior evening and nighttime L_{max} noise level standard, all on-site commercial truck delivery activities shall be limited to daytime hours only (7:00 AM to 7:00 PM).

On-Site Passenger Vehicle Circulation Noise at Proposed Noise-Sensitive Receptors

Using the methodology described above in the Method of Analysis section, on-site passenger vehicle noise levels at the nearest proposed residences were calculated and are shown in Table 4.9-31 and Table 4.9-32. It should be noted that the Noise Assessment does not evaluate noise from on-site residential passenger vehicle circulation at the proposed residences, as based on trip generation estimates provided by Fehr & Peers, on-site residential passenger vehicle circulation within the internal roadway network is not expected to result in noise impacts at the proposed residential uses.

Table 4.9-31
Predicted On-Site Passenger Vehicle Circulation Noise Levels at Proposed Residential Uses – Hourly L_{eq}

Nearest Receiver[1]	Shopping Center Component	Distance from Circulation Route (feet)[2]	Predicted Noise Level, L_{eq} (dB)[3]	Applicable County Standards, L_{eq} (dB)[4]		
				Day	Evening	Night
Res-S	C-Store/Gas Station	125	42	55	50	45
	Shopping Plaza-S			55	--	--
Res-N	Shopping Plaza-N	200	39	55	--	--
Nearest Proposed Residence	Mini-Storage	240	28	55	50	45

1 Locations of receivers and shopping area components are identified in Figure 4.9-4.
2 Distances scaled from component circulation route to receiver property lines using provided site plan.
3 Predicted hourly L_{eq} noise level uses 349 vehicle trips per hour (50 percent of estimated 697 peak hour trips) for the shopping center component of the project (C-Store/Gas Station and Retail) and 8 vehicle trips per hour for the mini-storage use.
4 County exterior noise levels standards for "urban" areas. Applied noise level standards based on assumed hours of operations for shopping center components, as discussed in the Noise Assessment.

Source: Bollard Acoustical Consultants, Inc., 2024.

Table 4.9-32
Predicted On-Site Passenger Vehicle Circulation Noise Levels at Proposed Residential Uses – Maximum L_{max}

Nearest Receiver[1]	Shopping Center Component	Distance from Circulation Route (feet)[2]	Predicted Noise Level, L_{max} (dB)[3]	Applicable County Standards, L_{max} (dB)[4]		
				Day	Evening	Night
Res-S	C-Store/Gas Station	125	52	70	60	55
	Shopping Plaza-S			70	--	--
Res-N	Shopping Plaza-N	200	49	70	--	--
Nearest Proposed Residence	Mini-Storage	240	38	70	60	55

1 Locations of receivers and shopping area components are identified in Figure 4.9-4.
2 Distances scaled from component circulation route to receiver property lines using provided site plan.
3 Predicted maximum L_{max} conservatively assumed to be 10 dB higher than predicted hourly L_{eq}.
4 County exterior noise levels standards for "urban" areas. Applied noise level standards based on assumed hours of operations for shopping center components, as discussed in the Noise Assessment.

Source: Bollard Acoustical Consultants, Inc., 2024.

As shown in the tables above, commercial on-site passenger vehicle circulation noise levels would comply with the Butte County exterior daytime, evening, and nighttime L_{eq} and L_{max} noise level standards, as applied at the nearest proposed residences. Based on the analysis and results presented above, additional consideration of noise-attenuating design measures would not be necessary to ensure compliance with applicable Butte County noise level criteria.

Parking Area Noise at Proposed Noise-Sensitive Receptors

Using the methodology described above in the Method of Analysis section, commercial parking area noise levels at the nearest proposed residences were calculated and are shown in Table 4.9-33 and Table 4.9-34. According to Table 4.9-33, commercial parking area noise levels would comply with the Butte County exterior daytime, evening, and nighttime L_{eq} noise level standards, as applied at the nearest proposed residential uses. However, as shown in Table 4.9-34, commercial parking area noise levels associated with the combination gas station/convenience store would exceed the applicable Butte County exterior evening and nighttime L_{max} noise level standards at the nearest proposed residences to the south of the main entry road (Receiver Res-S). As previously discussed, such noise effects are not environmental issues required for analysis under CEQA.

Table 4.9-33
Predicted Worst-Case Parking Area Noise Levels at Proposed Residential Uses – Hourly L_{eq}

Nearest Receiver[1]	Shopping Center Component	Distance from Parking Area (feet)[2]	Predicted Noise Level, L_{eq} (dB)[3,4]	Applicable County Standards, L_{eq} (dB)[5]		
				Day	Evening	Night
Res-S	C-Store/Gas Station	55	44	55	50	45
	Shopping Plaza-S	125	36	55	--	--
Res-N	Shopping Plaza-N	140	35	55	--	--
Nearest Proposed Residence	Mini-Storage	400	21	55	50	45

1 Locations of receivers and shopping area components are identified in Figure 4.9-4.
2 Distances scaled from component's nearest parking area to receiver property lines using provided site plan.
3 Predicted noise levels include a -5.0 dB offset in cases where proposed intervening structures would provide screening of parking areas.
4 Predicted noise levels from the mini-storage facility parking area is based on 10 stalls.
5 County exterior noise levels standards for "urban" areas. Applied noise level standards based on assumed hours of operations for shopping center components, as discussed in the Noise Assessment.

Source: Bollard Acoustical Consultants, Inc., 2024.

Table 4.9-34
Predicted Worst-Case Parking Area Noise Levels at Proposed Residential Uses – Maximum L_{max}

Nearest Receiver[1]	Shopping Center Component	Distance from Parking Area (feet)[2]	Predicted Noise Level, L_{max} (dB)[3]	Applicable County Standards, L_{max} (dB)[4]		
				Day	Evening	Night
Res-S	C-Store/Gas Station	55	64	70	60	55
	Shopping Plaza-S	125	52	70	--	--
Res-N	Shopping Plaza-N	140	51	70	--	--
Nearest Proposed Residence	Mini-Storage	400	42	70	60	55

1 Locations of receivers and shopping area components are identified in Figure 4.9-4.
2 Distances scaled from component's nearest parking area to receiver property lines using provided site plan.
3 Predicted noise levels include a -5.0 dB offset in cases where proposed intervening structures would provide screening of parking areas.
4 County exterior noise levels standards for "urban" areas. Applied noise level standards based on assumed hours of operations for shopping center components, as discussed in the Noise Assessment.

Source: Bollard Acoustical Consultants, Inc., 2024.

Nonetheless, the County would require the following conditions of approval as part of project approval to reduce noise levels associated with parking area noise in

compliance with the 2030 Butte County General Plan exterior evening and nighttime L_{max} noise level standards:

- To avoid the potential for exceedance of the Butte County exterior evening and nighttime L_{max} noise level standard, the hours of operation for all proposed commercial uses shall be prohibited during nighttime hours (10:00 PM to 7:00 AM).
- To satisfy the Butte County exterior evening (7:00 PM to 10:00 PM) L_{max} noise level standard at the closest proposed residential uses, the project design shall include the construction of an eight-foot-tall noise barrier (masonry wall, earthen berm, or combination of the two; other materials may be acceptable but should be reviewed by an acoustical consultant prior to construction) at the location shown in Figure 4.9-4.

Heating, Ventilation, and Air Conditioning Equipment Noise at Proposed Noise-Sensitive Receptors

Using the methodology described above in the Method of Analysis section and assuming a standard spherical spreading loss of -6.0 dB per doubling of distance, the combined HVAC equipment noise levels from all proposed commercial buildings at the nearest proposed residences were calculated and are shown in Table 4.9-35. Because mechanical equipment operation typically generates sustained, steady noise levels, the project rooftop mechanical equipment is assessed relative to the County's L_{eq} noise level standards, and predicted L_{max} noise levels associated with the proposed HVAC equipment is not included in the analysis.

Table 4.9-35
Predicted Commercial HVAC Equipment Noise Levels at Proposed Residential Uses – Hourly L_{eq}

Nearest Receiver[1]	Shopping Center Component	Distance from Buildings (feet)[2]	Predicted Noise Level, L_{eq} (dB)[3]	Applicable County Standards, L_{eq} (dB)[4]		
				Day	Evening	Night
Res-S	C-Store/Gas Station	100	40	55	50	45
	Shopping Plaza-S	60	44	55	--	--
Res-N	Shopping Plaza-N	100	40	55	--	--

1 Locations of receivers and shopping area components are identified in Figure 4.9-4.
2 Distances scaled from nearest two buildings of component (where appropriate) to receiver property lines using provided site plan.
3 Predicted combined equipment noise level exposure from nearest two buildings (where appropriate).
4 County exterior noise levels standards for "urban" areas. Applied noise level standards based on assumed hours of operations for shopping center components, as discussed in the Noise Assessment.

Source: Bollard Acoustical Consultants, Inc., 2024.

As shown in Table 4.9-35, commercial HVAC noise levels would comply with the Butte County exterior daytime, evening, and nighttime L_{eq} noise level standards, as applied

at the nearest proposed residential uses. However, final mechanical plans for the proposed commercial buildings have not been prepared. Furthermore, should the future commercial uses involve cold food storage, additional HVAC equipment would be required of such uses. The equipment is typically located on the rooftop of buildings, within a mechanical equipment room inside the building, or at ground level outside the building. Thus, depending upon the location and equipment configuration, noise levels from commercial HVAC equipment could exceed the County's daytime, evening, and nighttime noise standards at the nearest proposed residences. As previously discussed, such noise effects are not environmental issues required for analysis under CEQA. Nonetheless, the County would require the following condition of approval as part of project approval to ensure HVAC noise levels associated with cold food storage comply with the 2030 Butte County General Plan daytime, evening, and nighttime standards:

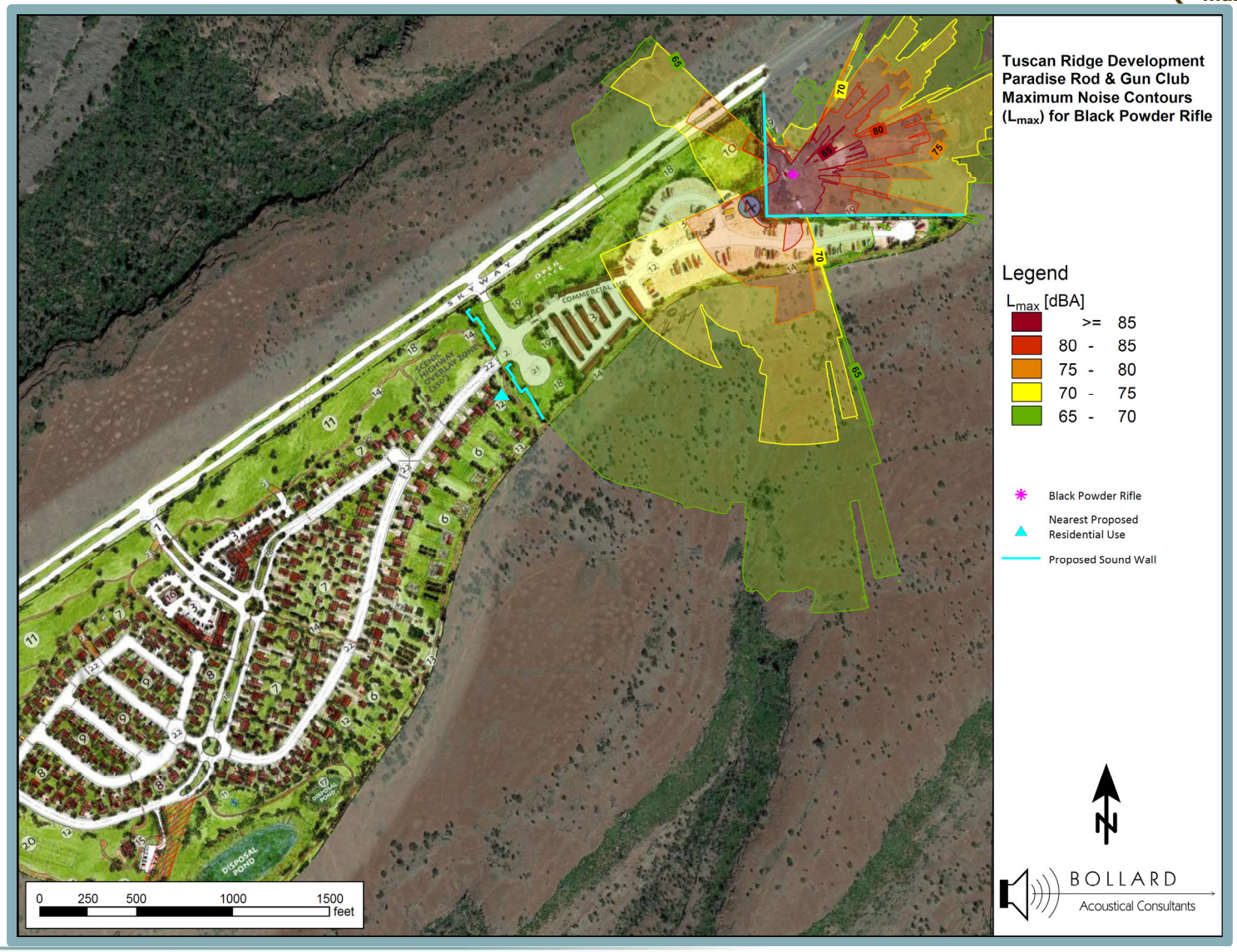
- Should the proposed project include mechanical equipment for the cold storage of food that is not proposed within a mechanical equipment room which would contain the noise generated by such equipment (i.e., rooftop of commercial buildings or at unshielded exterior ground-floor locations), a site-specific noise impact study that addresses commercial HVAC equipment shall be completed by a qualified noise consultant and submitted to the Butte County Development Services Department, once site-specific development plans are completed. The noise impact study shall include an analysis of commercial HVAC equipment noise exposure at the nearest proposed residential uses of the proposed project. The analysis shall include associated measures, as appropriate, to reduce commercial HVAC equipment noise levels to a state of compliance with applicable 2030 Butte County General Plan exterior noise level limits at nearby proposed residential uses. Such measures could include, but are not limited to, the use of building parapets to screen HVAC equipment from nearby sensitive uses, locating HVAC equipment within isolated mechanical equipment rooms, or relocating HVAC equipment as far as feasible from proposed noise-sensitive receptors.

Off-Site Operational Noise at Proposed Noise-Sensitive Receptors

As shown in Figure 4.9-2, the Paradise Rod & Gun Club is located adjacent to the eastern site boundary. The Paradise Rod & Gun Club is a recreational shooting range open to the general public and club members. The Paradise Rod & Gun Club holds events that include shooting matches and various trainings for local law enforcement, youth, and citizens. According to its website, the club operates all days of the week from 9:00 AM to an hour before sunset.

Based on BAC file data, the firearm that was consistently measured to be the loudest during the June 1998 simulation at the Paradise Rod & Gun Club was a black powder rifle, measured to be approximately 88 dB L_{max} at a distance of 250 feet to the southwest of the shooting range (i.e., towards the project site). Using the reference noise measurement level in addition to the methodology described above in the Method of Analysis section, the maximum noise level (L_{max}) contours associated with the Paradise Rod & Gun Club are shown graphically in Figure 4.9-5.

Figure 4.9-5
Paradise Rod & Gun Club Maximum Noise Contours for Black Powder Rifle (L_{max})



As indicated in Figure 4.9-5, the property line of the nearest proposed residential use is located outside of the modeled 65 dB L_{max} noise contour for the loudest measured firearm (black powder rifle).

Based on the modeling results and the design of the proposed project, maximum noise levels associated with Paradise Rod & Gun Club range activities would be below the Butte County 70 dB L_{max} exterior daytime noise level standard at the nearest proposed residential property line.

Additionally, Butte County Code Section 41A-9(l) exempts noise associated with private recreational activities. Gunfire occurring during target practice on private property in compliance with all State laws during daytime hours (9:00 AM to sunset) and not in excess of 65 dB L_{eq} when measured at any point on the property line over any 30-minute period qualifies as exempt under Section 41A-9(l). As mentioned previously, the Paradise Rod & Gun Club operates during daytime hours only. Given a maximum firearm noise level of 65 dB L_{max} at the property line of the nearest proposed residence, the calculated L_{eq} noise level would be below 65 dB at that location. Thus, noise from target shooting at the Paradise Rod & Gun Club would be exempt at the nearest proposed residential use of the development.

Although noise level exposure from Paradise Rod & Gun Club shooting activities would comply with applicable Butte County exterior noise level criteria at the nearest proposed residences, the County would require the following condition of approval as part of project approval:

- Disclosure statements shall be provided to future residents of the proposed project, notifying them of the audibility of Paradise Rod & Gun Club shooting activities and potential for elevated noise levels during range hours of operation (i.e., daytime hours).

Conclusion

Based on the above, the proposed project would not result in the generation of a substantial permanent increase in ambient noise levels at existing residences located within the immediate project vicinity. Therefore, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.9-3 Generation of excessive groundborne vibration or groundborne noise levels. Based on the analysis below, the impact is *less than significant*.

As discussed above in the Existing Environmental Setting section of this chapter, pursuant to the site visit conducted on January 19, 2022 as part of the Noise Assessment, vibration levels were below the threshold of perception within the project vicinity. Thus, the existing vibration environment in the project vicinity is considered negligible. The proposed project would consist of 165 residential units, commercial development, recreation areas, open space, various on-site road improvements, and

a sanitary waste disposal station. Given that none of the proposed uses typically involve activities during operation that would result in the generation of substantial groundborne vibration, the proposed project would not generate excessive groundborne vibration during project operation. However, construction activities associated with the proposed project would have the potential to result in varying degrees of temporary ground vibration depending on the specific construction equipment used and operations involved.

During on-site project construction, heavy equipment would be used for grading, excavation, paving, and building construction. Heavy equipment would also be used during construction of the on-site road improvements. Use of heavy equipment associated with such activities would generate localized vibration in the immediate vicinity of the project site.

Table 4.9-36 includes the range of vibration levels for equipment commonly used in general construction projects at a reference distance of 25 feet, as well as the projected equipment vibration levels at the nearest existing off-site sensitive receptor (Receiver 3) to the project site, which is located approximately 2,400 feet away (see Figure 4.9-2).

Table 4.9-36
Vibration Source Amplitudes for On-Site Construction Equipment

Equipment	Reference PPV at 25 Feet (in/sec)	Projected PPV at Nearest Receptor, Receiver 3 (2,400 Feet) (in/sec)
Vibratory Roller	0.210	<0.001
Hoe Ram	0.089	<0.001
Large Bulldozer	0.089	<0.001
Caisson Drilling	0.089	<0.001
Loaded Trucks	0.076	<0.001
Jackhammer	0.035	<0.001
Small Bulldozer	0.003	<0.001

Source: Bollard Acoustical Consultants, Inc., 2024.

As shown in Table 4.9-36, construction vibration levels generated from the majority of construction activities within the project site at the nearest residence would be well below the Caltrans thresholds for damage to residential structures of 0.5 in/sec PPV (see Table 4.9-9), as well as below or within the range of barely/slightly perceptible (see Table 4.9-10). Therefore, on-site construction would not result in excessive groundborne vibration levels at nearby existing residences.

Based on the above, construction and operation of the proposed project would not result in the generation of excessive groundborne vibration or groundborne noise levels. As such, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. For further detail related to the cumulative setting of the proposed project, refer to Chapter 6, Statutorily Required Sections, of this EIR.

4.9-4 Generation of a substantial permanent increase in ambient noise levels associated with the proposed project in combination with cumulative development. Based on the analysis below, the project's incremental contribution to the significant cumulative impact is *less than cumulatively considerable*.

Future development projects within the Butte County planning area, in combination with the proposed project, would incrementally affect the future cumulative ambient noise environment. The proposed project consists of residential uses, as well as a combination gas station/convenience store, a shopping center with retail uses, a mini-storage use, and a sanitary disposal station. As discussed under Impact 4.9-1, construction of the proposed project would result in a less-than-significant impact related to noise. Additionally, as discussed under Impact 4.9-2, operation of the proposed project would similarly result in a less-than-significant impact related to noise. Furthermore, additional development in the project vicinity is not currently planned and is not anticipated, and the nearest existing noise-sensitive receptors are located across Skyway in Butte Creek Canyon, separated from the project site by intervening topography. Thus, the primary project component that could combine with noise from other development in the project region would be associated with vehicle traffic, which, together, could potentially result in a significant cumulative impact related to transportation noise. To assess the potential noise impacts due to the traffic increase from the proposed project on the local roadway network under cumulative conditions, noise levels have been calculated for the cumulative and Cumulative Plus Project conditions at a standard distance of 100 feet from the centerline of the selected roadways using the methodology described in the Method of Analysis section. The estimated noise levels are presented in Table 4.9-37.

As indicated in Table 4.9-37, traffic generated by the proposed project under Cumulative Plus Project conditions would not result in a substantial increase of traffic noise levels on the local roadway network from cumulative conditions relative to the applicable FICON increase significance criteria.

Based on the above, under Cumulative Plus Project conditions, the proposed project would not result in the generation of a substantial permanent increase in ambient noise levels in combination with cumulative development, and the project's contribution to the significant cumulative impact would be ***less than cumulatively considerable.***

Table 4.9-37
Project-Related Traffic Noise Level Increases: Cumulative Versus Cumulative Plus Project

Segment #	Segment	Noise Levels at 100 Feet, DNL (dB)			Substantial Increase
		C	C+P	Increase	
1	North of Honey Run Road/Skyway Intersection	49.5	49.5	0.0	No
2	South of Honey Run Road/Skyway Intersection	--	--	--	--
3	East of Honey Run Road/Skyway Intersection	68.3	69.1	0.8	No
4	West of Honey Run Road/Skyway Intersection	68.3	69.1	0.8	No
5	North of Bruce Road/Skyway Intersection	64.2	64.5	0.3	No
6	South of Bruce Road/Skyway Intersection	54.6	54.9	0.3	No
7	East of Bruce Road/Skyway Intersection	67.4	68.1	0.7	No
8	West of Bruce Road/Skyway Intersection	67.3	67.9	0.6	No
9	North of Notre Dame Boulevard/Skyway Intersection	62.2	62.2	0.0	No
10	South of Notre Dame Boulevard/Skyway Intersection	60.4	60.4	0.0	No
11	East of Notre Dame Boulevard/Skyway Intersection	67.8	68.3	0.5	No
12	West of Notre Dame Boulevard/Skyway Intersection	69.5	69.8	0.3	No

Note: Blank cells indicate traffic data was not provided.

Source: Bollard Acoustical Consultants, Inc., 2024.

Mitigation Measure(s)

None required.

4.10. Public Services and Recreation

4.10. PUBLIC SERVICES AND RECREATION

4.10.1 INTRODUCTION

The Public Services and Recreation chapter of the EIR summarizes the setting information and identifies potential new demands resulting from the proposed project on fire and sheriff protection services, as well as demand associated with schools, parks, recreation facilities, and other public facilities such as libraries. Potential impacts are identified if the proposed project would require the development of new facilities or expansion of existing facilities, the construction of which could have adverse physical effects on the environment. Information for the Public Services and Recreation chapter was primarily drawn from the 2030 Butte County General Plan,[1] the 2030 Butte County General Plan EIR,[2] and the 2030 Butte County General Plan Supplemental EIR (SEIR).[3]

It should be noted that impacts related to wildfire are addressed in Chapter 4.13, Wildfire, of this EIR.

4.10.2 EXISTING ENVIRONMENTAL SETTING

The following section describes the existing fire, sheriff protection, and other public services within the project area, including schools, parks, and recreation facilities. The project site is located in unincorporated Butte County, between Chico and Paradise, California.

Fire Protection Services

Several fire agencies provide fire protection services within the project area, including both wildland fire and structural fire response. The Butte County Fire Department (BCFD) and the California Department of Forestry and Fire Protection (CAL FIRE) provide fire and emergency services to the unincorporated areas of Butte County, protecting over 1,600 square miles of land. Since 1931, the County has contracted with CAL FIRE to provide staffing to the BCFD through an annual cooperative agreement. Under the terms of the agreement, the County funds CAL FIRE professional command, firefighting, and administrative staff to operate the BCFD. Through the arrangement, CAL FIRE and the BCFD function together as a fully consolidated fire protection agency and provide cost-effective fire protection service for Butte County. Therefore, the fire service provider for the area is henceforth referred to only as the BCFD.

Responsibility for wildland fire suppression at the project site is the sole responsibility of the State (i.e., the BCFD), given that the project site is located within a State Responsibility Area (SRA). Fire and rescue service for the project site are the responsibility of the Butte County Cooperative Fire Agencies (BCCFA).

The BCCFA would be responsible for providing fire and rescue services to the project site. Butte County and their partner communities (the City of Gridley, City of Biggs, City of Oroville, and the Town of Paradise) benefit from an integrated, cooperative regional fire protection system provided

1 Butte County. *Butte County General Plan 2030.* November 6, 2012.
2 Butte County. *Butte County General Plan 2030 Draft EIR*. April 8, 2010.
3 Butte County. *Butte County GPA & Zoning Ordinance Update Draft Supplemental EIR*. May 31, 2012.

by the BCFD through cooperative fire protection agreements. The parent organization, BCFD, has brought organizational elements and leadership where the cooperative fire protection system is administered and operated efficiently as one fire department. BCCFA operates 22 career-staffed fire stations and 16 volunteer fire stations that serve over 1,600 square miles of unincorporated communities in Butte County and the cities of Biggs, Gridley, and the Town of Paradise. From the stations within the County, BCCFA provides full-service fire protection, pre-hospital basic life support emergency medical services, technical rescue services and response to hazardous materials incidents. BCCFA maintains automatic-aid emergency response agreements with all fire protection agencies within and adjacent to the County, as well as with the U.S. Forest Service, Lassen and Plumas National Forests, Hamilton City in Glenn County, Sutter County, Tehama County, and several fire districts in Yuba County.

According to the Butte County Cooperative Fire Protection 2020 Annual Report, the BCFD is staffed with 352 uniformed personnel during the summer and 220 uniformed personnel during the winter, for an on-duty daily staff of 98 uniformed personnel. In addition, BCFD staff includes 19 department chiefs, 16 civilian personnel, and 161 County volunteers.[4] The BCFD also protects 97 square miles of southeastern Tehama County. BCFD also operates Countywide dispatch services, coordinates major emergency response within the County as the Office of Emergency Service's mutual aid coordinator, and provides training for career and volunteer fire fighters. In addition to fire engine responses, the Department's Emergency Command Center (ECC) provides Emergency Medical Dispatch (EMD) services. Automatic aid agreements allow the resources nearest to an emergency situation to be dispatched on the first alarm regardless of jurisdiction.

It should also be noted that the Chico Fire Department (CFD) and Paradise Fire Department (PFD) provide first response to emergencies in the unincorporated County area surrounding the cities when a city engine is the closest resource. In exchange, County resources respond to city emergencies when a County engine is the closest resource.

The nearest fire station to the project site is the South Chico Fire Station (Station #44), located at 2334 Fair Street, approximately 6.4 miles west of the project site.

Sheriff Protection Services

The Butte County Sheriff's Office (BCSO) is responsible for law enforcement, criminal investigation, and crime prevention in the unincorporated areas of Butte County. The BCSO is currently allotted approximately 107 sworn personnel, excluding correctional deputies. Of the 107 positions, approximately nine positions are command staff (lieutenants or higher), 19 are sergeants and 79 are deputy sheriffs. Of the 107 sworn allotments, approximately 18 allotments are currently vacant.[5] In total, BCSO has approximately 300 employees, including corrections and civilian staff. BCSO also has volunteer groups, including Search and Rescue, with approximately 50 members, STARS (Sheriffs Team of Active Residents in Service), with approximately 40 members, along with CERT (Community Emergency Response Team), with approximately 30 members. In 2021, the Sheriff's Dispatch Center received approximately 179,092 calls, of which approximately 32,658 were 9-1-1 emergency calls. A reported 64,939 total incidents were entered

[4] Butte County Fire Department. *Butte County Cooperative Fire Protection 2020 Annual Report.* 2020.
[5] Matt Calkins, Undersheriff. *Tuscan Ridge Project Environmental Impact Report (EIR) – Butte County Sheriff's Office.* April 1, 2022.

by dispatch, of which 11,438 were deputy-initiated, including 2,678 arrests and 7,467 written reports.[6]

Deputies assigned to patrol would typically be the first responders to any call for service in or around the project area. Patrol teams are typically comprised of a sergeant and three to five deputies, depending on staffing levels. Seven BCSO patrol teams rotate through 12-hour shifts and provide 24-hour coverage to the County. Patrol teams are assigned to either "North County" or "South County", which are BCSO response area designations that split Butte County's 1,677 square miles roughly in half. South County encompasses the region south of the State Route (SR) 149/SR 99 interchange, including the Oroville, Gridley, Biggs, Concow, Kelly Ridge, Berry Creek, Feather Falls, and Forbestown areas. North County encompasses the region north of the SR 149/SR 99 interchange, and includes the Chico, Paradise, Magalia, Forest Ranch, Butte Valley, Durham, Butte Meadows, and Cohasset areas.

The main Sheriff's Office is located at 5 Gillick Way in Oroville, and substations are located in Chico and Magalia. The BCSO Chico Substation is located at 402 Otterson Drive in Chico. The Magalia substation is located at 14172 Skyway in Magalia. The project site would be served by both the Chico and Magalia Substations, located approximately 7.5 miles west of the site and 11.9 miles northeast of the site, respectively.

The BCSO is also the Countywide coordinator for mutual aid situations and maintains mutual aid agreements with the California Highway Patrol (CHP) and the municipal police departments. Municipal police departments are located within the incorporated areas of the County, which include: Chico, Paradise, Gridley, and Oroville. BCSO deputies perform coroner's duties in all areas of the County, including the incorporated cities. In addition, BCSO is responsible for operating a 614-bed jail facility, investigative units, a civil division, a waterways unit, a court security unit and a morgue.

The CHP provides law enforcement services, primarily traffic control, for State roads and roads in the unincorporated portions of the County. As noted above, the CHP has a mutual aid agreement with the BCSO and responds when requested by the Sheriff. The CHP has two offices that serve the north and south regions of the County. The project site would be serviced by the CHP north district office, which is located at 413 Southgate Avenue in Chico, approximately four miles west of the site.

Schools

The project would be served by the Chico Unified School District (CUSD) for all students aged Kindergarten through 12th Grade. Table 4.10-1 below provides enrollment and capacity information for the CUSD. As shown in the table, the CUSD's existing capacity exceeds current enrollment for all grade levels (K-12).

CUSD oversees 23 schools, including 12 elementary schools, three junior high schools, two high schools, one continuation school, one community day school, one opportunity school, one independent study, one special services school, one online learning academy, and four preschool programs.[7]

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6 Matt Calkins, Undersheriff. *Tuscan Ridge Project Environmental Impact Report (EIR) – Butte County Sheriff's Office*. April 1, 2022.

7 Chico Unified School District. *Our District*. Available at: http://www.chicousd.org/Our-District/index.html. Accessed March 2022.

Table 4.10-1
CUSD Enrollment and Capacity

District	Grades	Enrollment	Capacity
CUSD	K-5	5,156	6,676
	6-8	2,615	3,915
	9-12	3,688	5,467

Source: Chico Unified School District, 2022.

Based on the most recently updated attendance areas for the CUSD, the project site is within the Little Chico Creek Elementary School attendance area (K-5), the Marsh Junior High School attendance area (6-8), and the Chico High School attendance area (9-12). According to the 2021 School Accountability Report Cards for Little Chico Creek Elementary School,[8] Marsh Junior High School,[9] and Chico High School,[10] enrollment for each school was 400 students, 776 students, and 1,780 students, respectively.

Parks and Recreational Facilities

Recreational opportunities are provided by numerous federal, State, and local jurisdictions and private entities in Butte County. At the federal level, the U.S. Forest Service (USFS) manages approximately 133,687 acres of forest and public domain range lands. Two national forests extend into portions of Butte County: Plumas National Forest and Lassen National Forest. In addition, a 209-acre research center just outside of Chico is administered by the Mendocino National Forest. The U.S. Bureau of Land Management (BLM) owns 18,600 acres in Butte County, consisting primarily of scattered foothill lands. The Forks of Butte Creek Recreation Area is the only BLM public access site for recreation in the County, and provides hiking, fishing, tubing, kayaking, picnicking, and camping, among other activities. In addition, BLM manages approximately 120 acres near Magalia that include a series of nature trails.

Existing State parks and recreation areas include the Lake Oroville State Recreation Area, which encompasses 47,000 acres, as well as 12 separate recreation areas. The Bidwell River Park, west of Chico, is a 180-acre park with amenities such as boat launches and picnic tables. The park is popular with recreationists, serving 500 visitors daily. In addition, two wildlife management areas are operated by the State, including the Oroville State Wildlife Area, near Lake Oroville, and the Grey Lodge State Waterfowl Management Area, located southwest of Gridley.

Five large special independent districts maintain many of the parks and recreational facilities in Butte County. The districts, which encompass most of the County's land area, operate as independent districts, meaning that each district is governed by a board of directors elected by the voters in that district. The districts in Butte County are non-enterprise districts, and depend mainly on property taxes for operating revenue, rather than user fees. Butte County's special districts include the Chico Area Recreation and Park District (CARD); Feather River Recreation and Park District (FRRPD); Paradise Recreation and Park District (PRPD); Durham Recreation and Park District (DRPD); and Richvale Recreation and Park District (RRPD). The project site is located within the PRPD area. The PRPD maintains approximately 73 acres of developed park land and 358 acres of natural open space.[11] The nearest park to the project site is Baroni park, located approximately 6.2 miles northwest of the project site. In addition, the 287-acre Butte Creek

[8] Little Chico Creek Elementary School. *2021 School Accountability Report Card.* January 19, 2022.
[9] Marsh Junior High School. *2021 School Accountability Report Card.* January 19, 2022.
[10] Chico High School. *2021 School Accountability Report Card.* January 19, 2022.
[11] Butte County. *Butte County General Plan Update Draft EIR* [pg. 5.15-55]. January 2023.

Ecological Preserve is located just north of the project site, across Skyway, and provides various recreational opportunities, including hiking, birdwatching, wildlife viewing, and fishing.

Other Public Facilities

The Butte County Public Works Department maintains approximately 1,300 miles of roadways, including over 500 bridges and drainage structures and more than 18,000 road signs. The Public Works Department provides roadside tree and vegetation control, emergency roadway hazard response, bridge maintenance, maintenance of roadway signs, and striping and traffic signals. In addition to public roads, Butte County maintains various public facilities, such as public libraries and community buildings, which could potentially be used by residents of the proposed project.

The Butte County Library provides library services to all County residents through a consolidated operation from the main library in Oroville and branches in Biggs, Chico, Durham, Gridley, and Paradise. The nearest library to the proposed project site is the Paradise Branch Library located at 5922 Clark Road, approximately 7.3 miles northeast of the project site. In addition, the Chico Branch Library is located approximately 8.8 miles northwest of the project site, at 1108 Sherman Avenue.

4.10.3 REGULATORY CONTEXT

The following discussion contains a summary review of regulatory controls pertaining to public services and recreation, including State and local laws and ordinances.

State Regulations

The following are applicable State regulations related to the proposed project.

State Responsibility Area

Pursuant to PRC Sections 4125-4128, the Board of Forestry and Fire Protection classifies all lands in the State for the purposes of determining areas in which the financial responsibility of preventing and suppressing wildfire is primarily the responsibility of the State. The classified lands are termed SRA.

Fire Hazard Severity Zones

Fire Hazard Severity Zones (FHSZs) are geographical areas designated pursuant to California PRC Sections 4201 through 4204 and classified as Very High, High, or Moderate in SRAs, or as Local Agency Very High FHSZs pursuant to California Government Code Sections 51175 through 51189. The California Code of Regulations (CCR), Title 14, Section 1280 entitles the maps of the geographical areas as “Maps of the Fire Hazard Severity Zones in the State Responsibility Area of California.”

International Fire Code

The International Fire Code with the State of California Amendments contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the California Fire Code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The Fire Code contains specialized technical regulations related to fire and life safety.

California Health and Safety Code

State fire regulations are set forth in Sections 4.10000 et seq. of the California Health and Safety Code, include regulations for building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

Minimum Fire Safe Regulations

The State Minimum Fire Safe Regulations are set forth in CCR, Title 14, Section 1270, and constitute the minimum wildfire protection standards of the California Board of Forestry and Fire Protection related to development within SRAs and Very High FHSZs. The wildfire protection standards contained in the State Minimum Fire Safe Regulations include, but are not limited to, regulations pertaining to the provision of basic emergency access; perimeter wildfire protection measures; signing and building numbering; private water supply reserves for emergency fire use; vegetation modification; fuel breaks; greenbelts; and the provision of undeveloped ridgelines.

Proposition 1A/Senate Bill 50

Proposition 1A/Senate Bill (SB) 50 (Chapter 407, Statutes of 1998) is a school construction measure primarily for modernization and rehabilitation of older school facilities and construction of new school facilities. Proposition 1A/SB 50 implemented significant fee reforms by amending the laws governing developer fees and school mitigation.

- Establishes the base (statutory) amount (indexed for inflation) of allowable developer fees at $1.93 per square foot (sf) for residential construction and $0.31 per sf for commercial construction.
- Prohibits school districts, cities, and counties from imposing school impact mitigation fees or other requirements in excess of or in addition to those provided in the statute.

Proposition 1A/SB 50 also prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "[…] legislative or adjudicative act […] involving […] the planning, use, or development of real property" (Government Code 65996(b)). Additionally, a local agency cannot require participation in a Mello-Roos for school facilities; however, the statutory fee is reduced by the amount of any voluntary participation in a Mello-Roos. Satisfaction of the Proposition 1A/SB 50 statutory requirements by a developer is deemed to be "full and complete mitigation." The law identifies certain circumstances under which the statutory fee can be exceeded, including preparation and adoption of a "needs analysis," eligibility for State funding, and satisfaction of two of four requirements (post-January 1, 2000) identified in the law including: year-round enrollment, general obligation bond measure on the ballot over the last four years that received 50 percent plus one of the votes cast, 20 percent of the classes in portable classrooms, or specified outstanding debt. Assuming a district qualifies for exceeding the statutory fee, the law establishes ultimate fee caps of 50 percent of costs where the State makes a 50 percent match, or 100 percent of costs where the State match is unavailable. District certification of payment of the applicable fee is required before the County can issue the building permit.

Quimby Act

California Government Code Section 66477, Subdivision Map Act, referred to as the Quimby Act, permits local jurisdictions to require the dedication of land and/or the payment of in-lieu fees solely for park and recreation purposes. The required dedication and/or fees are based upon the residential density, parkland cost, and other factors. Land dedication and fees collected pursuant

to the Quimby Act may be used for acquisition, improvement, and expansion of park, playground, and recreational facilities or the development of public school grounds.

Local Regulations

The following are applicable local regulations related to the proposed project.

2030 Butte County General Plan

The relevant goals and policies from the 2030 Butte County General Plan related to public services and recreation are presented below.

Land Use Element

Policy LU-P9.1 The County shall work with municipalities and service providers to ensure that services are available for new development and consistent with master plans.

Policy LU-P10.2 New development projects shall pay their fair share of public improvement costs for countywide infrastructure, facilities, and services, and shall fund needed infrastructure and facilities proportionately to the cost of providing infrastructure and services.

Health and Safety Element

Policy HS-P11.4 New development projects shall meet current fire safe ordinance standards for adequate emergency water flow, emergency vehicle access, signage, evacuation routes, fuel management, defensible space, fire safe building construction and wildfire preparedness.

Public Facilities and Services Element

Goal PUB-1 Maintain facilities and staff adequate to provide appropriate levels of government services and administration for the residents of Butte County.

Policy PUB-P2.2 The adopted Standards of Cover for fire protection shall be maintained and implemented.

Goal PUB-3 Maintain a safe environment in Butte County through the enforcement of law.

Goal PUB-4 Support high-quality schools and educational facilities for all Butte County residents.

Policy PUB-P4.1 Review of development proposals shall be coordinated with school districts to determine and plan for capacity issues over time.

Policy PUB-P4.2 Review of development proposals shall be coordinated with school districts regarding the location and design of new schools.

Policy PUB-P4.5 Information on projected population growth and development patterns shall be provided to school districts to facilitate adequate school facilities.

Policy PUB-P4.6 School districts shall have the opportunity to review proposed residential developments and make recommendations about the need for additional facilities based on school-child projections, existing school capacity, access and traffic issues.

Policy PUB-P4.7 New development projects shall be approved only if the County and the applicable School District finds that existing or planned schools will be adequate to serve it.

Goal PUB-6 Support a comprehensive and high-quality system of recreational open space and facilities.

Policy PUB-P6.1 Review of development proposals shall be coordinated with public agencies in order to designate sites for new parks and recreation facilities.

Policy PUB-P6.3 New residential development shall be assessed for Quimby Act fees to support park development in coordination with parks and recreation districts.

Policy PUB-P6.4 Allowed densities shall be increased when parks are incorporated into development projects. Parks must meet standards set in district master plans.

Policy PUB-P6.5 Where appropriate, new residential developments should include permanently-protected and maintained open space using mechanisms such as, but not limited to, conservation easements and development agreements.

Butte County Code

The relevant sections from the Butte County Code related to public services and recreation are presented below.

Development Impact Fees for Fire Facilities

Chapter 3, Article XXIII, Development Impact Fees for Fire Facilities and Vehicles – Unincorporated Area, of the Butte County Code requires new development within the unincorporated areas of Butte County to pay development impact fees to the Butte County Department of Development Services for fire facilities and vehicles. The amount of the fees is determined by the most recent Impact Fee Resolution adopted by the County Board of Supervisors to defray the cost of acquiring, developing or improving fire facilities and vehicles made necessary to serve the additional facilities needs arising from an increase or change in the use of a property within the County.

Development Impact Fees for Fire Facilities are currently charged at a rate of $680 per dwelling unit for single-family residential development, and $200 per 1,000 sf for commercial development.[12] Fees are paid at the time of request for final inspection or certificate of occupancy, whichever occurs first.

Development Impact Fees for Sheriff Facilities

Chapter 3, Article XXI, Development Impact Fees for Sheriff Facilities, Vehicles and Equipment – Unincorporated Area, of the Butte County Code requires new development within the unincorporated areas of Butte County to pay development impact fees to the Butte County Department of Development Services for sheriff facilities, vehicles and equipment. The amount of the fees is determined by the most recent Impact Fee Resolution adopted by the County Board of Supervisors to defray the cost of acquiring, developing or improving sheriff facilities, vehicles and equipment made necessary to serve the additional facilities needs arising from an increase or change in the use of a property within the County.

Development Impact Fees for Sheriff Facilities are currently charged at a rate of $1,000 per dwelling unit for single-family residential development, and $300 per 1,000 sf for commercial development.[13] Fees are paid at the time of request for final inspection or certificate of occupancy, whichever occurs first.

Park Facility Fees

Chapter 16, Article VII, Park Facility Fees in the PRPD, of the Butte County Code requires new development located in the unincorporated area of the County of Butte within the PRPD to pay park facility fees to PRPD for park facilities. As discussed above, the project site is located within the PRPD area; and, therefore, would be subject to the PRPD park facility fees. The amount of the fee is equal to the total amount of square footage being added to the property multiplied by the park facility fee per sf established by the most recent Impact Fee Resolution adopted by the County Board of Supervisors for the purpose of acquiring and/or developing community or neighborhood park facilities which are operated by the PRPD.

It should be noted that fees are currently only charged for an increase of living space or new residential construction on a property that previously did not have a residential structure. Payment of fees is not required for commercial or non-living space construction.[14] The PRPD currently charges $0.82 per sf for single-family residences.[15] Fees are paid prior to the issuance of building permits.

Development Impact Fees for Library Facilities

Chapter 3, Article XVIII, Development Impact Fees for Library Facilities – Countywide, of the Butte County Code requires new development within the unincorporated and incorporated areas of Butte County to pay development impact fees to the Butte County Department of Development Services for library facilities. The amount of the fees is determined by the most recent Impact Fee Resolution adopted by the County Board of Supervisors to defray the cost of acquiring, developing or improving library facilities made necessary to serve the additional facilities needs arising from an increase or change in the use of a property within the County.

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12 Butte County. *Consolidated Development Impact Fee Report Fiscal Year 2021-2022.* December 27, 2022.
13 Butte County. *Fees.* Available at: https://www.buttecounty.net/256/Fees. Accessed January 2024.
14 Paradise Recreation and Park District. *Impact Fees.* Available at: https://www.paradiseprpd.com/impact-fees. Accessed September 2023.
15 *Ibid.*

Development Impact Fees for Library Facilities are currently charged at a rate of $230 per dwelling unit for single-family residential development.[16] Payment of fees is not required for commercial or non-living space construction. Fees are paid at the time of request for final inspection or certificate of occupancy, whichever occurs first.

Development Impact Fees for General Government Facilities

Chapter 3, Article XIX, Development Impact Fees for General Government Facilities – Countywide, of the Butte County Code requires new development within the unincorporated and incorporated areas of Butte County to pay development impact fees to the Butte County Department of Development Services for general government facilities. The amount of the fees is determined by the most recent Impact Fee Resolution adopted by the County Board of Supervisors to defray the cost of acquiring, developing or improving general government facilities made necessary to serve the additional facilities needs arising from an increase or change in the use of a property within the County.

Development Impact Fees for General Government Facilities are currently charged at a rate of $580 per dwelling unit for single-family residential development, and $170 per 1,000 sf for commercial development.[17] Fees are paid at the time of request for final inspection or certificate of occupancy, whichever occurs first.

Chico Unified Board of Education

Education Code Section 17620 authorizes the governing board of a school district to levy school fees to offset the impacts to school facilities from new residential and commercial/industrial construction and reconstruction. As such, the Chico Unified Board of Education requires that new development within the Chico Unified School District area pay school impact fees to the District. The amount of the fees is determined by the most recent School Impact Fee Resolution adopted by the Chico Unified Board of Education, as justified in the School District's School Fee Justification Study.

School impact fees are currently charged at a rate of $4.79 per sf for residential development, $0.78 per sf for commercial development, and $0.18 per sf for self-storage development.[18] Fees are paid at the time of request for final inspection or certificate of occupancy, whichever occurs first.

4.10.4 IMPACTS AND MITIGATION MEASURES

The section below describes the standards of significance and methodology used to analyze and determine the proposed project's potential project-specific impacts related to public services and recreation. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an impact related to public services and recreation is considered significant if the proposed project would:

[16] Butte County. *Fees.* Available at: https://www.buttecounty.net/256/Fees. Accessed January 2024.
[17] *Ibid.*
[18] Chico Unified School District. *School Impact Fees.* Available at: https://www.chicousd.org/Departments/Business-Services/Quick-Reference/School-Impact-Fees/index.html. Accessed February 2024.

- 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 protection;
    - Police protection;
    - Schools;
    - Parks; and/or
    - Other public facilities.
- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; and/or
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Method of Analysis

In order to determine the potential for the project to result in substantial adverse impacts associated with the provision of new or altered government facilities, relevant public services and recreation planning documents were reviewed, including, but not limited to, the 2030 Butte County General Plan, the 2030 Butte County General Plan EIR, and direct communication with service providers.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in comparison with the standards of significance identified above.

4.10-1 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection services. Based on the analysis below, the impact is *less than significant*.

Fire protection services for the project site would be provided by BCFD by way of the South Chico Fire Station (Station #44), located at 2334 Fair Street. The South Chico Fire Station is located approximately 6.4 miles west of the project site. Although implementation of the proposed project would increase the amount of structures protected by the BCFD, the BCFD has confirmed their ability to adequately serve the proposed project.[19]

Additionally, as is currently the case, the CFD and PFD would provide first response to emergencies at the project site when one of their engines is the closest resource. The BCFD has also established automatic aid agreements with every fire-fighting

[19] Chris Boyd, Fire Captain, Deputy Fire Marshal. *Will Serve Letter for Assessor's Parcel numbers 040-520-104 through -111*. January 13, 2022.

agency in the County, as well as with the U.S. Forest Service, Lassen and Plumas National Forests, Hamilton City in Glenn County, Sutter County, Tehama County, and several fire districts in Yuba County.

BCFD collects a Fire Facilities Fee for new development within the BCFD service area. Currently, the BCFD's Fire Facilities Fee is $680 per dwelling unit for single-family residential development and $200 per 1,000 sf for commercial development. Final improvement plans for the proposed project would be subject to review by the BCFD as part of the County's approval process in order to ensure compliance with fire and safety standards.

Furthermore, all structures included in the proposed project would be constructed consistent with the CBC and CFC. In compliance with the CBC (specifically Section 903.2.8, Group R), the design of the residences would include the installation and use of automatic fire sprinklers, and fire alarm systems would be incorporated pursuant to CFC requirements. Fire flow for the proposed project would be provided by the proposed water system that would be developed on-site. Specifically, a minimum of 300,000 gallons of water storage is anticipated to be required to meet minimum fire flows; however, the water storage requirements would be determined in consultation with the BCFD. An approximately 487,000-gallon water tank would be located in the northeastern portion of the project site, adjacent to the proposed mini-storage facility. The tank would be approximately 72 feet in diameter and 16 feet in height, and would be surrounded by a 125-foot by 125-foot security fence. The proposed water storage tank is designed to meet both the maximum day demand plus fire flow in storage and meet the peak hour demand through the well and distribution system for all pressure zones, pursuant to Title 22 CCR, Chapter 16, Section 64554(a)(3). Such features would reduce the potential for fires to occur within the proposed structures, which would reduce the demand for fire protection services from the project site.

General Plan Policy PUB-P2.2 requires that the County's adopted Standards of Cover for fire protection be maintained and implemented. The Standards of Cover for areas with a population of 500 to 1,000 people per square mile, such as the project area, are as follows:

- For emergencies requiring a single fire engine response the first due engine shall arrive within 13 minutes of the 911 call 90 percent of the time.
- For emergencies requiring multiple engines and an effective force of 15 fire fighters, engines shall arrive within 18 minutes of the 911 call 90 percent of the time.

According to the BCFD, response times from stations in the project vicinity to the project site would be approximately seven minutes for Station #44, located at 2334 Fair Street in Chico, approximately 6.4 miles west of the project site; eight minutes for Station #81, located at 767 Birch Street in Paradise, approximately 5.6 miles northeast of the project site; and 12 minutes for Station #45, located at 2367 Campell Street in Durham, approximately 11.6 miles southwest of the project site.[20] Therefore, the

[20] Chris Boyd, Fire Captain, Deputy Fire Marshal. *Will Serve Letter for Assessor's Parcel numbers 040-520-104 through -111*. January 13, 2022.

response time to the project site would be within the achievable response time goal. As such, response times for the proposed project would be consistent with the County's adopted Standards of Cover and General Plan Policy PUB-P2.2.

Given that the proposed project would not increase population such that the BCFD would require new or altered facilities, the proposed project would not result in a need for new, or improvements to existing, fire protection facilities, construction of which could cause significant environmental impacts. Therefore, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.10-2 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police protection services. Based on the analysis below, the impact is *less than significant*.

The proposed project is located within the jurisdiction of, and would be provided services by, the BCSO. In addition to BCSO service, the CHP would provide police protection services, primarily traffic control, for roads within the project area. As described above, the proposed project would be served by the Chico and Magalia substations, located 7.5 miles west of the site and 11.9 miles northeast of the site, respectively, and the CHP north district office, located approximately four miles west of the site.

The threshold for impacts related to police protection services, as identified in Appendix G of the CEQA Guidelines, is related to whether the project would result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios or performance objectives. According to the BCSO, response times to the project site would vary and be highly dependent on the location from which the deputies were responding. The response area for North County is large, with response times of approximately one hour to some of the furthest outlying areas. Presuming the deputies are responding to the proposed project from the Chico substation, response times would be approximately 14 to 22 minutes under light to moderate traffic conditions. Response times from the Magalia substation would be approximately 15 to 25 minutes under light to moderate traffic conditions.[21] Although a response time goal has not been adopted by the BCSO, the BCSO has indicated that response times to the proposed project would not be a substantial departure from response times to other unincorporated areas within the BCSO's jurisdiction.[22]

[21] Matt Calkins, Undersheriff. *Tuscan Ridge Project Environmental Impact Report (EIR) – Butte County Sheriff's Office.* April 1, 2022.

[22] *Ibid.*

In the event of an emergency call for service occurring when deputies are committed to other calls, when deputy response times would be extended, and/or when the nature of the call for service requires additional personnel, BCSO commonly requests the assistance of outside agencies on an as-needed basis. Based on the project location, the outside assisting agencies would likely be the CHP, Chico Police Department, Paradise Police Department, California State Parks, and/or California Fish and Wildlife.[23] Assistance from outside agencies would help to provide faster response times to the project site, as needed.

Based on the above, the BCSO has indicated that a substantial increase in demand for services as a result of the proposed project would not occur, and has determined that new or physically altered police protection facilities would not be needed to adequately serve the proposed project.[24] As a result, the proposed project would not result in a need for new, or improvements to existing, sheriff protection facilities, construction of which could cause significant environmental impacts, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.10-3 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for schools. Based on the analysis below, the impact is *less than significant*.

The proposed project would develop 165 single-family lots within the CUSD. Based on the student generation rates provided by the CUSD,[25] the proposed project is expected to generate 27 students in kindergarten through grade five, nine students in grade six through grade eight, and 15 students in grades nine through 12 (see Table 4.10-2).

As shown in Table 4.10-2, the available capacity of the CUSD would be sufficient to accommodate the projected students generated by the proposed project.

Furthermore, according to SB 50, payment of the necessary school impact fees for the project would be considered full and satisfactory CEQA mitigation. As discussed previously, proposition 1A/SB 50 prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "[…] legislative or adjudicative act […] involving […] the planning, use, or development of real property" (Government Code 65996[b]).

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23 Matt Calkins, Undersheriff. *Tuscan Ridge Project Environmental Impact Report (EIR) – Butte County Sheriff's Office*. April 1, 2022.

24 *Ibid.*

25 Chico Unified School District. *Demographic Analysis & Student Housing Report*. March 9, 2022.

Based on the above, the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for schools. Thus, a ***less-than-significant*** impact would occur.

Table 4.10-2
Projected Enrollment, Capacity, and Student Generation by Grade Level for Chico Unified School District

Grade Levels	Enrollment	Capacity	Student Generation Rate Per Unit	Students Generated by Project	Project Plus Existing Enrollment
K-5	5,156	6,676	0.159	27	5,183
6-8	2,615	3,915	0.054	9	2,624
9-12	3,688	5,467	0.087	15	3,703

Source: Chico Unified School District, 2022.

Mitigation Measure(s)

None required.

4.10-4 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for parks; increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. Based on the analysis below, the impact is *less than significant*.

The proposed project would include the construction of 165 single-family homes, and, based on an average of 2.59 persons per household,[26] would be anticipated to house approximately 428 new residents on the project site. Such residents could increase demand on existing parks and recreational facilities, potentially requiring provision of new facilities or expansion of existing facilities. As discussed above, the nearest park to the project site is Baroni park, located approximately 6.2 miles northwest of the project site. In addition, the 287-acre Butte Creek Ecological Preserve is located just

[26] U.S. Census Bureau. *QuickFacts Butte County, California.* Available at: https://www.census.gov/quickfacts/buttecountycalifornia. Accessed March 2022.

north of the project site, across Skyway, and provides various recreational opportunities, including hiking, birdwatching, wildlife viewing, and fishing.

The 2030 Butte County General Plan requires dedication of land and/or payment of fees in accordance with State law to ensure funding for the acquisition and development of public recreation facilities. Specifically, General Plan Policy PUB-P6.3 requires that new residential development be assessed for Quimby Act fees to support park development. The park and recreation districts within Butte County use a level of service ratio of five acres of usable parkland per 1,000 people.[27] As part of the proposed project, a total of approximately 36.7 acres of open space is proposed within the project site. Throughout the open space, predominantly within the northern portion of the project site, multi-use trails would be developed to allow for passive recreation, such as walking, jogging, and bicycling. However, based on the County's requirement of five acres of park land per 1,000 residents, the proposed project would be required to provide a minimum of approximately 2.14 acres of parks and recreation areas (0.005 acres/resident x 428 estimated residents). While the proposed project would include the provision of 36.7 acres of open space, which would include passive recreation facilities, a formal improved park space is not proposed as part of the project. Therefore, the proposed project would not meet the park requirements, and payment of fees would be required.

Consistent with goals and policies in the 2030 Butte County General Plan, Chapter 16, Article VII, Park Facility Fees in the PRPD, of the Butte County Code requires new development located in the unincorporated area of the County of Butte within the PRPD to pay park facility fees to PRPD for park facilities. As discussed above, the project site is located within the PRPD area, and, therefore, would be subject to the PRPD park facility fees. The PRPD currently charges $0.82 per sf for single-family residential development.[28] Payment of park facility fees would be required prior to the issuance of building permits.

Given that the project would include development of open space and passive recreation areas, as well as payment of fees to meet the demand created by future residents, the project would not be anticipated to substantially increase demand on existing or future parks or recreational facilities in the surrounding area. In addition, the proposed project is consistent with the project site's current General Plan land use designation of Planned Unit Development (PUD), and the County has assumed development of the 165-acre project site would include a mix of residential uses, community commercial uses, and water and/or sanitary sewer facilities, as well as landscaped and recreational/open space areas. As such, development of the proposed project, including the increase in demand on parks generated by project residents, has been anticipated by the County.

Based on the above, the proposed project would not result in an increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of such facilities would occur or be accelerated. Thus, a ***less-than-significant*** impact would occur.

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27 Butte County. *Butte County General Plan 2030 Draft EIR* [pg. 4.12-53]. April 8, 2010.
28 *Ibid.*

Mitigation Measure(s)
None required.

4.10-5 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for other public facilities. Based on the analysis below, the impact is *less than significant*.

Butte County maintains public facilities such as public libraries and community buildings, which could potentially be used by residents of the proposed project. In addition, the residents could potentially use public facilities in the nearby cities of Chico and Paradise. However, given the size of the proposed development, any additional demand generated by the proposed project would be relatively minor, and is not likely to result in the need to alter existing facilities or construct new facilities. Furthermore, the project applicant would be required to pay Development Impact Fees to the County for library facilities and general government facilities at the time of request for final inspection or certificate of occupancy, whichever occurs first.

Additionally, as discussed above, the proposed project is consistent with the project site's current General Plan land use designation of PUD, and the County has assumed development of the 165-acre project site would include a mix of residential uses, community commercial uses, and water and/or sanitary sewer facilities, as well as landscaped and recreational/open space areas. As such, development of the proposed project, including the increase in demand on public facilities generated by project residents, has been anticipated by the County.

Based on the above, the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for maintenance of public facilities, including roads, or for other government services. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

Additional detail regarding the cumulative project setting can be found in Chapter 6, Statutorily Required Sections, of this EIR.

4.10-6 Cumulative impacts to public services. Based on the analysis below, the cumulative impact is *less than significant*.

Potential cumulative impacts related to fire and sheriff protection services, schools, public services and government facilities, and parks and recreation are discussed below.

Fire Protection Services

The 2030 Butte County General Plan EIR did not identify any cumulative impacts related to fire protection. Rather, impacts were determined to be reduced to less-than-significant levels through implementation of the goals and policies included in the 2030 General Plan. Such policies would direct the County to work with municipalities and service providers to ensure that services are available for new development and consistent with master plans, and require that new development meet current fire safety ordinance standards for adequate emergency water flow, emergency vehicle access, signage, evacuation routes, fuel management, defensible space, fire safe building construction, and wildfire preparedness. As discussed above, the proposed project is consistent with the site's General Plan land use designation. As such, buildout of the site, including associated demand on fire, has been anticipated in the County's planned growth projections, and analyzed in the 2030 General Plan EIR.

As discussed above, the response times to the proposed project would be consistent with General Plan Policy PUB-P2.2, and the BCFD would be capable of serving the project site with existing equipment and facilities. In addition, the project would be required to pay a Fire Facilities Fee to the County. Furthermore, development within the project site, as well as other future development throughout Butte County, would be required to comply with all applicable regulations imposed by BCFD and the CFC. Based on the above, the proposed project would result in a less-than-significant cumulative impact related to fire protection services.

Sheriff Protection Services

The 2030 Butte County General Plan EIR did not identify cumulative impacts related to sheriff protection services. Rather, impacts were determined to be less-than-significant levels through implementation of the goals and policies included in the 2030 General Plan. As discussed above, the proposed project is consistent with the site's General Plan land use designation. As such, buildout of the site, including associated demand on sheriff protection services, has been anticipated in the County's planned growth projections, and analyzed in the 2030 General Plan EIR.

The BCSO has indicated that new or physically altered law enforcement facilities would not be needed to adequately serve the proposed project.[29] In addition, though response times are dependent upon the location of patrol officers at the time of the emergency call, on average, response times to the project site would be not be

[29] Matt Calkins, Undersheriff. *Tuscan Ridge Project Environmental Impact Report (EIR) – Butte County Sheriff's Office.* April 1, 2022.

substantially longer than response times to other unincorporated areas within the BCSO jurisdiction. As a result, the proposed project would not result in a need for new, or improvements to existing, sheriff protection facilities, construction of which could cause significant environmental impacts. Similar to the proposed project, other future development within the region would be required to address impacts related to sheriff protection services on a project-by-project basis. Based on the above, the proposed project, in combination with future development occurring under buildout of Butte County, would have a less-than-significant impact to sheriff protection services.

Schools

Cumulative buildout within the County and surrounding area could result in overcrowding at schools in the area. However, each individual development would be required to pay SB 50 school impact fees, similar to the proposed project, which would contribute to the facilitation of school expansions in order to serve the needs of the area. As discussed above, the CUSD has adequate capacity to serve the students that would be generated by the proposed project. In addition, other development projects are not proposed within the project vicinity at this time. Furthermore, according to SB 50, payment of the necessary school impact fees for the project would be considered full and satisfactory CEQA mitigation. Proposition 1A/SB 50 prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "[…] legislative or adjudicative act […] involving […] the planning, use, or development of real property" (Government Code 65996(b)). It should also be noted that the proposed project is consistent with the site's General Plan land use designation. As such, buildout of the site, including associated demand on schools in the County, has been anticipated in the County's planned growth projections, and analyzed in the 2030 General Plan EIR. Therefore, the proposed project, in combination with future development occurring under buildout of Butte County, would result in a less-than-significant cumulative impact related to the need for new, or improvements to existing, school facilities.

Parks and Recreation

The proposed project would include the provision of on-site open space areas and passive recreation facilities, as well as payment of the required park fees, and would not result in an increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of such facilities would occur or be accelerated. Consistent with goals and policies in the 2030 Butte County General Plan, Chapter 16, Article VII, Park Facility Fees in the Paradise Recreation and Park District, of the Butte County Code requires new development located within the PRPD to pay park facility fees to PRPD for the provision of new and expanded park facilities within the PRPD area. The purpose of the park and recreation facilities impact fee is to provide funding for expansion of park land and recreation facilities required to serve new development in the PRPD area. Future development within the PRPD area and Butte County would similarly be required to comply with the County's park facility fee standards. Additionally, as discussed above, the proposed project is consistent with the site's General Plan land use designation. As such, buildout of the site, including associated demand on project area parks, has been anticipated in the County's planned growth projections, and analyzed in the 2030 General Plan EIR. Therefore, the proposed project, in combination with future buildout

in the County, would result in a less-than-significant cumulative impact related to parks and recreation.

Public Facilities and Government Services

As discussed above, given the size of the proposed development, any additional demand on libraries or other public facilities and services generated by the proposed project would be relatively minor, and is not likely to result in the alteration of existing facilities or the construction of new facilities. The proposed project, as well as other development in the unincorporated County, would be required by the County to pay Development Impact Fees, which would help to fund and sustain public facilities and services, including libraries and general government facilities, within Butte County. Additionally, as discussed above, the proposed project is consistent with the site's General Plan land use designation. As such, buildout of the site, including associated demand on public facilities and government services, has been anticipated in the County's planned growth projections, and analyzed in the 2030 General Plan EIR. Therefore, the proposed project, in combination with future development occurring under buildout of the 2030 Butte County General Plan, would result in a less-than-significant cumulative impact.

Conclusion

Based on the above, the proposed project, in combination with future development occurring under buildout of the 2030 Butte County General Plan, would result in a ***less-than-significant*** cumulative impact related to public services and recreation.

Mitigation Measure(s)

None required.

4.11. TRANSPORTATION

4.11. TRANSPORTATION

4.11.1 INTRODUCTION

With the exception of minor staff-initiated modifications applied to this chapter for consistency purposes, this chapter of the EIR and the analysis presented herein has been prepared by Fehr & Peers.

The Transportation chapter of the EIR describes the potential impacts to the transportation system associated with the implementation of the proposed project. The impact analysis examines the following transportation system components:

- Roadways/Vehicle miles of travel (VMT);
- Transit;
- Bicycle;
- Pedestrian; and
- Safety.

The analysis of VMT is informed by the CEQA Guidelines Section 15064.3, the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (Technical Advisory), California Governor's Office of Planning and Research (December 2018), and the *Butte County California Environmental Quality Act Interim Transportation Threshold,* 2022 while the other impact analysis components are generally expected to be addressed according to Appendix G of the CEQA Guidelines. Appendix G contains a list of questions that help lead agencies determine if a project may cause a significant transportation impact and sets the expectation that impact analysis should consider the primary travel modes operating in the study area and safety.

Consistent with the *Traffic Impact Study Guidelines* (County of Butte, January 2021) a separate local traffic analysis was completed for the project to determine if it would cause any traffic operations deficiencies at local intersections. That study analyzes intersection level of service (LOS) effects of the project and compares the results to the County's 2030 General Plan LOS expectations.

4.11.2 EXISTING ENVIRONMENTAL SETTING

The section below describes the physical and operational characteristics of the existing (as of January 2023) transportation system within the study area, including the surrounding roadway network, transit, bicycle, and pedestrian facilities.

Roadway System

The roadway system is used by drivers and their vehicles to reach destinations inside and outside the County. Quantification of this travel in vehicles is expressed as VMT for purposes of environmental impact analysis as explained below.

State Route 99

State Route 99 (SR 99) is a California state highway connecting Butte County to other cities in the region such as Red Bluff, Yuba City, and Sacramento. SR 99 also connects to the Interstate 5 (I-5) freeway near Red Bluff to the north and Sacramento to the south. Within the study area, SR 99 is a four-lane freeway facility that connects to the local and regional roadway network via interchanges at East Park Avenue/Skyway.

Skyway

Skyway is generally an east-west arterial/expressway that provides access to SR 99 for eastern Chico and communities in the Sierra Nevada foothills, including unincorporated Butte County, Paradise, Magalia and more. Within the study area, Skyway is a four lane-facility with 50 miles per hour (MPH) posted speed limits. Skyway becomes E. Park Avenue west of SR 99.

Notre Dame Boulevard

Notre Dame Boulevard is a north-south arterial through residential neighborhoods in Chico. Its southern terminus begins south of Skyway, breaking at Little Chico Creek, north of Little Chico Creek, Notre Dame Boulevard transitions to El Monte Avenue. The roadway is primarily two lanes with a posted speed limit of 25 MPH, except for a section between Forest Avenue and Skyway where it is four lanes with a posted speed limit of 35 MPH.

Bruce Road

Bruce Road is a north-south arterial connecting residential areas north of State Route 32 (SR 32) and near E. 20th Street to the industrial and retail land uses along Skyway. Bruce Road is a two-lane facility with a posted speed limit of 45 MPH between E. 20th Street and Skyway. It becomes three lanes wide (two northbound lanes) between E. 20th Street and Picholine Way, and it is four lanes through some of the residential areas north of SR 32.

Honey Run Road

Honey Run Road is generally an east-west two-lane road running roughly parallel to and north of Skyway between Chico and Paradise. The segment from Honey View Terrace to Paradise city limits is a narrow, winding one lane rural road that has been closed to vehicles since November 2018, due to the Camp Fire. On November 7, 2022, the Paradise Town Council opted to reopen Honey Run Road as a Historical Community Route with vehicular speed, weight, and length restrictions.

Santa Rosa Road

Santa Rosa Road is the existing driveway access from Skyway to the permanently closed Tuscan Ridge Golf Course and the main access to the proposed project. It currently operates as a full access side-street stop-controlled intersection.

Vehicle Miles Traveled

Pursuant to CEQA Guidelines Section 15064.3, VMT is the primary metric used to identify transportation impacts under CEQA. VMT is a metric that accounts for the number of vehicle trips generated and the length or distance of those trips. VMT does not directly measure traffic operations; instead, VMT is a measure of transportation network use and efficiency, especially when expressed as a function of population (i.e., VMT per capita). Butte County measures specific VMT efficiency metric forms depending on the type of land use consistent with the *Technical*

Advisory on Evaluating Transportation Impacts in CEQA (Technical Advisory) in December 2018. Figure 4.11-1 below describes each key VMT metric used for this analysis.

Figure 4.11-1
VMT Metric Definition and Visualization

Metric	Definition	Visualization
Home-based VMT per resident	All automobile (i.e., passenger cars and light-duty trucks) vehicle-trips that start or end at the home are traced, but non-home-based trips made by residents elsewhere on the network are excluded.	
Home-based work VMT per employee	All automobile trips in both directions between home and work are counted.	

VMT tends to increase as land use density decreases and travel becomes more reliant on the use of single-passenger vehicles because land uses are farther apart. This pattern is visible in the mapping of home-based VMT per resident shown in Figure 4.11-2 below. VMT patterns are somewhat similar for employment related land uses shown in Figure 4.11-3 although the type of employment may distort the pattern as higher wage employment in land use efficient areas may attract long-distance commuters. These figures map VMT performance of individual traffic analysis zones (TAZs) in Butte County based on Modified Version 1.2 Post-Camp Fire of the Butte Associations of Government (BCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) travel demand model.

Figure 4.11-4 below shows the home-based VMT per resident by jurisdiction in Butte County. Consistent with Figure 4.11-2 and Figure 4.11-3, lower density areas such as the unincorporated county produce VMT generation rates that can be more than double those in urban areas such as the City of Chico.

Figure 4.11-2
2022 Daily Home-Based VMT Per Resident

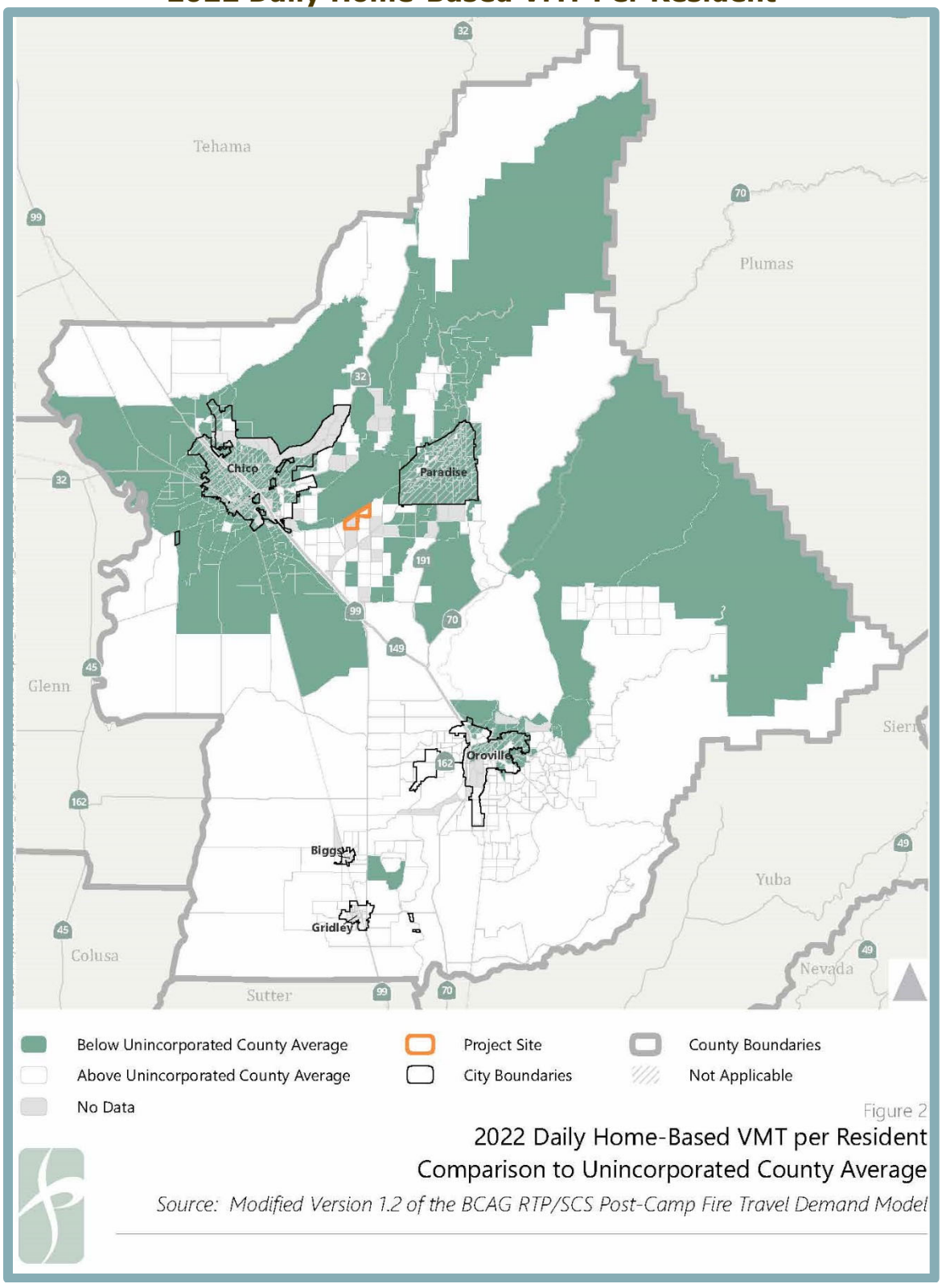


Figure 4.11-3
2022 Daily Home-Based Work VMT Per Employee

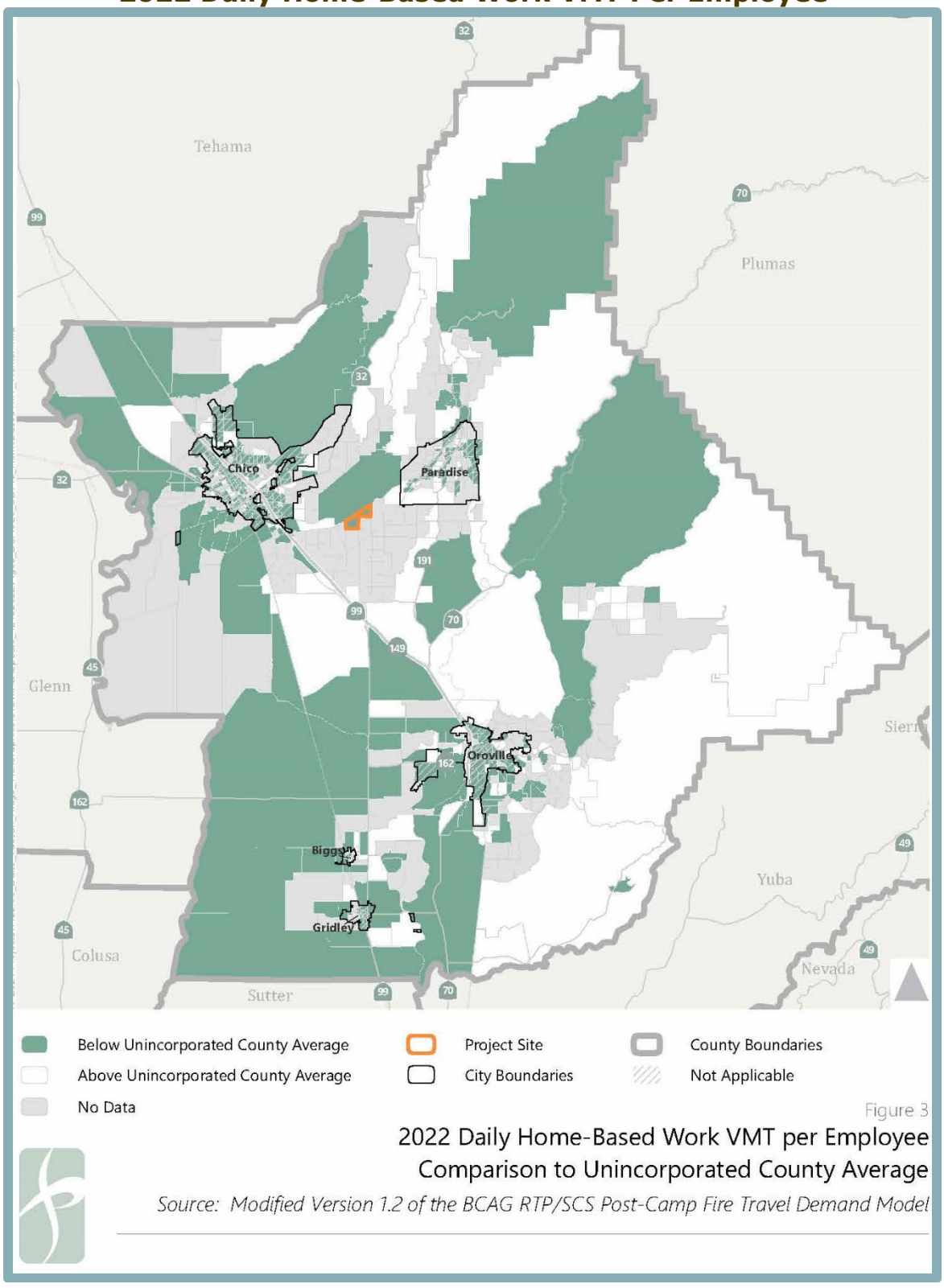
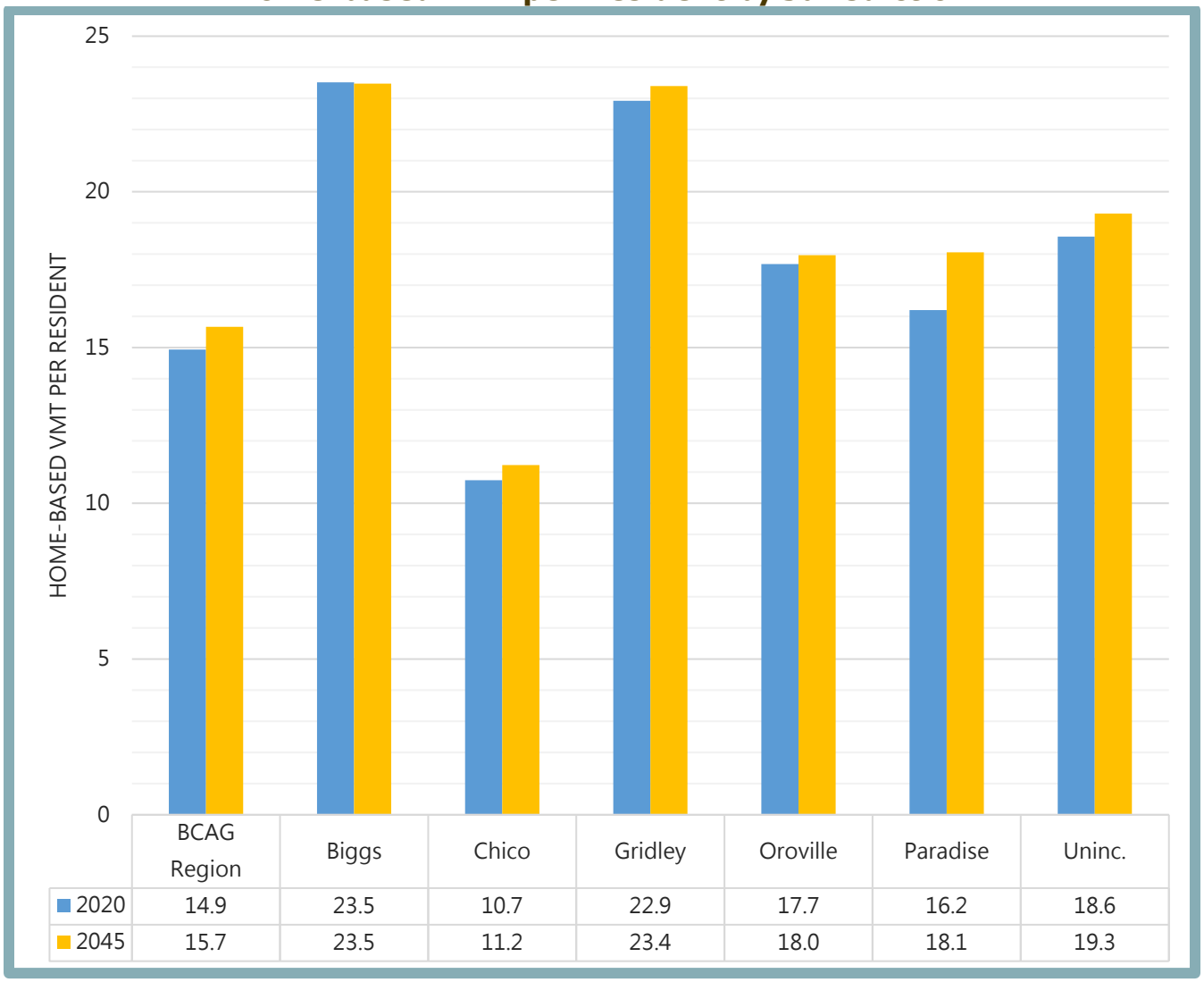


Figure 4.11-4
Home-based VMT per Resident by Jurisdiction



	BCAG Region	Biggs	Chico	Gridley	Oroville	Paradise	Uninc.
2020	14.9	23.5	10.7	22.9	17.7	16.2	18.6
2045	15.7	23.5	11.2	23.4	18.0	18.1	19.3

Source: Modified version 1.2 of the BCAG RTP/SCS Post Camp Fire travel demand model.

Pedestrian, Bicycle, and Transit Facilities

The sections below describe the existing pedestrian, bicycle, and transit facilities located within the vicinity of the project site.

Pedestrian and Bicycle Facilities

The study area has limited pedestrian or bicycle activity given its distance from nearby developed areas. As such, no pedestrian facilities exist along Skyway in the study area, with bicyclists relying on roadway shoulders instead of a formalized bicycle facility.

The nearest intersection to the project site in the study area is Honey Run Road and Skyway, as shown in Figure 4.11-5. There are crosswalks and Americans with Disabilities Act (ADA) compatible ramps at the intersection, despite the fact that there are no connecting sidewalks on Honey Run Road or Skyway. This intersection serves as the boundary on Skyway between Chico on the west and Butte County on the east. The City of Chico design standards are more urban than County standards; therefore, bicycle and pedestrians are accommodated on Skyway in Chico, but not in the jurisdiction of the County.

Figure 4.11-5 shows the existing intersection of Santa Rosa Road and Skyway, the current access to the project site, with limited shoulders and no pedestrian facilities.

According to the *Butte County Regional Bicycle Plan* (Butte County Public Works, June 2011) and the *Butte County Association of Governments Transit and Non-Motorized Plan*, (BCAG, May 2015), an off-street Class I bikeway is planned for Skyway between Chico and Paradise. This bikeway would connect to Class II on-street bikeways in each community. Specific details for each bikeway type are provided below.

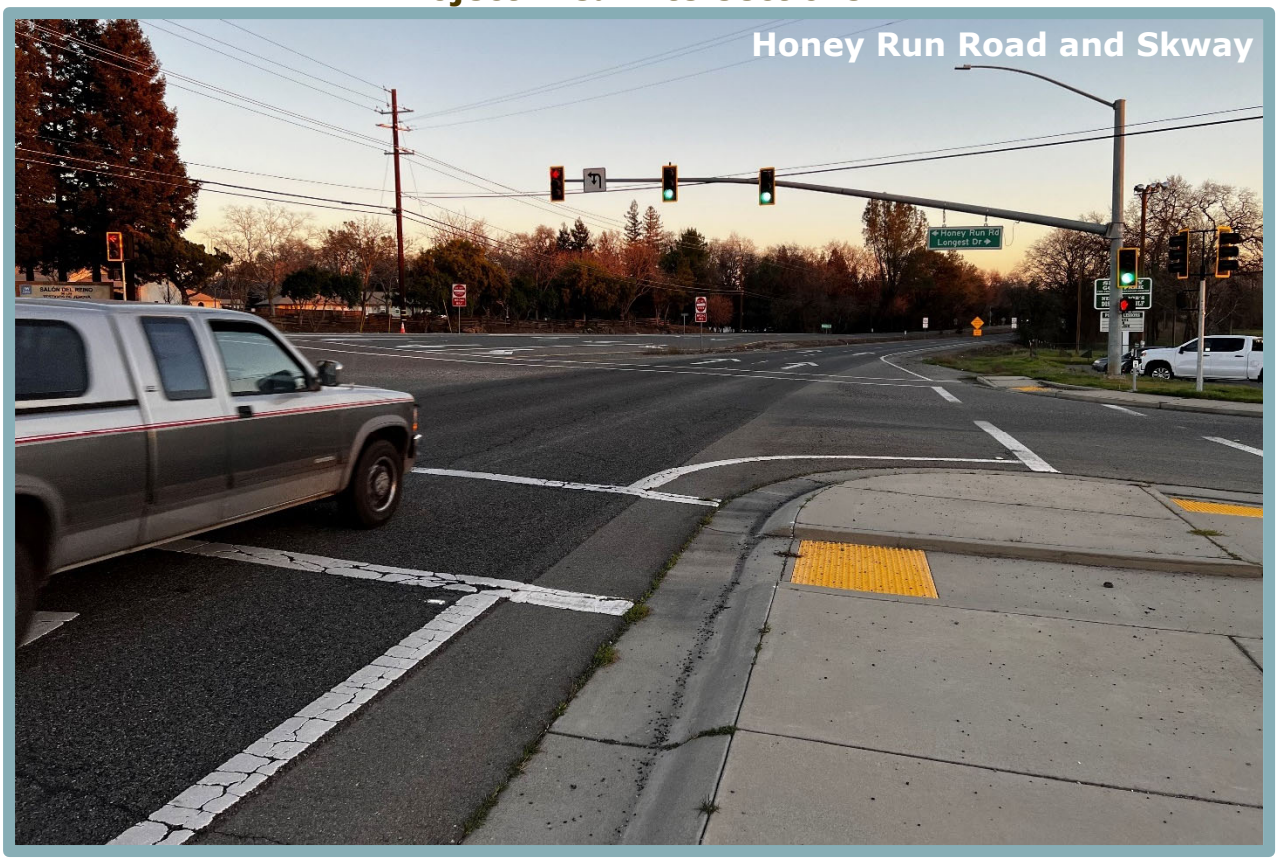
- Class I Bikeway (Bike Path) provides a completely separated facility designed for the exclusive use of cycles and pedestrians.
- Class II Bikeway (Bike Lane) provides on-road striped lanes with signs and pavement markings and legends with restricted travel to motor vehicles and pedestrians. Through travel by motor vehicles or pedestrians is prohibited, but crossflows by pedestrians and motorists is permitted.
- Class III Bikeway (Bike Route) provides on-street routes designated by signs or permanent markings and shared with pedestrians and motorists.

Since development of the plans noted above, Class IV bikeways have been formally recognized and implemented in a variety of communities in California. A Class IV Bikeway (Separated Bikeway) is a bikeway for the exclusive use of bicycles similar to a Class II facility, but includes a separation between the bike facility and through vehicular traffic. Separation facilities may include flexible posts, inflexible physical barriers, or on-street parking. Class IV facilities also allow for two-way bicycle traffic.

Public Transit System

Butte Regional Transit (B-Line) provides bus service throughout Butte County. Three B-Line routes serve the study area: Routes 31, 40, and 41. Route 31 between Paradise and Oroville was suspended until further notice due to impacts of the Camp Fire.

Figure 4.11-5
Project Area Intersections



Routes 40 and 41 have been combined into one schedule, using Skyway to connect Chico and Paradise.[1] Route 40/41 operates 9 weekday daily roundtrips and 5 weekend daily roundtrips. Transit stops do not exist near the project site due to the lack of demand in the area.

Emergency Access and Routes

The Butte County Cooperative Fire Agencies in the study area consist of CAL FIRE, Butte County Fire Department, and Town of Paradise with the nearest fire stations about seven miles in each direction on Skyway. Approximately 4 miles away in Paradise, Adventist Health Feather River provides urgent care services. Enloe Medical Center on Esplanade, the largest hospital in Butte County, is approximately a 9.5-mile drive from the northwest edge of the project site.

4.11.3 REGULATORY CONTEXT

Existing transportation policies, laws, and regulations that would apply to the proposed project are summarized below and provide a context for the impact discussion related to the project's consistency with the applicable regulatory conditions. Federal plans, policies, regulations, or laws related to transportation are not directly applicable to the proposed project. Rather, the analysis presented herein focuses on State and local regulations, which govern the regulatory environment related to transportation at the project level.

State Regulations

The following are the regulations pertinent to the proposed project at the State level, organized chronologically.

Senate Bill 743

Senate Bill (SB) 743, passed in 2013, required the Governor's Office of Planning and Research (OPR) to develop new State CEQA guidelines that address transportation impact metrics under CEQA. On December 28, 2018, the CEQA Guidelines were amended to add Section 15064.3, Determining the Significance of Transportation Impacts, which states that generally, VMT is the most appropriate measure of transportation impacts. In addition to making VMT the preferred metric, Section15064.3(a) also prohibited the use of delay from being used to determine environmental impacts stating, "Except as provided in subdivision (b)(2) (regarding roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact." This prohibition is reinforced by the CEQA Statute 21099(b)(2), "Upon certification of the guidelines by the Secretary of the Natural Resources Agency pursuant to this section, automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment pursuant to this division, except in locations specifically identified in the guidelines, if any." Beginning on July 1, 2020, the provisions of 15064.3 and 21099 applied statewide.

To aid in SB 743 implementation, OPR released a *Technical Advisory on Evaluating Transportation Impacts in CEQA* (Technical Advisory) in December 2018. The Technical Advisory provides advice and recommendations to lead agencies on how to implement SB 743 changes. This includes technical recommendations regarding the assessment of VMT, thresholds of significance, VMT mitigation measures, and screening thresholds for certain land use projects. Lead agencies may consider and use these recommendations at their discretion.

[1] Route details courtesy of B-Line http://www.blinetransit.com/Schedules/Route-4041-Paradise-Magalia-Chico/index.html.

Vehicle Miles Traveled-Focused Transportation Impact Study Guide

The *Vehicle Miles Traveled-Focused Transportation Impact Study Guide* (TISG) (Caltrans, May 20, 2020) provides direction to lead agencies regarding compliance with SB 743 from Caltrans' perspective. The TISG replaces the Caltrans' 2002 Guide for the Preparation of Traffic Impact Studies and is for use with local land use projects. The objectives of the TISG are summarized below.

a) Guidance in determining when a lead agency for a land use project or plan should analyze possible impacts to the state highway system (SHS), including its users.
b) Guidance for Caltrans land use review that supports state land use goals, state planning priorities, and GHG emission reduction goals.
c) Statewide consistency in identifying land use projects' possible transportation impacts, to the SHS, and to identify potential non-capacity increasing mitigation measures.
d) Recommendations for early coordination during the planning phase of a land use project to reduce the time, cost, and/or frequency of preparing a Transportation Impact Study or other indicated analysis.

Interim Local Development and Intergovernmental Review (LDIGR) Safety Review Practitioners Guidance

The *Interim Local Development and Intergovernmental Review (LDIGR) Safety Review Practitioners Guide* (Caltrans, December 2020) provides guidance to Caltrans districts and lead agencies for analyzing safety impacts of projects on the SHS. A proposed land use project or plan may affect the SHS by adding new automobile, bicycle, or pedestrian trips to state roadways; modifying access to state roadways; or affecting the safety of connections to or travel on state roadways.

Regional Regulations

The following are the regulations pertinent to the proposed project at the regional level.

BCAG Regional Transportation Plan/Sustainable Communities Strategy

The BCAG serves as the Metropolitan Planning Organization (MPO) for Butte County. As the MPO, the most relevant responsibility of the agency related to VMT impact analysis for local land use projects is through the development of the RTP/SCS. The RTP/SCS reflects the population and employment growth anticipated by local governments and includes a financially constrained list of transportation improvement projects. As noted above under the SB 375 discussion, the SCS has specific greenhouse gas (GHG) reduction targets set by the California Air Resources Board (CARB). The RTP also must demonstrate compliance with federal air quality conformity. Therefore, RTP/SCS performance is influenced by VMT growth so new land use projects that are not consistent with the RTP/SCS may jeopardize the air quality conformity for the county or the ability to achieve GHG reduction goals.

The most recent RTP/SCS was adopted on December 10, 2020 and complies with federal and state performance requirements. The RTP/SCS does not contain a specific VMT reduction goal, but VMT per capita reductions did contribute to the SCS performance. As documented in Table 4.9-1 of the 2020 RTP/SCS SEIR, total VMT generated in the county was projected to increase from 4,705,417 under 2018 baseline conditions to 5,332,327 under 2040 conditions with the proposed plan. This represents a 13.3 percent increase although total VMT per capita was

projected to decline about 3.4 percent from 20.7 to 20.0 between 2018 baseline and 2040.[2] New land use projects not consistent with the RTP/SCS could jeopardize the expected VMT and associated emissions reductions, so a project consistency finding is included as part of this analysis.

Local Regulations

Local rules and regulations applicable to the proposed project are discussed below.

2030 Butte County General Plan

The *2030 Butte County General Plan* (Butte County, October 2010; Amended November 2012) contains policies supportive of creating multimodal networks and achieving VMT reduction through increasing vehicle occupancies, sharing rides, promoting transit and active transportation, and supporting work-at-home programs. Policies that may apply directly to land use projects are listed below.

Circulation Element

Policy CIR-P2.6	The County shall incorporate "Complete Streets" policies that are designed and built to be safe for all users, including pedestrians, bicyclists and transit users.
Policy CIR-P3.4	Major new development projects, as determined by the Department of Development Services, shall consider provisions for alternative modes of transportation.
Policy CIR-P3.5	New development projects shall consider providing adequate pedestrian, bicycle and multi-use facilities in a way that integrates circulation and recreational use.
Policy CIR-P3.6	New neighborhoods shall provide bike and pedestrian connectivity between streets.
Policy CIR-P3.8	Major residential development projects shall be designed with interconnected collector street patterns and short block lengths. Cul-de-sac and dead-end streets shall conform to County design standards.
Policy CIR-P4.6	New development projects in areas served by existing or planned transit shall provide fixed transit facilities such as bus shelters and pullouts, according to expected demand.
Policy CIR-P5.6	Residential development projects shall incorporate internal circulation networks that encourage bicycle use and that connect to the external bicycle circulation system.
Policy CIR-P6.6	Major new development projects and subdivisions, as determined by the Department of Development Services, shall prepare and implement traffic studies to assess and

[2] The VMT forecasts exclude trip lengths external to the county and total VMT includes commercial vehicles.

mitigate adverse impacts to local and regional transportation facilities.

Policy CIR-P10.3 Pedestrian facilities shall be designed and constructed to be accessible to all users appropriate for these facilities.

In addition to the policies above, a new development project along Skyway is also subject to the following expectations. Furthermore, Table CIR-4 calls out maintaining Skyway as a "high capacity, limited access expressway by limiting additional access between Honey Run Road [in Chico] and Neal Road [in Paradise]."

Policy CIR-P6.4 Parcels adjacent to highways and significant roadways shall have only limited access to these facilities as a means to accommodate regional traffic and preserve public mobility.

Even with the multimodal and VMT reduction policy support, the growth anticipated in the *General Plan* was projected to increase daily VMT from 4,126,991 to 6,397,512 between 2006 and 2030. A 2012 general plan amendment increased the projected 2030 daily VMT by 1,511. Hence, land use projects consistent with the general plan are expected to contribute to VMT growth and that VMT growth has been deemed acceptable by the county as an outcome of the county's planned land use growth amounts and patterns combined with its planned transportation system.

Butte County Climate Action Plan

The *Butte County Climate Action Plan* (CAP) (Butte County, December 2021) sets community GHG reduction targets for 2030, 2040, and 2050 compared to baseline 2006 levels but does not establish a specific VMT reduction goal. As shown in Table 4.11-1 the transportation sector GHG decreased by 13 percent between 2006 and 2019. However, annual VMT increased from 464,302,660 in 2006 to 533,626,990 in 2019, representing a total increase of 15 percent. The County projects a 0.34 percent reduction in VMT from 2006 to 2050.

Table 4.11-1
Transportation Measures GHG Reduction Forecasts

Annual VMT	2006	2019	2030	2040	2050
	464,302,660	533,626,990	463,015,730	462,866,540	462,717,350
	Change	**+15%**	**-0.28%**	**-0.31%**	**-0.34%**

Source: Butte County Climate Action Plan (Butte County, December 2021)

The following transportation strategies and actions are relevant to the proposed project.

Strategy 6: Pursue Transportation Demand Management (TDM) strategies, implemented through local land use decisions and through partnerships with local employers that reduce VMT countywide.

Strategy 6 Actions:

6a. Continue to work in collaboration with BCAG and local chambers of commerce to promote TDM strategies, including publicizing of available materials, promotion of incentives, and other strategies.

6d. Encourage existing employers to participate in TDM strategies, including creation of an annual survey to track employee commute trends for all participating businesses.

6f. Encourage new development to provide a mix of land uses and infill development, and to be located contiguous to existing developed areas and infrastructure to support connectivity and to reduce trip lengths.

6g. Adopt countywide policies to encourage telecommuting and remote work for large employers, including improved countywide broadband internet infrastructure that supports connectivity and virtual/remote work and services.

6i. Provide facilities for carpooling and park-and-ride programs and facilities, such as the park-and-ride lot adjacent to the Oroville Veterans Memorial Hall.

Strategy 7: Prioritize bicycling and walking as safe, practical, and attractive travel options countywide.

Strategy 7 Actions:

7a. Implement the policies in the 2011 Butte County Bicycle Plan.

7b. Partner with incorporated communities and regional agencies to develop bikeways and trails that connect residential and non-residential areas and communities.

7c. Encourage active transportation use through infrastructure improvements and striping of county roads to support safe and shared use by cars and bicyclists, such as striping of county roads, sidewalk connections around frequently used facilities such as schools and businesses, ADA-compliant street corners, pedestrian-controlled crossing signals, speed monitors, and by re-routing crosswalks, as needed.

7f. Require large employers, including the County, to provide facilities that encourage bicycle commuting, including shower facilities, and covered or indoor bicycle parking.

7g. Actively promote walking and biking as safe modes of local travel, particularly for children attending local schools, by partnering with Butte County Safe Routes to Schools, including support of the Bike Rodeo, in-class lessons, National Walk to School Day, and future programs that increase school-age active transportation safety.

Strategy 8: Reduce carbon emissions from transportation by facilitating a transition to efficient or clean-fuel vehicles.

Strategy 8 Actions:

8b. Promote transportation electrification by providing funding, as feasible, to aid community partners in promoting a countywide switch to PHEV and EV vehicles.

8d. Require the installation of EV charging stations in new commercial, industrial, and large residential development, including multifamily development.

8e. Work with regional partners to encourage the installation of EV charging stations at existing residential properties, including working with owners of multifamily developments, single-family homes, and mobile homes.

8f. Facilitate the installation of public EV charging stations at existing and new residential and nonresidential uses, including EV parking areas for parks and open spaces.

8g. Support use of neighborhood EVs, such as low-speed golf carts or other personal neighborhood EVs.

Butte County California Environmental Quality Act Interim Transportation Threshold

The *Butte County California Environmental Quality Act Interim Transportation Threshold* (Butte County, 2022) contains specific recommendations for transportation impact analysis methodology and thresholds for projects in the unincorporated county. Specific impacts topics covered include VMT, transit, bicycle, pedestrian, and safety. These recommendations are the basis for the impact analysis approach used in this report.

Butte County Bicycle Plan

The Butte County Bicycle Plan (Butte County Public Works, June 2011) applies to the unincorporated county, striving to provide connectivity and gap closures in the entire County bicycle network. It promotes a mode shift to bicycling as an integral interregional means of travel and recreation by focusing on connectivity between the Cities of Biggs, Chico, Gridley, Oroville, and the Town of Paradise. The County emphasizes the need for bicyclists to be able to connect to other transportation modes for regional mobility. This includes the following goals and policies relevant to the proposed project.

- Goal 1: Provide a safe and efficient bikeway system.
    - Policy: Optimize safety conditions for bicyclists through traffic engineering and law enforcement efforts.
- Goal 2: Provide continuous and convenient bicycle access to and between major destinations throughout the county.
    - Policy: Encourage linkages between local bikeways to regional bikeways.
    - Policy: Emphasize directness of connections between population centers.
- Goal 5: Develop a bikeway system that encourages and facilitates bicycle commuting as an alternate means of transportation.
    - Policy: Emphasize bikeways that provide connections between regional activity centers, such as regional shopping areas, schools, government offices, and employment centers.
- Goal 6: Develop a bikeway system that encourages and facilitates recreational use.
    - Policy: Plan bikeway facilities to take full advantage of the scenic qualities of Butte County for the enjoyment of residents and visitors alike.

Butte County Association of Governments Transit and Non--Motorized Plan

The *Butte County Transit and Non-Motorized Plan* (BCAG, May 2015) recommends enhancements to the public transit active transportation network in Butte County.

The goals and policies established in the Transit and Non-Motorized Plan provide strategic direction for BCAG and the B-Line transit service. These transit goals are as follows.

- Goal 1: Maximize service efficiency and reliability.
- Goal 2: Maximize the effectiveness of service for B-Line's ridership markets. A more effective transit service focuses on simplification and ease of use, with minimal one-way loops and convenient transfers.
- Goal 3: Improve the usability of B-Line.
- Goal 4: Expand B-Line's services into areas where transit has a likelihood of success.

- Goal 5: Tie the provision of transit to land use and the resulting demand levels.
- Goal 6: Advocate sustainable development practices that support transit.

In addition to goals for transit, three primary goals were established for non-motorized transportation.

- Goal 1: Provide options so people will choose and be able to walk and bicycle as a way to travel, to be healthy and for recreation.
- Goal 2: Focus on urban infrastructure improvements that contribute to interconnectivity and safety for people who choose to walk or bike.
- Goal 3: Facilitate regional links allowing for origin-to-destination access to bicycle and pedestrian facilities.

The policies established for BCAG to support jurisdictions to promote non-motorized modes are the following:

- Encourage jurisdictions to revise local bikeway plans to become compliant with the Active Transportation Program (ATP) by requiring ATP compliance as a condition for regional funding.
- Rank project funding requests higher for projects that are identified in a jurisdiction's active transportation plan or equivalent plan (bicycle and pedestrian plan, etc.).
- Encourage jurisdictions to modify bicycle parking codes according to the 2010 California Green Building Standards Code.

With implementation of the BCAG Transit & Non-Motorized Plan, it is estimated that BCAG can increase the bicycle and walking mode share from 6.9 percent to 10 percent, which would represent approximately 2,600 new bicycling or walking commuters and almost one million bicycling or walking commute trips per year. This would result in a modest mode shift that would contribute to GHG emissions reduction.

4.11.4 IMPACTS AND MITIGATION MEASURES

This section describes the standards of significance and methodology utilized to analyze and determine the proposed project's potential impacts related to transportation and circulation.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an impact related to transportation is considered significant if the proposed project would:

- Conflict with a program, plan, ordinance, or policy, addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities;
- Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b);
- Substantially increase hazards to vehicle safety due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or
- Result in inadequate emergency access.

The criteria used to determine whether the proposed project would be considered to result in any of the above are whether the proposed project would result in any of the following:

- Disrupt existing bicycle and pedestrian facilities or interfere with planned facilities. A physical change proposed by the project would be inconsistent with bicycle and pedestrian policies contained in the Butte County General Plan.
- Disrupt existing service or interfere with planned transit service. A physical change proposed by the project would be inconsistent with transit policies contained in the Butte County General Plan.
- Modify the surrounding areas in a manner that is inconsistent with the applicable design standards.
- Generate VMT per capita above the unincorporated County baseline average. For residential land uses, home-based VMT per capita can be used, while work-related land uses can use home-based work VMT per employee.

Method of Analysis

The project's transportation impact analysis consists of quantitative and qualitative evaluations based on the methodology specified in the *Butte County California Environmental Quality Act Interim Transportation Threshold*. For the transit, bicycle and pedestrian, and safety components of the transportation system, the analysis focuses on whether the project would disrupt baseline facilities or services or interfere with the implementation of planned improvements. The safety evaluation also considers whether the project's proposed modifications to these facilities are consistent with applicable design standards. VMT Analysis is discussed in more detail below.

Project Vehicle Miles Traveled

Consistent with the *Butte County California Environmental Quality Act Interim Transportation Threshold*, the project was evaluated for potential VMT impacts by first conducting a screening assessment. The county's screening focuses on small projects (e.g., less than 110 daily vehicle trips) or those that are statutorily or categorically exempt from CEQA followed by the following criteria.

- Locally serving retail 50,000 square feet or less. Examples of local serving includes, but is not limited to schools, civic buildings, medical buildings, cleaners, offices, and other land uses intended to serve the local community and to improve the convenience of obtaining services locally.
- Projects within an adopted city sphere of influence (SOI) or within the planning area of an established community, which include the following:
    - The project is consistent with the General Plan, Specific or Community Plan and CAP.
    - Pedestrian connection (trails, sidewalks, cul-de-sac with pedestrian access to adjacent roadway) to existing or planned pedestrian systems.
    - Either include, or provide access to, complementary land uses that would encourage residents to stay local for some of the local trips.
    - Ensure that the design and construction of roadways connecting to the adjacent city/established community provide facilities for walking and bicycling (pursuant to the County wide Bike Plan), and where appropriate, transit stops consistent with Butte 6 Regional Transit specifications.
    - Payment of impact fees as appropriate for improvements consistent with the adjacent city's program for VMT reduction where adopted by the City.

The project did not qualify for screening, so a complete VMT impact analysis was performed. This analysis included producing baseline and baseline plus project VMT forecasts using a modified

version of the 2020 BCAG RTP/SCS travel demand forecasting model. The model's VMT forecasts account for travel both inside and outside of Butte County. The specific VMT metrics used in the analysis included home-based VMT per resident and home-based work VMT per employee as described above and visually mapped in Figures 2 and 3.

Project-Specific Impacts and Mitigation Measures

The proposed project impacts on the transportation system are evaluated in this section based on the thresholds of significance and methodology described above. Each impact is followed by recommended mitigation to reduce the identified impacts, if needed.

4.11-1 Conflict with a program, plan, ordinance, or policy addressing the circulation system related to bicycle and pedestrian facilities. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The proposed project includes a network of multi-use trails around the perimeter of the site, with connector trails between residences and commercial buildings. A portion of shared-use trail runs roughly parallel to Skyway. Sidewalks are proposed in residential and retail areas. No bicycle facilities such as bike lanes are proposed on internal project roadways.

By considering bicycle and pedestrian facilities, the proposed project is consistent with *Butte County General Plan* policy CIR-P3.4. The network of trails and sidewalks also provides consistency with CIR-P3.5, encouraging new development projects to consider providing adequate pedestrian, bicycle and multi-use facilities that integrate circulation and recreational use, and CIR-P3.6, to provide bike and pedestrian connectivity between streets in new neighborhoods. The proposed sidewalks will be designed to meet ADA standards consistent with *Butte County General Plan* policy CIR-P10.3, to construct pedestrian facilities to be accessible to all users.

The proposed project is consistent with *Butte County General Plan* policy CIR-P3.6, as the project provides bike connectivity between internal streets. By providing a network of multi-use trails, the proposed project is also consistent with *Butte County Bicycle Plan* Goal 6 Policy 1 to plan bikeway facilities for the enjoyment of scenery and encourage recreational use.

However, the proposed project trail network is inconsistent with the *Butte County General Plan* policy CIR-P5.6. While the proposed network of multi-use trails does "incorporate internal circulation networks that encourage bicycle use," the proposed facilities do not "connect to the external bicycle circulation system." The *Butte County Bicycle Plan* proposes a Class I facility along Skyway that is continuous, convenient and connects regional travel. This Class I facility does not yet exist between the project site and the neighboring communities of Chico and Paradise, so residents, workers, or visitors traveling to or from the proposed project would not have adequate bicycle facilities as expected in the *General Plan* and *Bicycle Plan*. It is beyond the scope of this project to construct off-site bicycle improvements on other properties to the nearest existing facility, which is located in Chico. Rather, the County requires each project to build its portion of regional facilities to ultimately establish the connectivity

envisioned in the Butte County Bicycle Plan. The project's proposed shared use trail along Skyway did not include width or construction material specifications so it may also be unsuitable for non-recreational travel. The lack of regional bicycle connection is also inconsistent with *Butte County Bicycle Plan* Goal 2 Policy 1 and 2, to encourage direct linkages between local and regional bikeways, and Goal 5 Policy 1, to emphasize bikeways that provide connections between regional activity centers.

Because the project is inconsistent with policies and the planned facilities detailed in the *Butte County Bicycle Plan* and with *Butte County General Plan* policy CIR-P5.6, the impact is ***significant.***

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

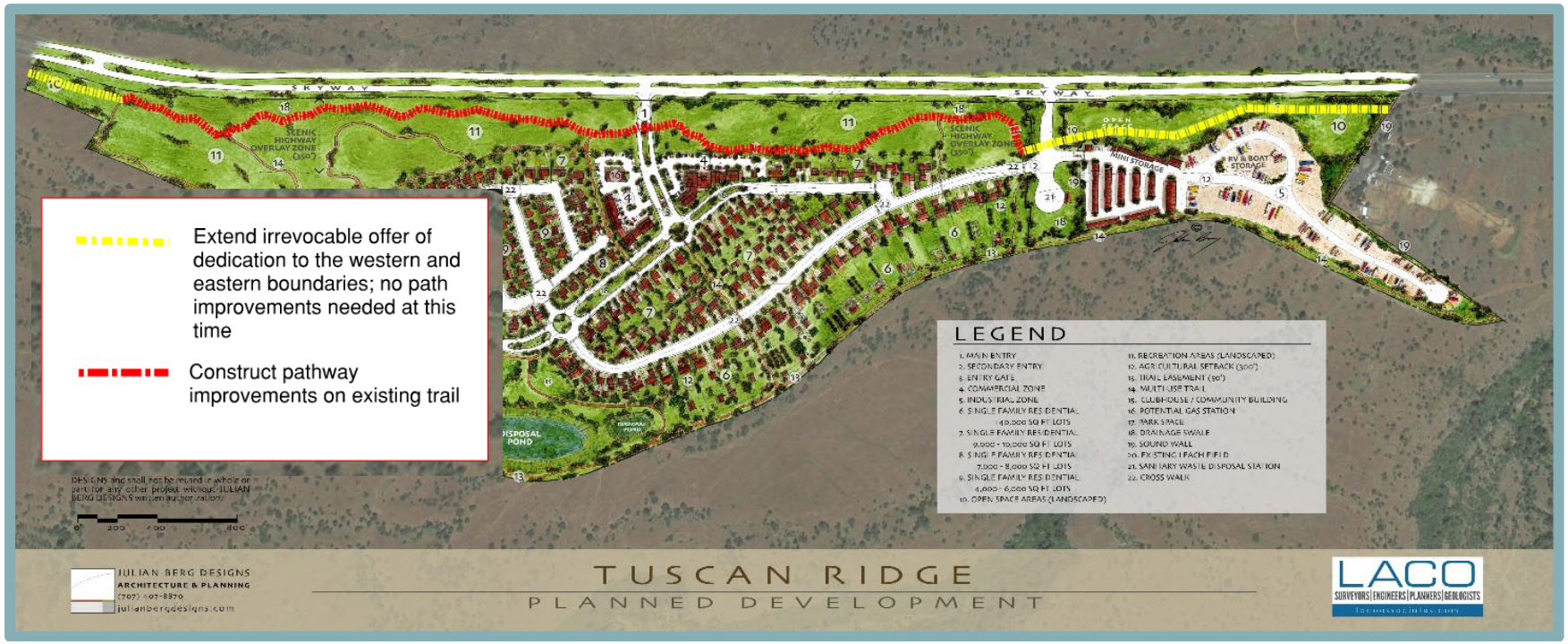
4.11-1(a) Prior to recordation of the first map/phase of development, the project applicant shall provide an irrevocable offer of dedication to Butte County and any future public or non-profit assignees (e.g., Butte County Association of Governments, Paradise Park and Recreation District, etc.) for a public recreational access easement along the project frontage with Skyway as shown in Figure 4.11-6 below, from the eastern to the western boundaries of the project site. Total dedication width shall be 28 to 30 feet in order to provide 8 to 10 feet of paved surface consistent with Caltrans Class I bicycle facility standards, along with 10 feet of width on either side for shoulders, signs, and maintenance vehicles, subject to Butte County Public Works Department review and approval.

4.11-1(b) Prior to map recordation, the project applicant shall construct or bond for improvements related to construction of bicycle lanes (Class II) or better (e.g., Class I or IV) on the internal collector street connecting to the on-site Class I bicycle facility. The project applicant shall construct the bicycle lanes concurrent with initial site improvements.

4.11-2 Conflict with a program, plan, ordinance, or policy addressing the circulation system related to transit facilities. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The project site is along B-Line Route 40/41. However, the closest bus stop to the site is five miles to the west at Dominic Drive/Bruce Road and Skyway, and 4.5 miles to the east at Princeton Way and Skyway. The Butte County 2030 General Plan policy CIR-P4.6 states that "New development projects in areas served by existing or planned transit shall provide fixed transit facilities such as bus shelters and pullouts, according to expected demand." While homes in the Tuscan Ridge development will likely cater towards a higher-income group and thus have higher rates of automobile ownership and usage, employees of the retail shops in the development may create demand for fixed route transit to access their workplace. As the current project description and site plan (Julian Berg Designs, December 14, 2021) does not show transit facilities, this impact is considered ***significant***.

Figure 4.11-6
Recreational Access Dedication



Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.11-2 Prior to map recordation, the project applicant shall include an easement to develop the frontage along Skyway for future deceleration and acceleration lanes, as well as a designated location for a bus turnout within the development near the primary project entrance on "Street H" and north of the roundabout at the terminus of Street H (i.e., on northbound Street H approximately 400 feet from the Skyway and Street H intersection or as close to the retail uses as feasible) or another acceptable location identified through coordination with BCAG. Street H shall be designed to accommodate bus turnarounds. At buildout of 165 housing units or as determined by BCAG in an unmet transit needs analysis, the project applicant shall install a bus turnout at the agreed-upon location in conformance with City of Chico Standard Plan No. S-28, or BCAG standards if adopted prior to construction. In conjunction with the installation of the bus turnout, the applicant shall construct the deceleration and acceleration lanes at the project's main access along Skyway to the satisfaction of BCAG and Butte County Public Works Department.

4.11-3 Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b). Based on the analysis below, even with mitigation, the impact is *significant and unavoidable*.

Table 4.11-2 contains the VMT analysis results for the project by comparing its VMT performance against the unincorporated county thresholds.

Table 4.11-2
VMT Impact Evaluation

VMT Metric	Unincorporated County VMT Threshold	Baseline Plus Proposed Project
Home-based VMT per resident	18.7	31.9[1]
Home-based work VMT per employee	13.3	12.4[2]

Note: Unincorporated County VMT threshold is the unincorporated County VMT average for each metric.

1 Based on the BCAG v1.2 2020 base year model, the population per household ratio for single family homes in the unincorporated county is about 2.64. Given the 165 single family homes proposed, the estimated resident population is 435.

2 Assumes 10% of employees carpool to work, based on the Butte County commute carpooling rate (American Community Survey 5-Year, 2017-2021).

Source: Modified version 1.2 of the BCAG RTP/SCS Post Camp Fire model, Fehr & Peers, 2022.

The proposed project would generate home-based work VMT per employee below the unincorporated county baseline average; therefore, the proposed project would not result in impacts regarding VMT associated with work-related land uses. However, the

proposed project would generate home-based VMT per resident above the unincorporated county baseline average, and a ***significant*** impact could occur.

Mitigation Measure(s)

Compliance with Mitigation Measure 4.11-3 would reduce project-generated VMT per resident by instituting a TDM program to reduce external vehicle trips generated by the proposed project. However, the effectiveness of TDM strategies is uncertain over time. Existing evidence indicates that the effectiveness of TDM strategies with regards to vehicle trip reduction can vary based on a variety of factors, including the context of the surrounding built environment (e.g., urban versus suburban and rural), individual traveler behavior, and the aggregated effect of multiple TDM strategies deployed together. Moreover, many TDM strategies rely on implementation and/or adoption by private entities and by residents to use non-automobile modes to travel outside the project. In addition, even with TDM strategy implementation, the project's home-based VMT per resident would likely still exceed the unincorporated county threshold of 18.7. Therefore, due to uncertainties regarding the ability for the mitigation measure to reduce VMT by at least 70 percent to reduce the impact to a less-than-significant level, VMT impacts would be considered *significant and unavoidable.*

4.11-3 Prior to issuance of building permits, the project applicant shall develop a TDM Plan for review and approval by the Butte County Department of Public Works. The TDM Plan shall contain VMT reduction strategies identified in the Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (California Air Pollution Control Officers Association [CAPCOA], 2021) or an equivalent reference where the effectiveness of strategies is supported by substantial evidence. The TDM Plan may include, but would not necessarily be limited to, the CAPCOA strategies presented in Table 4.11-3 below.

Table 4.11-3
Applicable CAPCOA Strategies

Category	Measure	Strategy Description	VMT Mitigation Reduction Potential
Neighborhood Design	T-21-A/B	Implement Carshare Program (Conventional or Electric)	0 – 0.18% of vehicle travel in the community, based upon number of vehicles deployed and project VMT
Trip Reduction Programs	T-7	Implement Commute Trip Reduction Marketing	0 – 4 4.0% of vehicle travel in the community, based upon employee commute VMT.
	T-9	Implement Subsidized or Discounted Transit Program	0 – 5.5% of vehicle travel in the community, based upon employee/resident vehicles accessing the site.
	T-23	Provide Community-Based Travel Planning	0 – 2.3% of vehicle travel in the community, based upon residences in community

Sources: ***Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (CAPCOA, 2021), Fehr & Peers, 2022.***

4.11-4 Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) or result in inadequate emergency access. Based on the analysis below and with the implementation of mitigation, the impact is *less than significant*.

The project proposes a full access intersection at Santa Rosa Road and Skyway as the main access and a secondary full access intersection on Skyway about 2,250 feet east of the primary access. According to *Butte County General Plan Table CIR-4: Additional Improvements Necessary to Achieve Level of Service Standards on County Roadways*, Skyway is to be maintained as a high capacity and limited access expressway by limiting additional access between Honey Run Road and Neal Road. In addition, policy CIR-P6.4 states parcels adjacent to highways and significant roadways shall have only limited access to these facilities as a means to accommodate regional traffic and preserve public mobility. As the project would add additional access points on this sensitive segment of Skyway, the impact is considered to be significant.

In addition, construction activities associated with the proposed project would include use of construction equipment, including vehicles removing or delivering fill material, bulldozers, and other heavy machinery, as well as building materials delivery, and construction worker commutes. The transport of heavy construction equipment to the site, haul truck trips, and construction worker commutes could affect the local roadway network. Without proper planning of construction activities, construction traffic and potential street closures could interfere with existing roadway operations during the construction phase.

Overall, impacts related to a substantial increase in hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) or result in inadequate emergency access could be ***significant***.

Mitigation Measure(s)

The location of the project would require access on Skyway. To determine adequate access requirements consistent with the expectations above, a separate study was conducted and is documented in the *Tuscan Ridge Safety Assessment and Intersection Control Evaluation Technical Memorandum* (Fehr & Peers, December 2022) (see Appendix I). Based on the general plan policy expectations noted above, the number of project trips, the existing volume and speed on Skyway, multiple intersection control alternatives are offered for the primary access, while limited, right-turn only operations are recommended at the secondary access. The County has determined that the preferred primary access is a signalized intersection to be built by the project applicant, and the secondary access will be limited to right-turns only. Based on the 11th Edition of the ITE Trip Generation Manual, the estimated daily vehicle trips associated with the previously approved land use for the site of Golf Course would be 547 daily vehicle trips, which is approximately equivalent to the daily vehicle trips that would be generated by 54 single-family residences. According to the *Tuscan Ridge Safety Assessment and Intersection Control Evaluation Technical Memorandum*, this level of traffic did not necessitate a traffic signal or result in

significant collisions at the intersection of Santa Rosa Road and Skyway. Accordingly, the timing for Mitigation Measure 4.11-4(a) below is based on the equivalent level of daily vehicle trips.

The secondary access is justified to comply with emergency access requirements of policy CIR-P9.1, which states, "All new road systems, both public and private, shall provide for safe evacuation of residents and adequate access to fire and other emergency services by providing at least two means of emergency access to an interconnected collector system." Implementation of the following mitigation would reduce the above potential impact to a *less-than-significant* level.

4.11-4(a) *Prior to building permit issuance for the 55th single-family unit, commercial uses, or any combination thereof that results in the equivalent of 548 daily trips or more, whichever comes first, the project applicant shall construct a three-way traffic signal at the intersection of Santa Rosa Road and Skyway, and frontage improvements necessary to support the signal. The configuration shall maintain the existing lane configuration on Skyway, with two through lanes and one turn storage lane in both directions. Acceleration lanes shall be eliminated due to the timed control. Separate left- and right-turn lanes shall be provided at the primary project access to better serve egressing project trips. Frontage improvements shall consist of appropriate advanced warning signage, flashing beacons, pavement markings, and intersection lighting on Skyway to increase the visibility of the signal and alert drivers that a stop is approaching at the primary access point. Design and installation of improvements shall be in compliance with the California Highway Design Manual and the California Manual on Uniform Traffic Control Devices. In no case shall these improvements be delayed until the certificate of occupancy for the 55th single family home or commercial uses.*

4.11-4(b) *Prior to recordation of the first map/phase of development, the applicant shall construct or enter into a subdivision improvement agreement to secure future improvements at the secondary access road and Skyway, which shall include a deceleration and acceleration lane as shown conceptually in Figure 4.11-7. The intersection shall include a paved emergency vehicle access median cut-out on Skyway, as well as a contrasting surface treatment within the triangular area between the right-turn deceleration lane and acceleration lane that delineates space, as shown in Figure 4.11-7. Secondary access improvements shall be constructed prior to the issuance of a certificate of occupancy for the first unit under Phase C, D, E, or F of the project, whichever comes first, as shown on the project phasing plan.*

Figure 4.11-7
Secondary Access Right-in Right-out Concept

4.11-4(c) Prior to issuance of any grading or site improvement permits, the applicant shall submit a Construction Traffic Management Plan to address the potential for high-speed conflicts at the Santa Rosa Road/Skyway intersection. The Traffic Management Plan shall use the 85th percentile prevailing speed of 70 miles per hour as noted in the Tuscan Ridge Safety Assessment and Intersection Control Evaluation Technical Memorandum prepared for the project in order to determine design parameters. The plan shall address both ingress and egress, including prohibiting right turns, and how left turns will be accomplished.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. The cumulative setting for the proposed project is discussed above under the Cumulative Scenario Assumptions section. For further detail related to the cumulative setting of the proposed project, refer to Chapter 6, Statutorily Required Sections, of this EIR.

Based on the land use and zoning designations for the area surrounding the proposed project on the southern side of Skyway, and due to the separation and elevation distance between the areas designated as Foothill Residential (FR) and Medium Density Residential (MDR) on the northern side of Skyway, future development in the vicinity of the proposed project is generally not anticipated. Therefore, impacts related to conflicts with transit, bicycle or pedestrian transportation, roadways, and emergency access would be similar to the impacts described under Impacts 4.11-1, 4.11-2, and 4.11-4 above; therefore, they are not repeated in the cumulative impacts evaluation. Overall, with implementation of Mitigation Measures 4.11-1(a), 4.11-1(b), 4.11-2, and 4.11-4(a) through (c), the proposed project would not make a cumulatively considerable contribution to inadequate emergency access or transit, bicycle, or pedestrian access.

VMT Analysis

Impacts related to VMT would also be identical to the impacts described in Impact 4.11-3, above, as the characteristics of the project including location and land use diversity would go unchanged under the cumulative condition. However, background VMT trends documented in reports listed below reveal that VMT per capita rates have been increasing over the past few years.

Emerging Trends

The BCAG RTP/SCS travel forecasting model (TFM) version 1.2 was developed before the COVID-19 pandemic and adjusted after the Camp Fire in November 2018 to reflect travel demand changes in Paradise and the region. While the TFM was calibrated to replicate base year traffic conditions, travel behavior and the transportation systems are changing quickly in response to emerging trends and new technologies, such as on-demand ride-hailing (e.g., Uber and Lyft) and greater levels of tele-work, internet shopping, and social media use. These changes combined with the current effects of the COVID-19 pandemic and continued irregular growth in the region after the Camp Fire increase uncertainty about how VMT generation rates may change for land use projects over the time.

Historical VMT Trends

When making a final VMT impact determination, other available evidence related to VMT trends should be considered. This analysis identified the following relevant information.

- *2018 Progress Report, California's Sustainable Communities and Climate Protection Act* (2018 Progress Report) (California Air Resources Board, 2018).
- *Draft 2022 Progress Report, California's Sustainable Communities and Climate Protection Act* (2022 Progress Report) (California Air Resources Board, 2022).
- *California Air Resources Board Improved Program Measurement Would Help California Work More Strategically to Meet Its Climate Change Goals* (Audit Report) (Auditor of the State of California, 2021).
- *Final 2022 Scoping Plan Update* (Scoping Plan) (California Air Resources Board, 2022).

The 2018 and Draft 2022 Progress Reports measure the effect of SB 375, revealing that VMT and GHG per capita increased in California between 2010 and 2019 and are trending upward (see Figure 4.11-8).

The Audit Report is a more recent assessment of CARB's GHG reduction programs, which also found that VMT and associated GHG emissions were trending upward through 2018. Per the audit, the State is not on track to achieve 2030 GHG reduction goals, and emissions from transportation have not been declining. The 2020 Mobile Source Strategy (California Air Resources Board 2021) also acknowledges the challenge of VMT reduction and states, "Without additional policy intervention, VMT may continue to rise."

The Scoping Plan reviews California's progress for meeting GHG reduction goals and sets forth strategies to achieve those goals based on past performance. The plan acknowledges that the state is not meeting its VMT reduction objectives and that VMT growth is returning after COVID-19 pandemic effects diminish.

> *After a significant pandemic-induced reduction in VMT during 2020, passenger VMT has steadily climbed back up and is now closing in on pre-pandemic levels. Driving alone with no passengers remains the primary mode of travel in California, amounting to 75 percent of the mode share for daily commute trips. Conversely, transit ridership, which was also heavily affected during the lockdown months, has not recovered at the same pace as VMT, and roughly averages two-thirds of pre-pandemic levels of ridership.*

This evidence demonstrates the challenge of reducing VMT when background macro-level conditions are contributing to higher VMT generation rates. The evidence also suggests greater action on the part of state and local agencies may be needed to achieve the state's VMT and GHG reduction goals while providing a high level of confidence that the proposed project's VMT impact findings will be realized in the future.

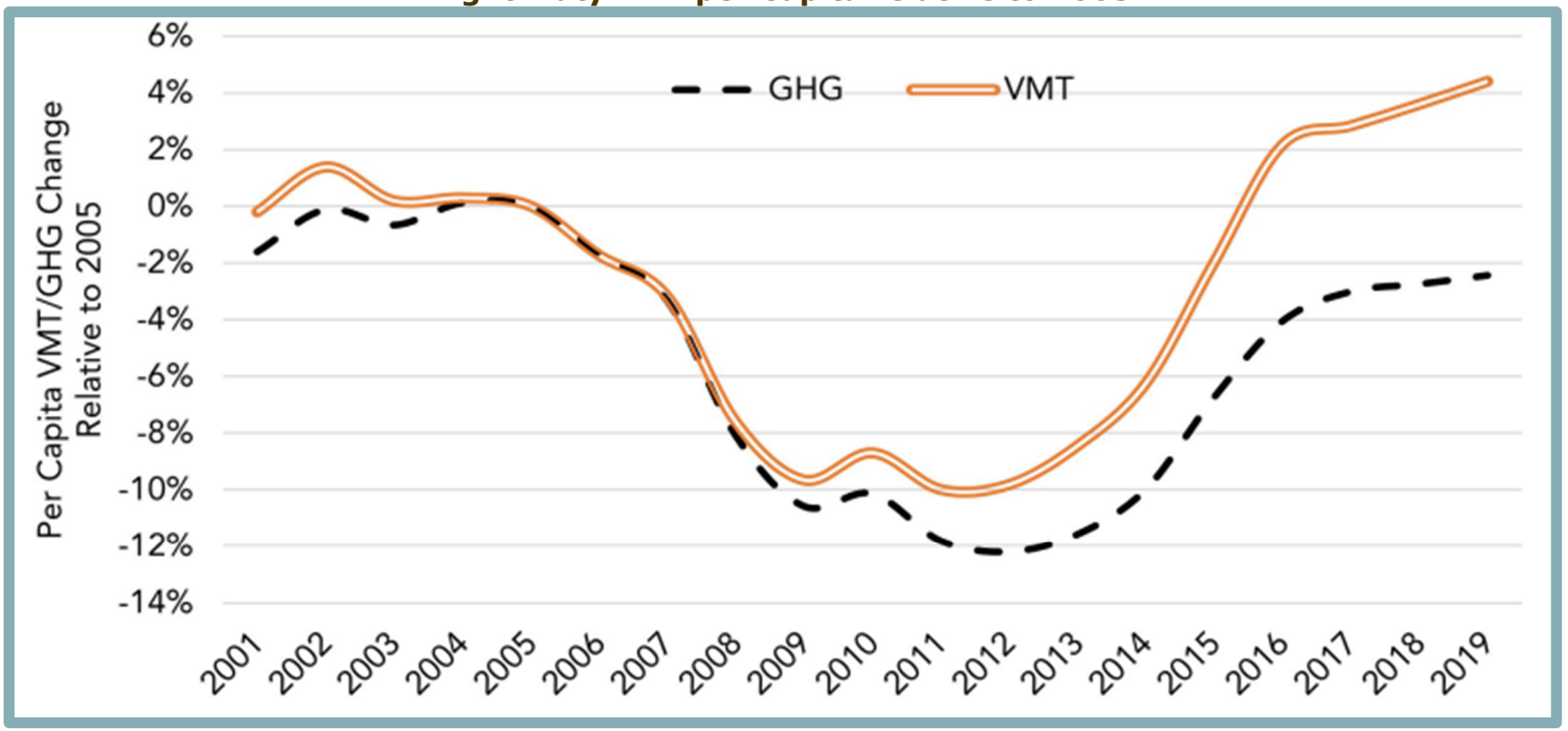
The proposed project generally does not contribute to the basic objectives of SB 743 for local land projects due to its location away from Chico or Paradise, leading to longer trip lengths to destinations and reduction in multimodal choices.

The type of project and location are not likely to produce lower VMT generation rates below applicable thresholds without state and local actions that discourage vehicle travel (i.e., increasing

the cost of driving or making it less convenient) while reducing the barriers or constraints that prevent more efficient use of vehicles and greater use of transit, walking, and bicycling.

Given the evidence, under cumulative conditions, the proposed project will still likely generate home-based VMT per resident above the unincorporated county baseline average, and may generate home-based work VMT per employee above the unincorporated county baseline average. Therefore, cumulative VMT impacts would remain the same as project-specific VMT impacts described under Impact 4.11-3, above, and, even with implementation of Mitigation Measure 4.11-3, would be significant and unavoidable.

Figure 4.11-8
Light-Duty VMT per Capita relative to 2005



Note: VMT represents the aggregate of California's 18 MPO regions. 2019 data indicate that nearly all regions were far from achieving 2020 targets set by CARB.

Source: California Air Resources Board, 2022.

4.12. Utilities and Service Systems

4.12 UTILITIES AND SERVICE SYSTEMS

4.12.1 INTRODUCTION

The Utilities and Service Systems chapter of the EIR summarizes the setting information and identifies potential new demands resulting from the proposed project on utilities and service systems, including water, sanitary sewer, electric power, natural gas, telecommunication, and solid waste disposal services. The chapter evaluates the sufficiency of water supplies to meet the project's water demand, the adequacy of the wastewater treatment system required to serve the project, and the project's compliance with applicable regulations related to solid waste. Information for the Utilities and Service Systems chapter was primarily drawn from the Estimated Water Use and Storage Tank Sizing Technical Memorandum (Water Memorandum) prepared by LACO Associates (see Appendix J of this EIR),[1] the Hydrogeologic Opinion Letter prepared by Wallace-Kuhl & Associates (WKA) (see Appendix K of this EIR),[2] and the Wastewater Treatment System Capacity Study (Wastewater Capacity Study) prepared by NexGen Engineering & Consulting (see Appendix L of this EIR).[3] In addition, information was sourced from the 2030 Butte County General Plan,[4] the 2030 Butte County General Plan EIR,[5] and the 2030 Butte County General Plan Supplemental EIR (SEIR).[6]

It should be noted that impacts related to groundwater supplies, recharge, water quality, and stormwater drainage facilities are addressed in Chapter 4.7, Hydrology and Water Quality, of this EIR.

4.12.2 EXISTING ENVIRONMENTAL SETTING

The following section describes the existing utilities and service systems in the project area, including water supply, wastewater conveyance and treatment, solid waste, and gas, electric, and telecommunication infrastructure.

Water Delivery Infrastructure

The project site is not currently served by a water service provider. Potable water is provided to the project site through an existing on-site water system that was previously permitted as a domestic water supply through the Butte County Public Health, Environmental Health Division (BCPH EH Division) (Permit Number 04-09182) and the State Water Resources Control Board (SWRCB) Division of Drinking Water. Pursuant to the 2016 renewal of Permit Number 04-09182, the water system's previously permitted capacity was 418 gallons per minute (gpm). A new permit through the BCPH EH Division would be required in order to allow use of the existing system. The water system was required to comply with all requirements set forth by the California Safe Drinking

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1 LACO Associates. *Technical Memorandum: Tuscan Ridge Planned Development Estimated Water Use and Storage Tank Sizing, 3100 Skyway Road, Paradise, California 95969, Assessor's Parcel Numbers 040-520-104-104 through -111*. May 15, 2022.
2 Wallace-Kuhl & Associates. *Hydrogeologic Opinion Letter*. March 31, 2022.
3 NexGen Engineering & Consulting. *Technical Memorandum: Tuscan Ridge Planned Unit Development, Wastewater Treatment System Capacity Study, Butte County, California*. December 12, 2023.
4 Butte County. *Butte County General Plan 2030*. November 6, 2012.
5 Butte County. *Butte County General Plan 2030 Draft EIR*. April 8, 2010.
6 Butte County. *Butte County GPA & Zoning Ordinance Update Draft Supplemental EIR*. May 31, 2012.

Water Act, California Health and Safety Code. All water supplied by the on-site water system for domestic purposes is required to meet all applicable Maximum Contaminant Levels (MCLs) and Action Levels (ALs) established by the SWRCB Division of Drinking Water (DDW).

The existing on-site water system consists of a well at a depth of 735 feet. Water pumped from the well is sent to two 10,000-gallon aboveground water storage tanks through a 75-horsepower (hp) turbine pump and is subsequently pulled from the tank through two 10-hp pumps and pressurized into a distribution system through four pressure tanks. The existing well was initially installed in 1999 for the purposes of irrigating the Tuscan Ridge Golf Course and providing services to an associated bistro. The well was subsequently used for potable water purposes by Pacific Gas and Electric Co. (PG&E) and ECC Constructors during their occupation of the site. In 2020, as part of demolition and cleanup efforts in response to the 2018 Camp Fire, the base camp that was previously located on-site temporarily housed 1,500 employees, all of whom were dependent on the on-site water system.[7] As shown in Figure 4.12-1, the on-site water system is located to the north of the existing wastewater treatment ponds.

In addition, as part of the Hydrogeologic Opinion Letter, WKA reviewed the locations of existing wells within the project vicinity, as well as associated well construction reports of the identified wells that are available through the California Department of Water Resources (DWR). WKA found only two wells (Nos. 1999-008039 and 1980-005711), in addition to the existing on-site well, that met the location and approximate depth parameters to suggest that the wells are located on the same ridge as the project site (see Figure 4.12-2).

Wastewater Conveyance and Treatment

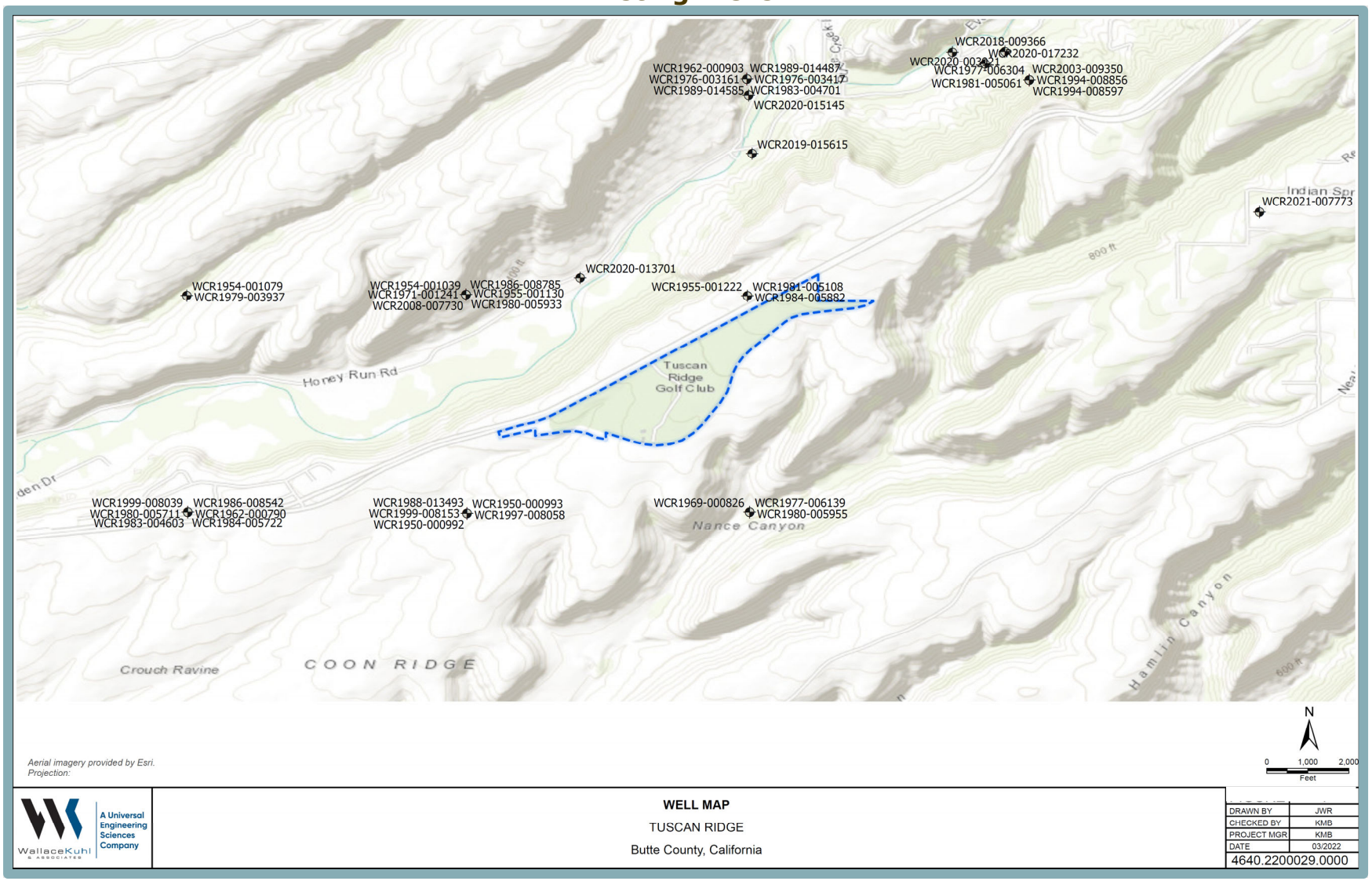
The project site is not currently served by a wastewater treatment services provider. Wastewater treatment is provided through an existing on-site system that was constructed in 2020 to serve base camp personnel conducting demolition and cleanup efforts in response to the 2018 Camp Fire. The on-site wastewater treatment system is located in the southern portion of the project site (see Figure 4.12-1) and is permitted under SWRCB General Waste Discharge Requirements (WDR) for Domestic Wastewater Treatment Systems, Order 2014-0153-DWQ-R5309. The WDR permit allows for a discharge limit of 100,000 gallons per day (gpd) and requires treatment of effluent to meet basic secondary treatment levels (including ultraviolet [UV] disinfection). The existing on-site system is designed to treat and dispose of a maximum average daily flow of 100,000 gpd. The treatment process includes solids separation and anaerobic digestion, aerobic digestion, media filtration, and UV disinfection, which is accomplished through septic tanks, aerobic treatment modules, and UV disinfection units.

More specifically, wastewater is pumped through four 40,000-gallon septic tanks, where the majority of solids settle out. Flows are then directed to one of four 25,000 gpd Presby multi-level treatment beds. A 3,000-gallon collection pump tank with UV treatment connected to each Presby treatment bed then provides tertiary treatment of effluent. The treated effluent is then routed for disposal through a two-inch force main to the evaporative ponds, which are equipped with bottom-mounted aerators. The two ponds, located in the southernmost portion of the project site, have volumes of 48.6 and 6.1 acre-feet, respectively. Additionally, the ponds are comprised of 3:1 interior and external slopes and a minimum 15-foot-wide crest to provide access around the perimeter.

[7] Analytical Environmental Services. *Tuscan Ridge Project, Spill Prevention and Emergency Response Plan*. March 2019.

Figure 4.12-1
Existing On-Site Water and Wastewater Systems

Figure 4.12-2
Existing Wells



The ponds' containment system also features a 40-mil high-density polyethylene (HDPE) geosynthetic liner, eight-ounce non-woven geotextile fabric, and a leak collection/detection system to fully contain the treated effluent. Effluent and accumulated precipitation are disposed of through evaporation, floating fountain-type aerators, and sprinklers spraying from the pond perimeters towards the pond center.

Solid Waste

The project site is not currently served by a solid waste service provider. As part of approval of the proposed project, solid waste and recycling collection services would be provided by Northern Recycling and Waste Services (NRWS), one of three licensed private haulers that provides residential, commercial, and industrial collection services for unincorporated areas within Butte County. NRWS primarily serves the northeast portion of the County. Recyclables and solid waste collected by NRWS are ultimately disposed of at the Neal Road Recycling and Waste Facility, located at 1023 Neal Road approximately seven miles to the southeast of the City of Chico.

According to the California Department of Resources Recycling and Recovery (CalRecycle), the landfill at the Neal Road Recycling and Waste Facility is permitted to accept a maximum of 25,271,900 cubic yards of waste.[8] The landfill has a remaining capacity of 20,847,970 cubic yards and is anticipated to cease operations in 2048.

NRWS offers a variety of waste reduction and recycling programs to divert the amount of waste transported to the landfill at the Neal Road Recycling and Waste Facility, including curbside recycling, commercial recycling, commercial and residential organics recycling, green waste disposal options, and recycling through the NRWS' recycling center located at 920 American Way in the Town of Paradise.

Electric and Telecommunication Infrastructure

Electric services in the project area are provided by PG&E. PG&E is one of the largest providers of electricity throughout Butte County. PG&E is a San Francisco-based investor-owned utility that is regulated by the California Public Utilities Commission and provides electricity to the majority of Northern California. PG&E has ample resources to meet a wide range of projected growth; however, when the time comes, additional improvements to the facilities may be required to meet future growth demands. PG&E would provide electricity to the project site through an existing on-site connection. The proposed project would not include a natural gas connection; rather, propane or another form of gas may be used by both residential and commercial users, for residential and commercial applications, through individually established service from a local provider.

4.12.3 REGULATORY CONTEXT

The following discussion contains a summary of regulatory controls pertaining to utilities, including State and local laws and ordinances.

Federal Regulations

The federal environmental laws and policies relevant to utilities are primarily related to water quality, which is addressed in Chapter 4.7, Hydrology and Water Quality, of this EIR.

[8] California Department of Resources Recycling and Recovery. *SWIS Facility/Site Activity Details Neal Road Recycling and Waste Facility (04-AA-0002)*. Available at: https://www2.calrecycle.ca.gov/SolidWaste/Site/Details/108. Accessed October 2023.

State Regulations

The following are applicable State regulations associated with utilities related to the proposed project.

California Green Building Standards Code

The 2022 California Green Building Standards Code, otherwise known as the CALGreen Code (California Code of Regulations [CCR] Title 24, Part 11) is a portion of the California Building Standards Code (CBSC), which became effective on January 1, 2023. The CBSC is adopted every three years by the Building Standards Commission (BSC).

The purpose of the CALGreen Code is to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices. The CALGreen standards regulate the method of use, properties, performance, types of materials used in construction, alteration repair, improvement and rehabilitation of a structure or improvement to property. The provisions of the code apply to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure throughout California. Requirements of the current CALGreen Code include, but are not limited to, the following measures:

- Mandatory reduction in indoor water use through compliance with specified flow rates for plumbing fixtures and fittings;
- Mandatory reduction in outdoor water use through compliance with a local water efficient landscaping ordinance or the DWR's Model Water Efficient Landscape Ordinance (MWELO);
- 65 percent of construction and demolition waste must be diverted from landfills;
- Mandatory inspections of energy systems to ensure optimal working efficiency;
- Inclusion of electric vehicle (EV) charging stations or designated spaces capable of supporting future charging stations; and
- Low-pollutant-emitting exterior and interior finish materials, such as paints, carpets, vinyl flooring, and particle boards.

The CALGreen standards also include voluntary efficiency measures that are provided at two tiers and implemented at the discretion of local agencies and applicants. According to Section A4.602 of Appendix A4 of the CALGreen Code, CALGreen's Tier 1 standards call for a 15 percent improvement in energy requirements, stricter water conservation, 65 percent diversion of construction and demolition waste, 10 percent recycled content in building materials, 20 percent permeable paving, 20 percent cement reduction, and cool/solar-reflective roofs. CALGreen's more rigorous Tier 2 standards call for a 30 percent improvement in energy requirements, stricter water conservation, 80 percent diversion of construction and demolition waste, 15 percent recycled content in building materials, 30 percent permeable paving, 25 percent cement reduction, and cool/solar-reflective roofs. Butte County does not require compliance with Tier 1 or Tier 2 CALGreen standards at this time.

Assembly Bill 1327

Assembly Bill (AB) 1327, the Solid Waste Reuse and Recycling Access Act of 1991, requires jurisdictions to adopt ordinances requiring development projects to provide adequate storage area

for collection and removal of recyclable materials. Butte County has adopted such an ordinance (Butte County Code Chapter 31).

Assembly Bill 1881

AB 1881, the Water Conservation in Landscaping Act of 2006 required the DWR to update the MWELO. Furthermore, AB 1881 required local agencies to adopt the updated model ordinance or an equivalent ordinance by January 1, 2010. If local jurisdictions failed to adopt the updated model ordinance or an equivalent by January 1, 2010, the DWR's updated model ordinance would automatically be adopted by statute. Butte County has adopted such an ordinance (Butte County Code Section 24-112).

California Integrated Waste Management Act – Assembly Bill 939

AB 939, the California Integrated Waste Management Act of 1989, contains requirements affecting solid waste disposal in California. According to AB 939, all cities and counties are required to divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000. Solid waste plans are required to explain how each city's AB 939 plan will be integrated within the respective county plan. The plans must promote (in order of priority) source reduction, recycling and composting, and environmentally safe transformation and land disposal. Cities and counties that do not meet this mandate are subject to $10,000-per-day fines.

Senate Bill 1016

Enacted in 2007, SB 1016 amended portions of the California Integrated Waste Management Act, allowing the California Integrated Waste Management Board (CIWMB) to use per capita disposal as an indicator in evaluating compliance with the requirements of AB 939. Jurisdictions track and report their per capita disposal rates to CalRecycle.

Per capita disposal rates are not currently provided through CalRecycle for the unincorporated portions of Butte County. The Countywide Integrated Waste Management Plan (IWMP) is mandated by State law under AB 939. The purpose of the IWMP is to describe local waste diversion and disposal conditions and lay out realistic programs to achieve the waste diversion goals outlined in AB 939. The IWMP serves as the primary tool for designing waste-reduction programs that are countywide in scope. The IWMP also addresses the County's landfill needs in a comprehensive way. In Butte County, waste reduction and disposal facilities that require Solid Waste Facility Permits must conform to the policies contained in the IWMP.

Executive Order N-7-22

On March 28, 2022, Executive Order (EO) N-7-22 was issued to enhance water supply resilience and increase drought response within the State. EO N-7-22 limits a county, city, or other public agency's ability to permit modified or new groundwater wells. Specifically, before local entities can permit new or modified groundwater wells in high and medium priority groundwater basins, EO N-7-22 requires the Groundwater Sustainability Agency (GSA) monitoring the basin to verify in writing that the permitted action is not inconsistent with the Groundwater Sustainability Plan (GSP) or other groundwater management program for the basin. Additionally, the permitting entity must determine that the well will not interfere with nearby wells and will not cause subsidence that could negatively affect nearby infrastructure.

Local Regulations

The following are applicable local utility regulations related to the proposed project.

2030 Butte County General Plan

The following goals and policies from the 2030 Butte County General Plan related to utilities are applicable to the proposed project.

Water Resources Element

Goal W-2 Ensure an abundant and sustainable water supply to support all uses in Butte County.

Policy W-P2.5 The expansion of public water systems to areas identified for future development on the General Plan land use map is encouraged.

Policy W-P2.6 The County supports water development projects that are needed to supply local demands.

Policy W-P2.9 Applicants for new major development projects, as determined by the Department of Development Services, shall demonstrate adequate water supply to meet the needs of the project, including an evaluation of potential cumulative impacts to surrounding groundwater users and the environment.

Public Facilities and Services Element

Goal PUB-9 Provide safe, sanitary and environmentally acceptable solid waste management.

Policy PUB-P9.1 Butte County residents, businesses and industries shall be encouraged to reduce the use of non-biodegradable and nonrecyclable materials, including reduced use of packaging and use of reusable, rather then disposable, products.

Policy PUB-P9.3 Innovative strategies shall be employed to ensure efficient and cost-effective solid waste and other discarded materials collection, disposal, transfer and processing.

Policy PUB-P9.5 The Neal Road Recycling and Waste Facility should prioritize disposal and processing capacity for waste materials generated within Butte County, but accept waste materials from outside the county when capacity is available and the rates cover the full cost of disposal and processing.

Goal PUB-11 Increase recycling among Butte County residents, businesses and public agencies.

Policy PUB-P11.1 The County shall meet or exceed State waste diversion requirements.

Policy PUB-P11.2 Construction sites shall provide for the salvage, reuse, or recycling of construction and demolition materials.

Goal PUB-12 Manage wastewater treatment facilities at every scale to protect the public health and safety of Butte County residents and the natural environment.

Policy PUB-P12.1 Applicants shall be allowed to make case-by-case assessments of septic and other wastewater treatment systems to determine appropriate system designs and densities and shall be allowed to utilize new technologies that are supported by State and County practices.

Policy PUB-P12.3 New community sewerage systems shall be managed by a public County sanitation district or other County-approved methods. Proponents shall demonstrate the financial viability of constructing, operating and maintaining the proposed community sewerage system.

Policy PUB-P12.4 New sewer collection and transmission systems shall be designed and constructed to minimize potential inflow and infiltration.

Goal PUB-13 Plan adequate wastewater infrastructure to serve new development.

Policy PUB-P13.2 New development projects shall demonstrate the availability of a safe, sanitary and environmentally sound wastewater system.

Policy PUB-P13.3 For development projects that will rely on on-site wastewater systems, applicants shall provide detailed plans demonstrating that the system will be adequate to serve the project.

Policy PUB-P13.4 Installation of sewer lines shall occur concurrently with construction of new roadways to maximize efficiency and minimize disturbance from construction activity.

Butte County Code

The following sections of the adopted Butte County Code related to utilities are applicable to the proposed project.

Chapter 19 – On-Site Wastewater Systems

Butte County Code Section Chapter 19 establishes the County's requirements for on-site wastewater systems. As established by Section 19-5 of the Butte County Code, new wastewater systems installed as part of new development projects must conform to the standards set forth in the Butte County On-Site Wastewater Manual with respect to the siting, design, installation, component quality, operation, monitoring, and maintenance of on-site wastewater systems in the County.

Chapter 23B – Water Wells

According to Butte County Code Section 23B-3, construction of new wells, as well as repair, deepening, or destruction of existing wells requires a written permit from the BCPH EH Division.

Pursuant to Butte County Code Section 23B-5, construction of new wells, and repair, deepening, or destruction of existing wells must adhere to the requirements established by DWR Bulletins 74-81 and 74-90.

Section 24-112 – Model Water Efficient Landscaping Ordinance

Pursuant to Butte County Code Section 24-112, applicable development projects must comply with the DWR MWELO. The MWELO is codified in Chapters 4 and 5 of the CALGreen Code.

Chapter 26A – Underground Utility Districts

As established by Butte County Code 26A-2, the Butte County Board of Supervisors may call public hearings to ascertain whether the public necessity, health, safety or welfare requires the removal of poles, overhead wires and associated overhead structures within designated areas of the unincorporated area of the County, followed by the underground installation of wires and facilities for supplying electric, communication or similar or associated service. If underground construction is necessary to provide utility service within an underground utility district created by County resolution, the supplying utility must furnish that portion of the conduits, conductors, and associated equipment required to be furnished by the utility under its applicable rules, regulations, and tariffs on file with the California Public Utilities Commission.

Butte County Improvement Standards

The purpose of the Butte County Improvement Standards is to provide minimum standards that are applied to all site improvements, private and public works, as well as improvements to be installed within existing rights-of-way (ROWs) and easements. Through requiring minimum standards, the Butte County Improvement Standards facilitate coordinated development of required facilities to be used by and for the protection of the public. The standards apply to and regulate the design and preparation of plans for construction of streets, highways, alleys, drainage, sewerage, street lighting, water supply facilities, fire protection, and related public improvements.

4.12.4 IMPACTS AND MITIGATION MEASURES

The section below describes the standards of significance and methodology utilized to analyze and determine the proposed project's potential project-specific impacts related to utilities and service systems. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, a significant impact related to utilities and service systems would occur if the proposed project would result in any of the following:

- Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects;
- Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;

- Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; or
- Comply with federal, State, and local management and reduction statutes and regulations related to solid waste.

Impacts related to groundwater supplies, recharge, and quality, and stormwater drainage facilities are addressed in Chapter 4.7, Hydrology and Water Quality, of this EIR.

Method of Analysis

In order to determine the potential for the proposed project to result in substantial adverse impacts associated with the provision of utilities and service systems, relevant planning documents were reviewed, including, but not limited to, the 2030 Butte County General Plan, the 2030 Butte County General Plan EIR, and the 2030 Butte County General Plan SEIR.

In addition, information related to water supply was primarily drawn from the Water Memorandum prepared by LACO Associates (see Appendix J of this EIR) and the Hydrogeologic Opinion Letter prepared by WKA (see Appendix K of this EIR). Information related to sewer conveyance and treatment was primarily drawn from the Wastewater Capacity Study prepared by NexGen Engineering & Consulting (see Appendix L of this EIR). The method of analysis used in each technical assessment is discussed further below.

Water Memorandum

The methodology to determine the estimated water demand of the proposed project and the storage requirements of the proposed water storage tank are discussed further below.

Estimated Water Demand

The estimated water demand for the proposed project is based on the following uses:

- 165 single-family residential lots;
- Approximately 19.3 acres of commercial development that would be generally consistent with the permitted and conditionally permitted uses allowed within the County's General Commercial (GC) and Neighborhood Commercial (NC) zoning districts, including the following:
    - 3,600-square foot (sf) gas station/convenience store;
    - 76,000 sf of retail space;
    - 53,000-sf mini storage use;
    - 3,000-sf restaurant;
- A sanitary waste disposal station; and
- Approximately 3.9 acres of landscaped open space and 52.6 acres of passive recreational uses.

The estimated water demand for the proposed project is based on the aforementioned project components, data reviewed for similar developments, standard engineering principles, and other sources. It should be noted that the Water Memorandum was prepared for an earlier iteration of the proposed project. Since that time, the proposed project was revised to include an increased acreage of evaporative ponds. As a result, some of the foregoing acreages have been adjusted since the preparation of the Water Memorandum. However, the proposed residential and

commercial components have not changed, and, thus, the conclusions in the Water Memorandum related to the water demand of the proposed project remain applicable.

The residential value was determined based on review of the 2020 City of Chico Urban Water Management Plan. Because data could not be found and the number of accessory dwelling units (ADUs) was assumed to be less than 50 percent of the proposed single-family residential lots, the water demand for an ADU was assumed at 50 percent of the usage of the primary dwelling unit.[9] Retail and restaurant water demand per sf is based on data from the Ventura Water District Final Water Demand Factor Study. The gas station/convenience store water demand estimate per vehicle is based on data from the Standard Handbook of Environmental Engineering. It should be noted that the Water Memorandum assumed that the water demand associated with the sanitary waste disposal station would be negligible.

Water Storage Tank Requirements

The peaking conditions considered for the proposed project and the sizing of the water infrastructure included (1) maximum day demand with fire flow; and (2) peak hour demand on the maximum day. The maximum day demand is expressed in gpd. The peak hour demand is expressed in gpm. The fire flow calculation assumes construction of the proposed commercial uses would meet the requirements set forth by the CBSC that allow the minimum fire flow to be reduced to 25 percent of the value in Table B105.1(2) of the California Fire Code (CFC) and not less than 1,500 gpm for a duration of two hours, pursuant to Table B105.2 of the CFC.

Hydrogeologic Opinion Letter

WKA prepared the Hydrogeologic Opinion Letter in order to issue an opinion on the adequacy of siting a second well for the purposes of providing water system redundancy to the proposed project. As part of preparing the Hydrogeologic Opinion Letter, WKA reviewed the following documents:

- The Water Memorandum prepared by LACO Associates;
- Other LACO Associates materials prepared for the proposed project, including:
    - A site figure titled “Tuscan Ridge Planned Development” prepared by Julian Berg Designs in conjunction with LACO Surveyors, Engineers, Planners, Geologists and dated February 23, 2022;
    - Tuscan Ridge Well #1 Completion Report; and
    - Tuscan Ridge Well #1 well production information;
- Well driller reports within approximately three miles of the proposed well location; and
- Google Earth Pro aerial imagery.

In addition, WKA conducted site visits from November 2018 through May 2021 and completed various technical documents related to the site’s uses by PG&E and the 2018 Camp Fire base camp.

[9] While a certain percentage of ADUs was assumed for the project in the Water Memorandum, this was done for engineering purposes and it does not follow that the EIR should include evaluation of ADUs. For example, in *Save Round Valley Alliance v County of Inyo*, the court upheld an EIR’s project description for a residential subdivision against claims the description should have included units that might be built under a county ordinance allowing a second unit on each lot because future construction of second units was speculative. For the proposed project, there is no specific proposal to build ADUs on the project site, and thus, evaluating ADUs throughout the technical sections of the EIR would amount to speculation.

Wastewater Capacity Study

The Wastewater Capacity Study included an estimation of wastewater flows that would be generated by the proposed residences, commercial uses, gas station/convenience store, mini-storage facility, and sanitary waste disposal station.

Wastewater design flows for each residential connection or equivalent dwelling unit (EDU) were estimated to be either 350 gpd per EDU (gpd/EDU) or 450 gpd/EDU, depending on whether the lot includes an accessory dwelling unit (ADU). The 350 gpd/EDU estimate is based on an average bedroom count of 3.5, while the 450 gpd/EDU estimate includes an additional bedroom. The total number of bedrooms was then multiplied by an assumed unit flow factor of 100 gpd/bedroom. The 100 gpd/bedroom unit flow factor is based on the 2002 U.S. Environmental Protection Agency (USEPA) Onsite Wastewater Treatment Systems Manual, taking into account the use of water-conserving plumbing fixtures and the fact that the proposed project would include a large community system and not an individual system. The proposed project includes a total of 165 residential lots. The Wastewater Capacity Study assumed that 82 of the lots would also contain an ADU.

The assumed unit flow factor for the proposed commercial uses is 1,200 gpd per acre, which is based on the Vallecitos Water District's 2018 Water, Wastewater, and Recycled Water Master Plan prepared by Black and Veatch. The gas station/convenience store is anticipated to generate 500 gpd per service bay. The unit factor is based on the Butte County On-Site Wastewater Systems Ordinance, dated March 16, 2010. The mini-storage facility would contain a one-bedroom manager's unit. Therefore, the wastewater associated with the mini-storage facility is based on a 100 gpd per bedroom unit factor. Finally, the recommended wastewater unit flow factor for the sewage dump station is 700 gpd per vehicle, which is based on the lowest capacity septage pumper of 1,000 gallons and applying a 0.7 reduction factor. The reduction factor assumes that 30 percent of the volume is solid matter that would remain in the dump station septic tank, while the remaining 70 percent is wastewater that would pass through to the sanitary waste disposal station.

It should be noted that the wastewater flow estimates within the Wastewater Capacity Study were based on an earlier iteration of the project, where a total of 17.3 acres for commercial uses were anticipated. The proposed project includes 15.9 acres of commercial uses; therefore, the wastewater flow estimate for commercial uses would be considered conservative. The proposed residential components have not changed from the previous iteration of the project. Therefore, the conclusions of the Wastewater Capacity Study remain applicable to the proposed project.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in comparison with the standards of significance identified above.

4.12-1 Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Impacts on the water, wastewater treatment, electric power, natural gas, and telecommunications facilities associated with the proposed project are discussed separately below. Stormwater drainage facilities are addressed in Chapter 4.7, Hydrology and Water Quality, of this EIR.

Water Supply Infrastructure

Water service would be provided to the project site by the existing on-site water system, which was previously permitted as a domestic water supply through the SWRCB Division of Drinking Water and BCPH EH Division Permit Number 04-09182. A new permit through the SWRCB and/or BCPH EH Division would be required in order to allow use of the existing system to serve the proposed project. As part of compliance with the new permit, the existing system would be upgraded through several improvements to ensure the water system meets water treatment and distribution requirements. The water system improvements would be required to comply with public health standards set forth by CCR Title 22, Chapter 15 (Domestic Water Quality and Monitoring Regulations), Proposition 65 (formerly the California Safe Drinking Water Act), and Butte County Code Chapter 23B.

In order to convey domestic water to the new structures, the proposed project would include installation of new six-inch water lines within the internal circulation network. The new six-inch water lines would be designed and installed in accordance with Section 12.0 (Water Supply) of the Butte County Public Works Improvement Standards. From the new six-inch water lines, water would be provided to the proposed structures through new water laterals. The Paradise Irrigation District (PID) would provide maintenance of the proposed water system. The PID's maintenance would be covered by an extraterritorial service agreement or annexation of the project site into the PID service area, which would be subject to approval by the Butte Local Agency Formation Commission (LAFCo). In the absence of an approved agreement or annexation to the PID, the County would require the formation of a County Service Area (CSA) to fund operations and maintenance of the water and wastewater systems.

In addition, the proposed improvements to the existing system would include the installation of an additional water supply well to provide water system redundancy in the event that issues arise with the primary, existing well. The new well would be required to be constructed in accordance with the California Waterworks Standards (CCR Title 22, Chapter 16). Additionally, construction of the new well would require issuance of a Permit to Construct a Small Diameter Well from the BCPH EH Division and would be required to be consistent with GSA review standards of EO N-7-22. Pursuant to the provisions of the Permit to Construct a Small Diameter Well, the new well would be required to be constructed in accordance with American Water Works Association (AWWA) Standard A100-06.

An approximately 487,000-gallon water storage tank would also be located in the northeast portion of the project site, adjacent to the proposed mini-storage facility. The tank would be approximately 72 feet in diameter and 16 feet in height and surrounded by a security fence. The proposed water storage tank is designed to meet both the maximum day demand plus fire flow in storage and meet the peak hour demand through the well and distribution system for all pressure zones, pursuant to Title 22 CCR, Chapter 16, Section 64554(a)(3). Under the reasonable assumption that the

proposed commercial uses would meet requirements established by the California Building Code, the required fire flow storage would be 180,000 gallons.[10] In addition, it should be noted that while all non-residential structures require fire flow, they do not all require automatic fire sprinklers. As such, even a modestly sized non-residential building with a high enough fire flow could cause a significant increase in storage, if a fire were to last for a long enough duration. Nonetheless, by adding the maximum day demand for domestic use of 220,083 gallons (see the discussion under Impact 4.12-2) to the estimated fire flow storage requirement, the total storage requirement would be 400,083 gallons. Thus, the tank's oversize of 487,000 gallons of total storage volume and 457,000 gallons of active storage volume for domestic water usage when one foot of freeboard is maintained at the top of the tank would be sufficient to meet the total storage requirement. Any additional water tanks needed to support the proposed project would be constructed using materials that meet appropriate California Department of Forestry and Fire Protection (CAL FIRE) standards.

As previously discussed, the project site has been heavily disturbed, as the site was damaged by the 2018 Camp Fire and was subsequently used as a base camp housing 1,500 employees who assisted in demolition and cleanup efforts in response to the fire. Installation of the new water supply infrastructure, including new fire water lines and hydrants, would occur in previously disturbed areas or in areas proposed for disturbance as part of the project. All potential physical environmental impacts that could result from development of the proposed project, including new on- and off-site utility infrastructure, have been evaluated throughout the technical chapters of this EIR. Thus, the new water infrastructure, including the new, secondary well and water storage tank, are not anticipated to cause significant environmental effects. However, because final designs for the water infrastructure improvements included as part of the proposed project have not yet been prepared, proper compliance with applicable regulations established by the BCPH EH Division, CCR Title 22, Chapter 16, and the Butte County Code cannot be ensured at this time.

Based on the above, development of proposed project could require or result in the relocation or construction of new or expanded water facilities, the construction or relocation of which could cause significant environmental effects, and a significant impact could occur.

Wastewater Infrastructure

On-site wastewater treatment is currently provided through an existing system that operates under SWRCB General Order 2014-0153-DWQ-R5309 and is located in the southern portion of the project site. The WDR permit allows for a discharge limit of 100,000 gpd and requires treatment of effluent to meet basic secondary treatment levels (including UV disinfection). The existing on-site system is designed to treat and dispose of a maximum average daily flow of 100,000 gpd. In order to provide wastewater conveyance and treatment services to the proposed uses, the proposed project would include improvements to the existing wastewater system.

[10] Meeting California Building Code requirements would allow the minimum fire flow to be reduced to 25 percent of the value in Table B105.1(2) of the California Building Code, but not less than 1,500 gpm, pursuant to Table B105.2, for a duration of two hours. The required fire flow under such assumptions would be 180,000 gallons.

Wastewater flows would be conveyed from the proposed uses to a series of septic and clarification tanks by way of new eight- and 10-inch sewer lines installed within the new internal circulation network. Similar to the new water lines discussed above, the PID would be responsible for maintaining the proposed project's sewer system. Once flows have been conveyed, the septic and clarification tanks would allow for septage detention and liquid waste discharge to the on-site wastewater treatment system in the southern portion of the site. More specifically, a 40,000-gallon, solids-holding tank would accept raw sewage and digest the solid waste, fill, and overflow through commercial effluent filters into a 20,000-gallon clarification tank. The clarification tank would then allow the pretreated waste to flow by gravity towards the wastewater treatment system. The solids-holding tank and clarification tank would also accept sewage waste from the new sanitary waste disposal station, which would be located in the northeast portion of the project site off a cul-de-sac at the end of the proposed eastern entryway from Skyway. The sanitary waste disposal station would primarily serve future patrons of the mini-storage facility by providing a convenient location for dumping sewage waste from recreational vehicles (RVs) and boats stored on-site. Following treatment by the on-site system (which is discussed further in the Hydrology and Water Quality chapter of this EIR), treated effluent flows would be pumped to either the lined evaporative ponds in the southern portion of the project site or the subsurface drip dispersal system, which would be located within the open space areas adjacent to Skyway. It should be noted that the lined evaporative ponds that would serve the proposed project would consist of the two existing ponds, as well as 4.1 acres of proposed evaporative pond expansion (see Figure 3-5 in the Project Description chapter of this EIR). The lined evaporative ponds would be used during the wet weather season (between November and March) or during periods of inclement weather, whereas the subsurface drip dispersal system would be used during the dry weather season (between April and October), particularly during the summer months.

The improvements to the existing wastewater conveyance system would be covered under General Order 2014-0153-DWQ-R5309. Installation of the new sewer infrastructure and construction of the new sanitary waste disposal station would occur either in areas that have been previously disturbed as part the 2018 Camp Fire and base camp or in areas proposed for disturbance as part of development of the proposed project. As discussed, all potential physical environmental impacts that could result from implementation of the proposed project have been evaluated throughout the technical chapters of this EIR. In addition, the new sewer infrastructure would be designed and constructed in accordance with the applicable standards set forth in Section 11.0 (Sewage Disposal) of the Butte County Public Works Improvement Standards and the Butte County On-Site Wastewater Manual, which includes minimum requirements related to proper materials and sizing. However, because final designs for the new wastewater infrastructure included as part of the proposed project have not yet been prepared, proper compliance with General Order 2014-0153-DWQ-R5309 cannot be ensured at this time.

Based on the above, development of proposed project could require or result in the relocation or construction of new or expanded wastewater facilities, the construction or relocation of which could cause significant environmental effects, and a significant impact could occur.

Electricity and Telecommunications Infrastructure

The proposed project would include new connections to an existing on-site electricity connection. In addition, the project would include new connections to existing telecommunications infrastructure located in the vicinity of the project site within Skyway. Installation of the new electricity and telecommunications infrastructure would occur either in areas that have been previously disturbed or in areas proposed for disturbance as part of development of the proposed project. Consistent with the provisions set forth in Butte County Code Chapter 26A, new electricity and telecommunications infrastructure would be required to be installed underground. The proposed project would not include a natural gas connection; rather, propane or another form of gas may be used by both residential and commercial users, for residential and commercial applications, through individually established service from a local provider.

Based on the above, development of the proposed project would not require or result in the relocation or construction of new or expanded electricity, natural gas, and telecommunications facilities, the construction or relocation of which could cause significant environmental effects, and a less-than-significant impact would occur.

Conclusion

Based on the above, development of proposed project would not require or result in the relocation or construction of new or expanded electricity, natural gas, and telecommunications facilities, the construction or relocation of which could cause significant environmental effects. However, without proper compliance with applicable regulations established by the BCPH EH Division; CCR Title 22, Chapter 16; the Butte County Code; and SWRCB General Order 2014-0153-DWQ-R5309 related to water well and wastewater system improvements, the proposed project would require the relocation or construction of new or expanded water and wastewater facilities, the construction or relocation of which could cause significant environmental effects. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure, which requires the project applicant to obtain the applicable permits from the SWRCB and Butte County Environmental Health Division prior to the installation of the water supply and wastewater treatment infrastructure, would reduce the above potential impact to a *less-than-significant* level.

4.12-1 Implement Mitigation Measures 4.7-2(b) and 4.7-2(c).

4.12-2 Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, single dry, and multiple dry years. Based on the analysis below, the impact is *less than significant*.

Based on the uses included as part of the proposed project and discussed under the Method of Analysis subheading, the estimated water demand to serve the project would be approximately 110,042 gpd (see Table 4.12-1). Of the 110,042 gpd

estimated for the total project water demand, 99,000 gpd would be associated with the proposed residential and commercial uses. It should be noted that approximately 50 to 75 percent of the water used for the aforementioned purposes would result in wastewater treated at the on-site wastewater treatment system, which is discussed further under Impact 4.12-3. Domestic water would be provided to the proposed project from the existing on-site water system, which includes an on-site well at a depth of 735 feet that would serve as the primary water source. Pursuant to the Hydrogeologic Opinion Letter, which determined water usage associated with the project site based on a review of the LACO Associates materials listed in the Method of Analysis section above, the existing on-site well has a documented usage of between 325,000 and 425,000 gpd. Thus, given the estimated demand associated with the proposed project of 110,042 gpd, the Hydrogeologic Opinion Letter determined that the existing on-site well has sufficient water supply to meet the anticipated demands of the project during normal, dry, and multiple dry years.

Table 4.12-1
Estimated Water Demand

Land Use	Unit	Unit Total	GPD/Unit	GPD
Single-Family Residential	Residence	165	400	66,000
Accessory Dwelling Unit	Residence	82	200	16,400
Retail	Square Feet	76,000	0.155	11,780
Restaurant	Square Feet	3,000	0.673	2,019
Gas Station/Convenience Store	Vehicles	500	5	2,500
Mini-Storage	Bathrooms	2	150	300
Landscaping[1]	Square Feet	169,885	0.065	11,043
Total				110,042
Maximum Day Demand (Peaking Factor: 2)				220,083

[1] U.S. Department of Energy: Guidelines for Estimating Unmetered Landscaping Water Use, July 2010. Sacramento values provided in the document were used to estimate a mid-range demand per square foot.

Sources: LACO Associates, 2022.

In accordance with BCPH EH Division guidance, a new, secondary well would be constructed on-site to provide water system redundancy, in the event that issues arise with the primary well. As previously discussed, the new, secondary well would be required to be constructed in accordance with CCR Title 22, Chapter 16, and construction of the new well would require issuance of a Permit to Construct a Small Diameter Well from the BCPH EH Division. Pursuant to the provisions of the Permit to Construct a Small Diameter Well, the new well would be required to be constructed in accordance with American Water Works Association (AWWA) Standard A100-06.

According to the Hydrogeologic Opinion Letter, a second well drilled within the eastern third of the project site would be anticipated to provide similar production as the existing on-site well, if drilled to a similar depth corrected for surface elevation differences (740 feet) and designed similarly. Depth of the well would likely be more important than location, as the new well would be required to penetrate the Tuscan mudflow breccia and access permeable underlying strata. Furthermore, as part of the Hydrogeologic Opinion Letter, WKA reviewed the locations of existing wells within the vicinity of the project site, as well as associated well construction reports of the

identified wells that are available through the DWR. WKA found only two wells (Nos. 1999-008039 and 1980-005711), in addition to the existing on-site well, that met the location and approximate depth parameters to suggest the wells are located on the same ridge as the project site. WKA concluded that the closest of the two production wells to the project site, well No. 1980-005711 (see Figure 4.12-2), is located approximately 1.1 miles southwest of the existing on-site well. Therefore, the Hydrogeologic Opinion Letter found that a new, secondary well within the project site would not be anticipated to adversely impact existing wells located beyond a mile from the site. However, in order to minimize pumping influences between the existing on-site well and new, secondary well, a 1,500-foot separation distance is recommended. The 1,500-foot separation is precautionary, as the demonstrated pumping capacity of the existing on-site well indicates that the aquifer that supports the project site is very productive. Impacts related to groundwater supply are addressed in Chapter 4.7, Hydrology and Water Quality, of this EIR. In addition, the new, secondary well is proposed as a redundancy for the existing on-site well, such that the two wells would be unlikely to operate at the same time.

Finally, as previously discussed, the proposed project would include installation of an approximately 487,000-gallon water storage tank in the northeast portion of the project site, adjacent to the proposed mini-storage facility. The proposed water storage tank is designed to meet both the maximum day demand plus fire flow in storage and meet the peak hour demand through the well and distribution system for all pressure zones, pursuant to Title 22 CCR, Chapter 16, Section 64554(a)(3).

Based on the above, the existing on-site well has sufficient water supply to meet the anticipated water demands of the proposed project and construction of a new, secondary well and water storage tank would further ensure adequate water supply is available to serve the proposed project. Therefore, the proposed project would have sufficient water supplies available to serve buildout of the proposed project and reasonably foreseeable future development during normal, dry, and multiple dry years, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.12-3 Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The on-site wastewater treatment system, including the proposed upgrades, would operate under SWRCB General Order 2014-0153-DWQ-R5309. The WDR permit allows for a discharge limit of 100,000 gpd and requires treatment of effluent to meet basic secondary treatment levels (including UV disinfection). The existing on-site system is designed to treat and dispose of a maximum average daily flow of 100,000 gpd.

Based on the calculation of wastewater flow estimates discussed further under the Method of Analysis subheading above, the Wastewater Capacity Study determined that the proposed project would result in approximately 96,810 gpd of wastewater flows, as summarized in Table 4.12-2.

As previously discussed, following treatment by the on-site system (which is discussed further in the Hydrology and Water Quality chapter of this EIR), treated effluent flows would be pumped to either the lined evaporative ponds in the southern portion of the project site or the subsurface drip dispersal system, which would be located within the open space areas adjacent to Skyway. The lined evaporative ponds would be used during the wet weather season (between November and March) or during periods of inclement weather, whereas the subsurface drip dispersal system would be used during the dry weather season (between April and October), particularly during the summer months.

Table 4.12-2
Wastewater Flow Estimates

Facility	Factor	Flow Rate	Estimated Flow
Residential (Primary Dwelling)	165 units	350 gpd/unit[1]	57,750 gpd
Residential (Accessory Dwelling)	82 units	100 gpd/unit[1]	8,200 gpd
Commercial	17.3 acres	1,200 gpd/acres[2]	20,760 gpd
Gas Station/Convenience Store	6 bays	500 gpd/bay[3]	3,000 gpd
Mini-Storage	1 unit	100 gpd/unit[1]	100 gpd
Sanitary Waste Disposal Station	10 vehicles	700 gpd/vehicle1	7,000 gpd
Total			**96,810 gpd**

1 Based on USEPA Onsite Wastewater Treatment Systems Manual.
2 Pursuant to the Vallecitos Water District 2018 Water, Wastewater, and Recycled Water Master Plan.
3 Pursuant to the Butte County On-Site Wastewater Systems Ordinance.

Source: NexGen Engineering & Consulting, 2023.

With regard to the drip dispersal system, the system would be comprised of special drip tubing that discharges the treated wastewater in small, precise doses. The tubing would be placed at or slightly below the ground surface to make use of the most biologically active soil zone for distribution, nutrient uptake, and evapotranspiration of the wastewater. The drip dispersal system would be located at a distance of greater than 50 feet from the existing drainage course, which runs through the open space areas and nearest property line. Thus, the system would meet the setback requirements specified in Table 3 of the General Order 2014-0153-DWQ-R5309.[11] In regard to potential impacts to groundwater, the water discharged to the ground surface is not expected to infiltrate the underlying bedrock. If the treated wastewater does reach groundwater levels, the effluent will have already been treated to State standards for discharge to groundwater.

A water balance analysis was performed as part of the Wastewater Capacity Study performed to assess the storage capacities of the ponds for the processed wastewater

[11] Central Valley Regional Water Quality Control Board. *Notice of Applicability (NOA), Water Quality Order No. 2014-0153-DWQ-R5309, Tuscan Ridge Base Camp, Wastewater Treatment Facility, Butte County*. April 26, 2019.

and the ability of the drip dispersal system to contain the discharge (outflow) of the wastewater without discharging from the land application area. The analysis was submitted to the RWQCB, which requested more information showing that the proposed wastewater treatment system would have the capacity to serve the proposed project. The following comments have been received from the RWQCB on the water balance analysis to date:

- The seasonal precipitation used in the pond sizing water balance calculations must be based on the 100-year return annual total precipitation distributed monthly in accordance with average precipitation values. The calculations must demonstrate adequate capacity to maintain two feet of freeboard in the ponds;
- Provide justification of the use of a 1.5 multiplier given the type and size of evaporators proposed;
- Use precipitation data representative of the site location; and
- Provide water balance calculations that utilize multiple years of average rainfall in addition to one year of 100-year rainfall to demonstrate adequacy of wastewater storage and disposal system.

The water balance analysis was updated to address the above comments and resubmitted to the RWQCB. Pursuant to the Wastewater Capacity Study, the water balance analysis demonstrates that over the course of 10 calendar years, the proposed wastewater treatment system would have the capacity to capture and distribute the treated wastewater generated on-site. Upon approval of the water system analysis, the RWQCB is anticipated to issue a Notice of Applicability for regulatory coverage under General Order 2014-0153-DWQ-R5309.

With respect to the sanitary waste disposal station, the facility would be primarily used by septage pumpers. Given that septage pumpers dump substantially more sewage than an RV, the Wastewater Capacity Study conservatively assumed that all vehicles using the station would be septage pumpers, which would result in 3,500 to 7,000 gpd. Given that the total estimated wastewater flows would not exceed the discharge limit of 100,000 gpd, the on-site wastewater treatment system would have adequate capacity to serve the proposed project.

It should be noted that PID would provide maintenance of the proposed wastewater treatment system. The PID's maintenance would be covered by an extraterritorial service agreement or annexation of the project site into the PID service area, which would be subject to approval by the Butte LAFCo. In the absence of an approved agreement or annexation to the PID, the County would require the formation of a CSA to fund operations and maintenance of the water and wastewater systems.

Based on the above, the proposed wastewater treatment system, including the lined evaporative ponds and the subsurface drip dispersal system, is anticipated to have adequate capacity to serve the demand generated by the proposed project. However, because the RWQCB has not approved the water system analysis, coverage under General Order 2014-0153-DWQ-R5309 cannot be ensured at this time. Therefore, the proposed project could result in a determination that the proposed wastewater system

does not have adequate wastewater treatment capacity to serve the project's projected demand, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.12-3 Implement Mitigation Measure 4.7-2(c).

4.12-4 Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals, or conflict with federal, State, and local management and reduction statutes and regulations related to solid waste. Based on the analysis below, the impact is *less than significant*.

As previously discussed, the project site is not currently served by a solid waste service provider. As part of project approval, solid waste and recycling collection services would be provided by NRWS, which primarily serves the northeast portion of Butte County. Recyclables and solid waste collected by NRWS are ultimately disposed of at the Neal Road Recycling and Waste Facility, located at 1023 Neal Road approximately seven miles to the southeast of the City of Chico. The landfill at the Neal Road Recycling and Waste Facility is permitted to accept a maximum of 25,271,900 cubic yards of waste.[12] The landfill has a remaining capacity of 20,847,970 cubic yards and is anticipated to cease operations in 2048.

Overall, following development of the project site, the proposed project could result in a maximum building square footage of 4,434,408 sf, which is a conservative assumption that does not account for acreage within the residential, commercial, and Special Utility District areas of the project site that would contain landscaping, open space, or parking areas. In addition, the Special Utility District areas would primarily include the proposed wastewater improvements discussed above, which would not generate a substantial amount of construction waste. Of the 163.12 total acres within the project site, 36.9 acres, or about 23 percent, are planned for residential development. As such, the proposed project is reasonably assumed to include 1,019,913.84 sf of residential building square footage (4,434,408 * 0.23) and 3,414,494.16 sf of non-residential building square footage. According to the USEPA report, Estimating 2003 Building-Related Construction and Demolition Materials Amounts, residential construction activities generate an average of 4.39 pounds per square foot (lbs/sf) of waste and non-residential construction activities generate an average of 4.34 lbs/sf of waste.[13] Therefore, applying such an amount to buildout of

[12] California Department of Resources Recycling and Recovery. *SWIS Facility/Site Activity Details Neal Road Recycling and Waste Facility (04-AA-0002)*. Available at: https://www2.calrecycle.ca.gov/SolidWaste/Site/Details/108. Accessed October 2023.

[13] U.S. Environmental Protection Agency. *Estimating 2003 Building-Related Construction and Demolition Materials Amounts.* 2009.

the proposed project would produce approximately 19,296,326.41 lbs (9,648.2 tons) of construction waste (4.39 * 1,019,913.84 + 4.34 * 3,414,494.16).

The CALGreen Code requires at least 65 percent diversion of construction waste for projects permitted after January 1, 2017. As such, a minimum of 6,271.3 tons of waste would be diverted away from landfill disposal during construction. Considering the applicable CALGreen Code requirements, buildout of the proposed project would be anticipated to produce up to 3,376.9 tons of waste during construction, using conservative assumptions. Construction waste generation represents a short-term increase in waste generation. Considering that the Neal Road Recycling and Waste Facility landfill has a remaining capacity of 82.5 percent of the total permitted capacity of the landfill, the proposed project's construction waste would represent only an incremental contribution to the waste received at the landfill, and a less-than-significant impact would occur.

Operational solid waste generation from the proposed project has been estimated based on an average waste generation rate for households, commercial square footage, and industrial square footage, as published by CalRecycle.[14] The total number of residences would produce approximately 2,017.95 lbs/day (1.01 tons/day) (165 * 12.23) of operational solid waste. The total commercial square footage of the proposed project would produce approximately 9,003.85 lbs/day (4.5 tons/day) (692,604 sf/1,000 * 13 lbs) of operational solid waste. As previously discussed, the Special Utility District areas would primarily include the proposed wastewater improvements discussed above, which would not generate a substantial amount of operational waste. Overall, operational solid waste associated with the proposed project would total 5.51 tons/day. Considering that the Neal Road Recycling and Waste Facility landfill has a remaining capacity of 82.5 percent, the proposed project's operational waste would represent only an incremental contribution to the remaining capacity at the landfill.

Based on the above, the proposed project would not generate solid waste in excess of State or local standards or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. In addition, the project would not conflict with applicable federal, State, and local management and reduction statutes and regulations related to solid waste. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the

[14] California Department of Resources Recycling and Recovery. *Estimated Solid Waste Generation Rates*. Available at: https://www2.calrecycle.ca.gov/wastecharacterization/general/rates. Accessed November 2023.

change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

The cumulative setting for impacts related to utilities encompasses buildout of the applicable service areas of public service and utility providers discussed in this chapter. Additional detail regarding the cumulative project setting can be found in Chapter 6, Statutorily Required Sections, of this EIR.

4.12-5 Increase in demand for utilities and service systems associated with the proposed project, in combination with future buildout of the Butte County General Plan. Based on the analysis below, the cumulative impact is *less than significant*.

The following discussions provide an analysis of the proposed project's contribution to cumulative impacts associated with water supply, wastewater treatment, dry utilities, and solid waste within Butte County.

Water Supply

Unincorporated areas of Butte County are provided domestic water service by various municipal water companies, investor-owned utilities, and irrigation districts. As cumulative development within the County occurs, a corresponding increased demand for water supplies would result. However, as discussed under Impact 4.12-2, the aquifer that supports the project site is very productive, and the estimated water demand associated with the proposed project (110,042 gpd) would be below the documented usage of the existing on-site well (between 325,000 and 425,000 gpd). Thus, future demand of the aquifer generated by future development is not expected to exceed supplies in any year or hydrologic condition. Furthermore, it should be noted that future development projects within the project vicinity are not currently planned. Finally, in the event that future development projects are proposed, new water infrastructure required as part of such projects would be required to be designed and constructed in accordance with applicable requirements set forth by the BCPH EH Division, as well as Section 12.0 (Water Supply) of the Butte County Public Works Improvement Standards. Compliance with the foregoing requirements and standards would ensure new water infrastructure installed as part of future development within Butte County is constructed in conformance with proper materials and sizing. Therefore, adequate water supply would be available to serve cumulative development within Butte County, in conjunction with the proposed project, and a less-than-significant impact would occur.

Wastewater Treatment

Unincorporated areas of Butte County are provided wastewater treatment services by Community Wastewater Systems, County Service Areas, or on-site septic systems. Similar to the proposed wastewater infrastructure improvements discussed under Impact 4.12-1, in the event that future development projects are proposed, new wastewater infrastructure required as part of such projects would be required to be designed and constructed in accordance with the applicable standards set forth in Section 11.0 (Sewage Disposal) of the Butte County Public Works Improvement Standards and the Butte County On-Site Wastewater Manual, ensuring that new

sewer lines and other infrastructure are constructed in conformance with proper materials and sizing. Furthermore, the on-site wastewater system is sized and designed to treat sewer flows from only the proposed project. Thus, development of the proposed project would not affect whether other wastewater treatment service providers in Butte County have adequate capacity to meet existing commitments. Therefore, impacts related to the increase in demand for wastewater treatment services and facilities associated with the proposed project, in combination with future development within Butte County, would be considered a less-than-significant impact.

Electricity and Telecommunications Facilities

Environmental effects associated with the construction of new or expanded electricity and telecommunications facilities would primarily be project-specific, rather than cumulative. As noted under Impact 4.12-1 above, while the project would include new connections to existing electrical and telecommunications infrastructure located in the project vicinity, substantial extension of existing off-site infrastructure would not be required. In addition, the proposed project would not include a natural gas connection; rather, propane or another form of gas may be used by both residential and commercial users, for residential and commercial applications, through individually established service from a local provider. Therefore, the proposed project would result in a less-than-significant cumulative impact related to construction of new or expanded electricity, natural gas, and telecommunications facilities.

Solid Waste

As previously discussed, according to CalRecycle, the Neal Road Recycling and Waste Facility landfill has a remaining capacity of 20,847,970 cubic yards and an estimated closure date of 2048. Construction waste generated by development facilitated by future development within Butte County would be required to comply with the applicable provisions of the CALGreen Code. The CALGreen Code requires at least 65 percent diversion of construction waste for projects permitted after January 1, 2017. In addition, recyclables collected and processed by NRWS and/or other waste collection providers would be bundled and transported to recycling centers, further preserving remaining capacity at the Neal Road Recycling and Waste Facility landfill. Considering the remaining capacity at the landfill to serve future development, adequate capacity would be available to serve cumulative development within Butte County, in conjunction with the proposed project, and a less-than-significant impact would occur.

Conclusion

Based on the above, adequate water supply, electricity, natural gas, telecommunication facilities, and landfill capacity would be available to serve cumulative development in conjunction with the proposed project. In addition, development of the proposed project would not affect the capacity of other wastewater treatment service providers in Butte County to meet existing commitments. Therefore, a ***less-than-significant*** cumulative impact would occur.

Mitigation Measure(s)

None required.

4.13. WILDFIRE

4.13. WILDFIRE

4.13.1 INTRODUCTION

The Wildfire chapter of the EIR summarizes the existing wildfire setting and identifies the wildfire potential within the project area. The chapter describes the fire types that occur in the project region, wildland fire hazards associated with the project site, the fire history in the project region, the fuel treatment projects, such as mechanical thinning and prescribed fire, within the region, and consideration of site-specific factors that may affect the wildfire potential at the project site. The information contained in the analysis is primarily based on the Fire Risk Reduction Plan (FRRP) (see Appendix M)[1] prepared by Reax Engineering, Inc. Further information was sourced from publicly available information provided by the California Department of Forestry and Fire Protection (CAL FIRE), the California Public Utilities Commission (CPUC), the Butte County Cooperative Fire Agencies (BCCFA), as well as the 2030 Butte County General Plan,[2] the 2030 Butte County General Plan EIR,[3] and the 2030 Butte County General Plan Supplemental EIR (SEIR).[4] As discussed in further detail below, through an annual cooperation agreement, CAL FIRE and the Butte County Fire Department (BCFD) function together as a fully consolidated fire protection agency and provide cost-effective fire protection service for Butte County. Therefore, the fire service provider for the area is henceforth referred to only as the BCFD.

4.13.2 EXISTING ENVIRONMENTAL SETTING

The project site, located on the southeast side of Skyway, in unincorporated Butte County, between Chico and Paradise, was formerly the Tuscan Ridge Golf Course, which included a clubhouse and bistro restaurant and was in operation through 2017. The site is currently highly disturbed, with large graveled and/or paved areas void of vegetation, due to damage sustained immediately before, during, and after the 2018 Camp Fire. In mid-2018, prior to the Camp Fire, the site was used as a Pacific Gas and Electric Co. (PG&E) vegetation management camp. The site was subsequently burnt during the wildfire, then leveled and graveled for use as a base camp and staging area by PG&E and ECC Constructors during the wildfire response. PG&E continued to use portions of the site as a base camp for debris removal until March 2020. Primary site access is provided through an existing driveway from Skyway, which is located near the center of the site, and a secondary access point from Skyway was created in the northeastern portion of the site during the site's use as a base camp, but has since been blocked off by boulders and is currently inaccessible.

An existing drainage ravine is located within the northwestern portion of the site, generally parallel with Skyway. Generally following the alignment of the ravine within the northern portion of the site is an existing meandering path associated with the prior use of the site as a golf course. Three remnant buildings from the golf course operation also remain on the site. A small area near the secondary access point location is currently being used for construction materials storage and includes a portable administrative building.

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1 Reax Engineering, Inc. *Tuscan Ridge Project Fire Risk Reduction Plan*. February 10, 2023.
2 Butte County. *Butte County General Plan 2030.* November 6, 2012.
3 Butte County. *Butte County General Plan 2030 Draft EIR*. April 8, 2010.
4 Butte County. *Butte County GPA & Zoning Ordinance Update Draft Supplemental EIR*. May 31, 2012.

The project site is bound by Skyway to the north and large undeveloped parcels to the east, south, and west, with the exception of Paradise Rod & Gun Club, which is located adjacent to the northeast border of the site. Butte Creek is located to the north of, and runs roughly parallel to, Skyway. The Butte Creek Ecological Preserve is also located north of the site, across Skyway, with Butte Creek Canyon located further to the northeast. Butte Creek and the Butte Creek Ecological Preserve are separated from the project site by Skyway and an approximately 380-foot decline in elevation.

The following section describes the existing wildfire setting in the project region, including fire types, large fire history, wildland fire hazards, fire agencies and resources in the project region, fuel treatment efforts, emergency vehicle access, existing emergency evacuation procedures, and public safety power shutoffs.

Fire Types

The following sections describe the fire types to which various areas of Butte County are at risk of experiencing.

Wildfires

Wildfires occur on mountains, hillsides, and grasslands. Vegetation, wind, temperature, humidity, and slope are all factors that affect how wildfires spread. In Butte County, native vegetation, such as chaparral, sage, and grassland, provide fuel that allows wildfires to spread easily across large tracts of land. Such plant species are capable of regeneration after a fire, making periodic wildfires a natural part of the local ecology. Butte County is considered a rural/suburban County with wildfire as the most prevalent fire type. The climate of the Butte County region keeps the grass dry, which makes the region's grass more readily combustible during fire season. As discussed in further detail in the Topography and Vegetation subsection, steep slopes bring grass and brush within reach of upward-moving flames, while impeding the access of firefighting equipment. Seasonal drought conditions exacerbate fire hazards.

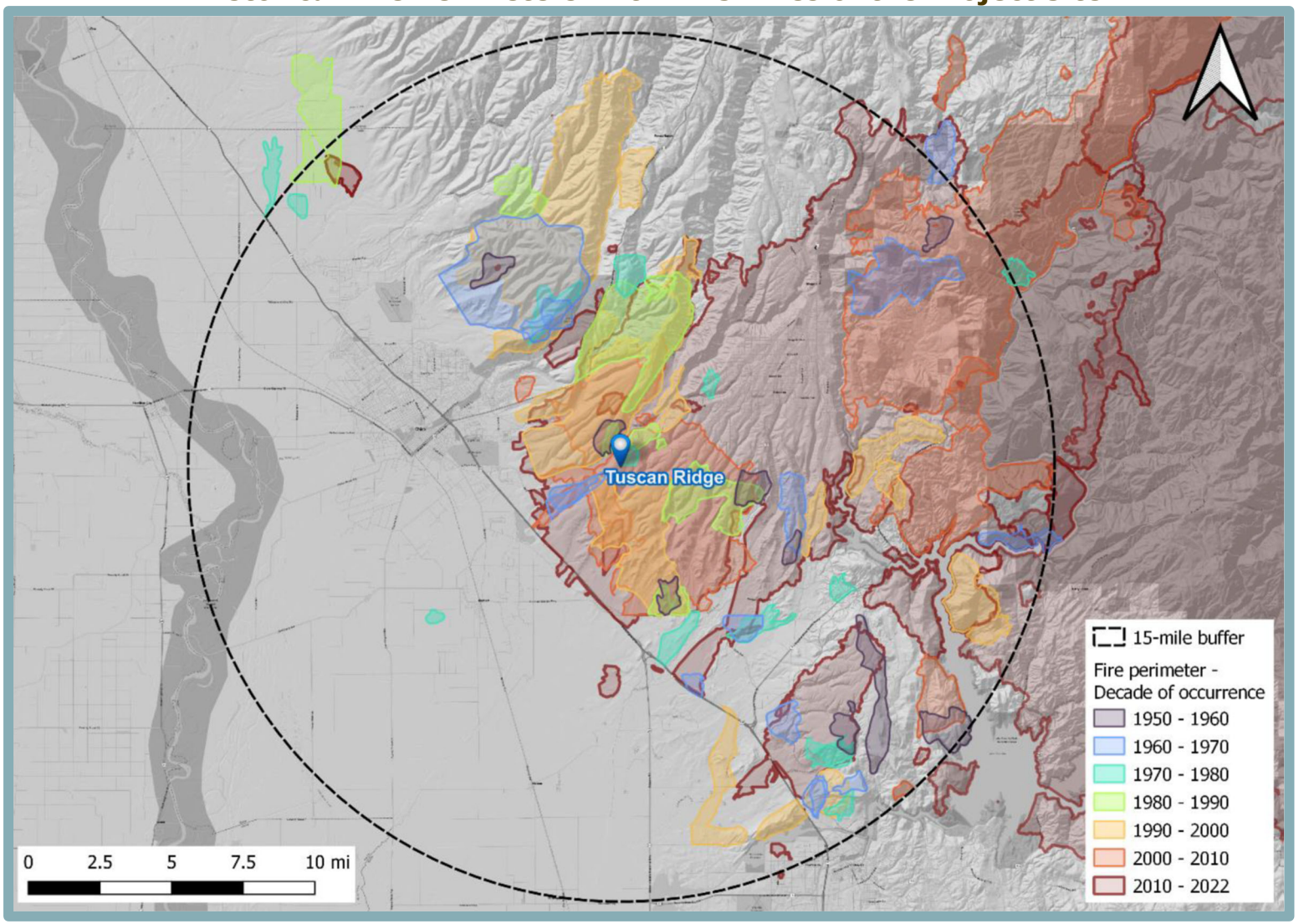
Structural Fires

Urban fires occur in developed environments, destroying buildings and other humanmade structures. Structural fires are often caused by faulty wiring or mechanical equipment or combustible construction materials, and are able to proliferate due to the absence of fire alarms and sprinkler systems. The fires have been due largely to human accidents, although deliberate fires (arson) may be a cause of some events. Older buildings that lack modern fire safety features may face greater risk of damage from fires. To minimize fire damage and loss, Chapter 38A, Fire Prevention and Protection, of the County Code, which is intended to supplement the California Fire Code (CFC), requires the maintenance of defensible spaces and hazardous vegetation management, among other things.

Large Fire History

The FRRP indicates that 11 larger wildfires, defined as timber fires 10 acres or greater, brush fires 30 acres and greater, and grass fires 300 acres or greater, have occurred or spread to within a mile of the project site, as shown in Figure 4.13-1 and summarized in Table 4.13-1. The Camp Fire destroyed the golf course that formerly occupied the project site in 2018.

Figure 4.13-1
Historical Fire Perimeters Within 15 Miles of the Project Site



Source: Reax Engineering, Inc., 2023.

Table 4.13-1
Large Fires Within a One-Mile Radius of the Project Site

Fire Name	Year	Area (acres)	General Cause	Specific Cause
Camp	2018	153,336	Human	Power Line
Humboldt	2008	23,344	Human	Arson
Honey	2007	726	Human	Power Line
Skyway	2002	2,141	Natural	Lightning
Doe Mill	1999	10,856	Natural	Lightning
Burton	1992	5,914	Human	Equipment Use
Skyway	1961	638	Undetermined	Unknown/Unidentified
Skyway #3	1983	604	Undetermined	Unknown/Unidentified
Skyway #10	1961	538	Undetermined	Unknown/Unidentified
Centerville	1960	504	Undetermined	Unknown/Unidentified
Humbug Road	1979	264	Undetermined	Unknown/Unidentified

Source: Reax Engineering, Inc., 2023.

Historical Ignition Density

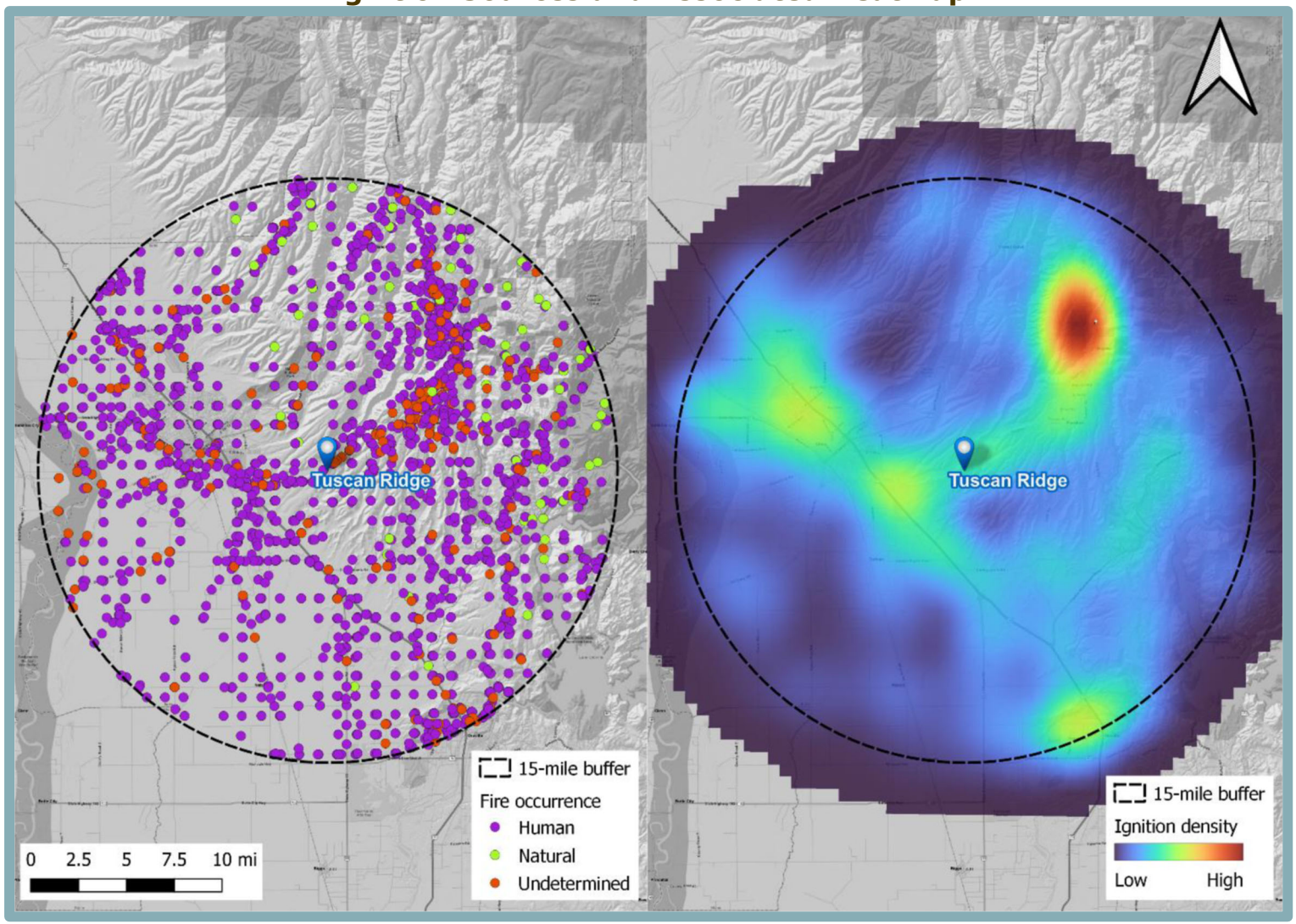
While historical large fire perimeters inform fire activity and spread patters that commonly occur in a region, smaller fires may trigger an evacuation and threaten structures as well. Thus, an assessment of local ignitions further improves understanding of potential fire threat. Based on the U.S. Forest Service Fire Occurrence Database (FOD), Figure 4.13-2 presents all recorded ignitions within 15 miles of the project site, color-coded to classify the cause of the fires as human, natural, or undetermined ignition source. Figure 4.13-2 also shows an associated heatmap of the ignition density, which triangulates the areas that have historically experience the greatest density of ignitions.

Human-caused fires describe a range of possible ignition causes including, but not limited to, debris burning, vehicle, utility, and campfires. The locations of such ignitions often follow linear features, such as roads, or tend to be clustered near centers of human activity, such as residential neighborhoods or campgrounds. Although human-caused fires tend to be smaller and are more successfully suppressed in the initial attack phase than lightning-caused fires, such ignitions are of significant interest because human-caused fires often occur under high winds and can become especially large. Contributing factors include expansion of human-caused ignitions into regions during seasons where wind speeds are climatologically higher and the reduced tactical capacities of aerial suppression efforts during high winds.

Locations of lightning-caused ignitions tend to be both more random and more uniform than human-caused fires. Lightning-caused ignitions are indifferent to geographic location and, as such, do not display dominating trends such as following linear features. Lightning-caused ignitions are also less common where certain fuel types are prevalent, such as wetlands or sparsely vegetated areas.

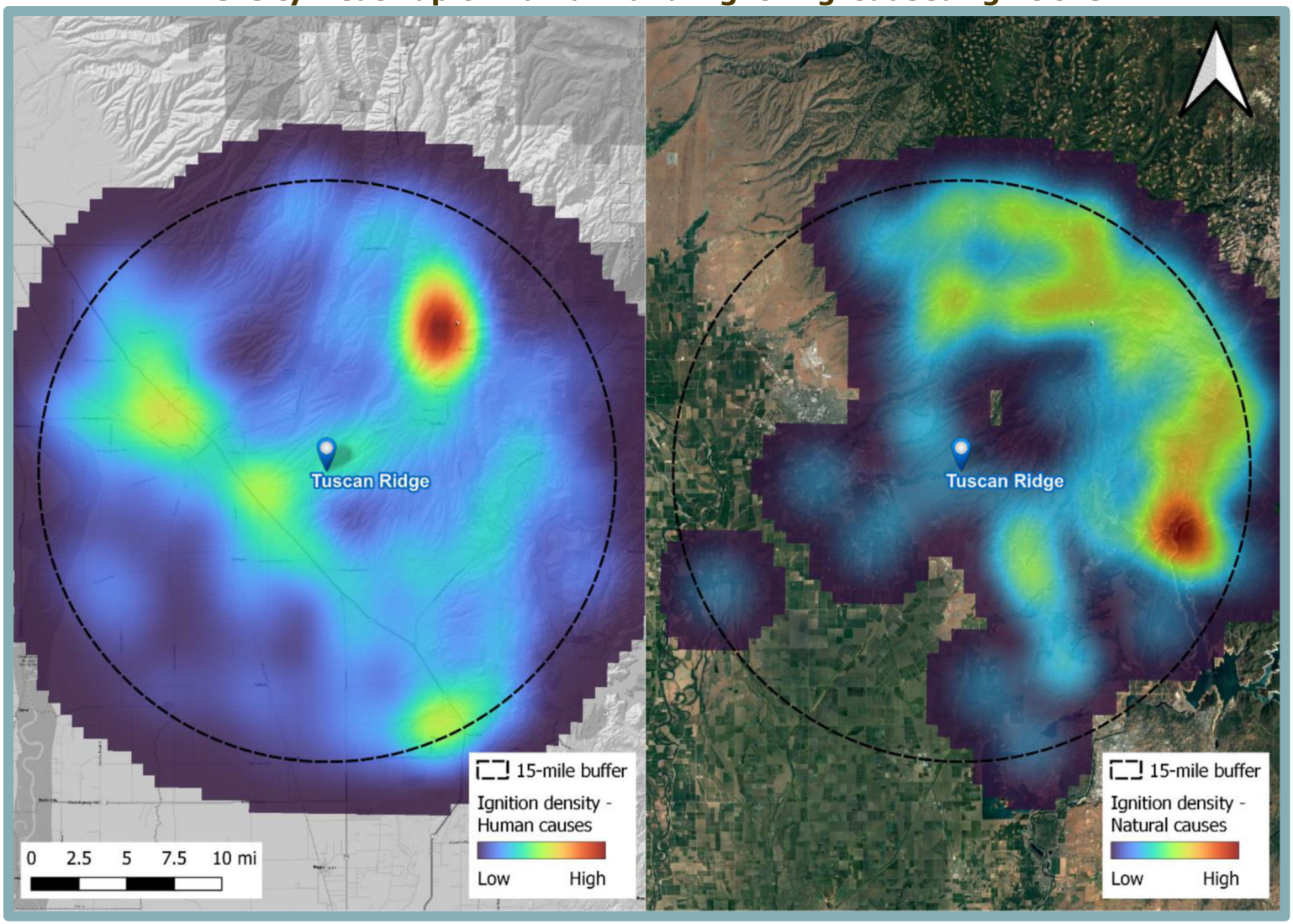
Figure 4.13-3 consists of separate heatmaps prepared using the FOD that show a comparison of human-caused and lightning-caused ignition densities. As shown therein, human-caused ignitions are more common that lightning-caused ignitions in the project vicinity. In addition, Figure 4.13-3 shows that human-caused ignitions are most dense along roadways, whereas lightning-caused ignitions predominantly occur in higher elevation locations east of the project site.

Figure 4.13-2
Ignition Sources and Associated Heatmap



Source: Reax Engineering, Inc., 2023.

Figure 4.13-3
Density Heatmap of Human- and Lightning-Caused Ignitions



Source: Reax Engineering, Inc., 2023.

Comparing the historical fire perimeters in Figure 4.13-1 and the ignition heatmap presented in Figure 4.13-2 shows that although a moderately heightened density of ignitions have occurred in the hotspot 14 miles to the southeast of the project site, large fires that begin in that hotspot do not typically spread as far north as far as State Route (SR) 70, let alone reach the project site.

Wildland Fire Hazards

The following section includes a discussion of the potential for wildland fires to occur in the project area and the agencies and resources available for wildland fire suppression.

Wildfire Classifications

With respect to wildland fires, previous significant wildland fires within the State have precipitated the passage of statutes necessitating the classification of wildland fire hazard areas, according to a location's potential for causing ignitions to buildings. Such classifications are referred to as Fire Hazard Severity Zones (FHSZs) and provide the basis for application of various mitigation strategies to reduce risks to buildings associated with wildland fires.

Pursuant to Government Code Section 51178, Very High FHSZs are determined by the Director of Forestry and Fire Protection, based on consistent statewide criteria and the severity of fire hazard that is expected to prevail in such areas. Very high FHSZs are based on fuel loading, slope, fire weather, and other relevant factors, including areas where Santa Ana, Mono, and Diablo winds have been identified by the BCFD as a major cause of wildfire spread. Public Resources Code (PRC) Sections 4201 through 4204 direct the BCFD to map fire hazards within State Responsibility Areas (SRAs), based on relevant factors such as fuels, terrain, and weather. SRAs are recognized by the Board of Forestry and Fire Protection as areas where the BCFD is the primary emergency response agency responsible for fire suppression and prevention.

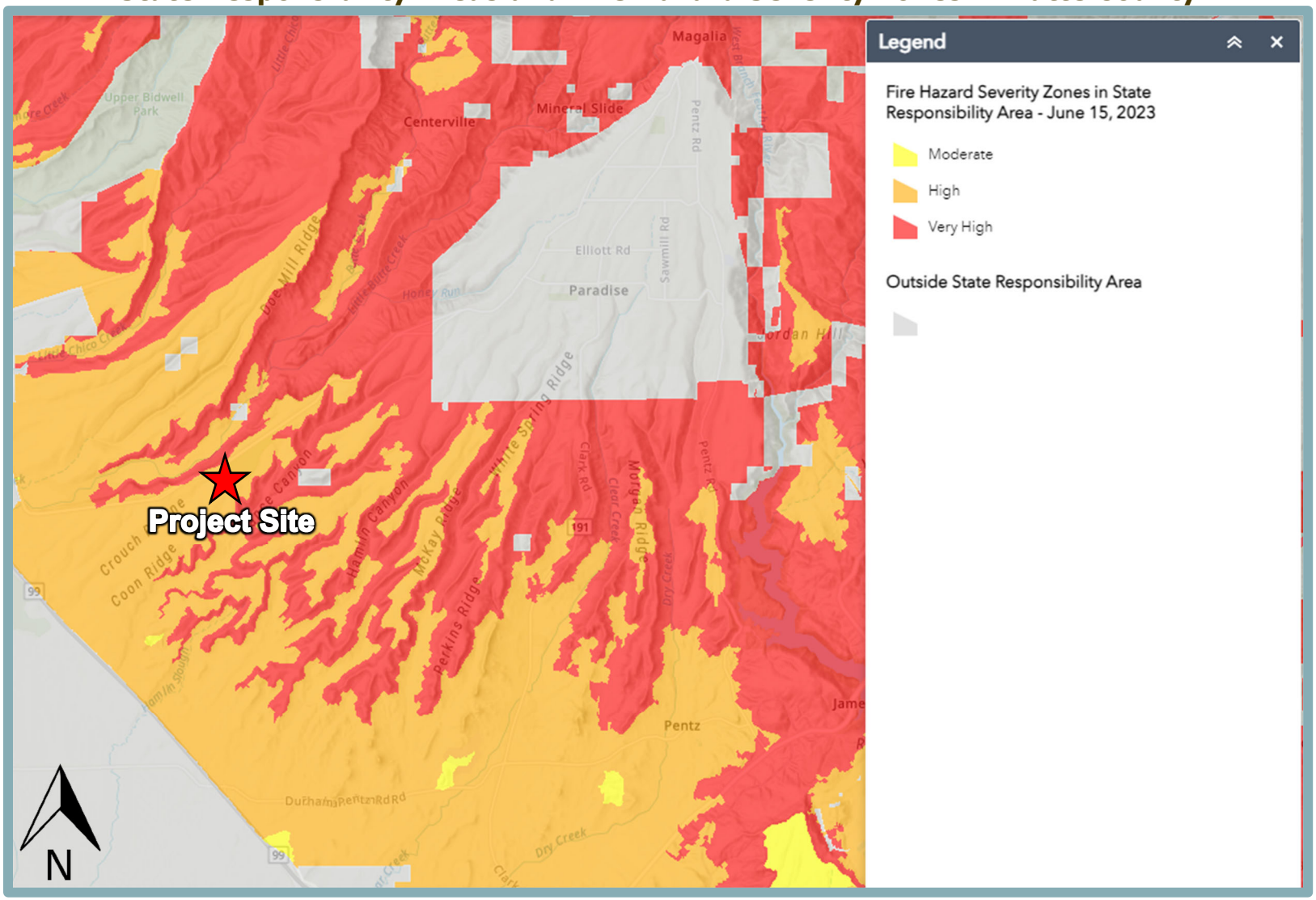
The project site is located within a SRA. Therefore, the BCFD is the primary emergency response agency responsible for fire suppression and prevention. As shown in Figure 4.13-4, the project site is identified as being within a High FHSZ area. Additionally, although the project site itself is not located within a wildland-urban interface (WUI) zone, the site is surrounded on all sides by land within a WUI zone. A WUI zone is defined as an area where buildings and infrastructure mix with areas of wildland vegetation susceptible to ignition.

Topography and Vegetation

Topography, which includes slope and aspect, can play a significant role in wildfire risk. Fires burn faster uphill than downhill, due to fuels above a fire being brought into closer contact with upward moving flames. In addition, the process of heat transfer is influenced by topography, because heat rises (convection) and heat transfer through convection tends to move upward. Furthermore, during wildfires, burning materials on the forest floor also create convection currents that preheat the leaves and branches of shrubs and trees above the fire. Heat transfer, therefore, occurs more rapidly through fuels up a slope, resulting in fire traveling more quickly upslope than downslope. In addition, vegetation on south-facing slopes in the Northern Hemisphere receives greater heating and drying by solar radiation from early morning to sunset. North-facing slopes only receive varying amounts of solar radiation depending on season and latitude.

Types of terrain that can result in intense fire behavior include chimneys, chutes, and saddles. A chimney is defined as a narrow side canyon that tilts up toward a ridge line, a chute is defined as a collection of fairly narrow and straight depressions that lead up to a ridgeline, and a saddle is defined as a depression or pass in a ridgeline.

Figure 4.13-4
State Responsibility Areas and Fire Hazard Severity Zones in Butte County



Source: California Department of Forestry and Fire Resources, Fire Hazard Severity Zone Viewer, 2023.

Butte County covers an area of approximately 1,670 square miles and can be divided into general topographical areas: a valley area, a foothill region east of the valley area, and a mountain region east of the foothills. Elevations range from 90 to 7,870 feet above mean sea level (msl). Butte County's foothills and mountains are carved up by several river drainages, the largest being the Feather River watershed which culminates in Lake Oroville. The northern part of Butte County is bisected by Butte Creek to the west of Paradise and by Big Chico Creek which separates the Forest Ranch and Cohasset ridges. The topography in these drainages differs significantly from the deep and very steep, heavily timbered drainages of the Feather River watershed to the moderately steep wide and generally brush filled Butte Creek and Chico Creek drainages. The presence of steep and significant slopes contributes to wildfire risks related to topography in the project region.

Butte County vegetation is grouped into three general fuel types: grass, brush and timber. The valley and lower foothills, up to approximately 1000-foot elevation, are covered by the grass fuel type. This fuel type is comprised of fine dead grasses and leaf litter which is the main carrier of fire. Fires in this fuel type react dramatically to changes in weather, particularly low relative humidity and high wind speed. Grassland fires can be very difficult to control during gusty wind conditions and often spread over a large area quickly, threatening life and property. The mid-foothill and lower mountain areas, generally between 1000 and 2000 feet in elevation, are dominated by brush. Fire in this fuel type can burn readily, especially later in the summer as live fuel moistures drop to critical levels. Brush fuel, unlike grass fuel, does not react readily to changes in relative humidity.

Brush fires can be difficult to control under normal summer burning conditions when their fuel moistures reach critical levels and become very difficult to control on steep topography and when subjected to strong winds. The mountainous areas above 2000 feet in elevation are generally covered by the timber fuel type. Timber fires burn readily, especially if they occur in overstocked stands, in stands with down dead material, and/or later in the summer as live fuel moistures drop. Timber fires can be difficult to control under normal summer burning conditions, but they become very difficult to control on steep topography and when subjected to strong winds. The existing vegetation within the project region provides potential fuel for wildfire.

The terrain of the approximately 163-acre project site is varied from flat to gently sloped, with elevations ranging from approximately 635 feet above msl in the west to approximately 945 feet above msl in the east. The slope of the project site is generally south-facing, which leads to more rapid drying of fuels from increased sun exposure. Vegetation on the site consists primarily of sparse ruderal vegetation, along with scattered oak and pine trees. An existing drainage ravine is located within the northwestern portion of the site, generally parallel with Skyway, and includes a culvert under the main access driveway, as well as under an existing access easement in the western portion of the site. An existing outfall is located near the westernmost border of the site. A number of easements are present throughout the project site, including the access easement within the western portion of the site for the adjacent agricultural property, as well as power utility easements across the site. Three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Course currently exist on-site: a 2,440-square foot (sf) grill building, an 1,830-sf clubhouse, and a Quonset hut. In addition, an existing potable water well and associated system, as well as an existing wastewater treatment system, including septic tanks, leach field, and disposal ponds, are located in the southwestern portion of the site.

Additionally, the project site is located within a rural residential and agricultural area of Butte County. Primarily undeveloped land with scattered vegetation is located south and west of the

site, which provide potential fuel sources for wildfire. The nearest existing development is the Paradise Rod & Gun Club, which is located adjacent to the northeast border of the site. Rural residences are located north of the project site, but the developed area is separated from the project site by Skyway, as well as an approximately 2,700-foot distance and an approximately 434-foot decline in elevation.

Climate

Weather patterns in the project area are generally characterized by hot, dry summers of a Mediterranean-like climate and cool, wet winters. The average maximum temperature between July and September, when temperatures are hottest, ranges from 90 degrees Fahrenheit to 95 degrees Fahrenheit. Record highs for the same months range from 105 degrees Fahrenheit to 110 degrees Fahrenheit. Precipitation falls predominantly between October and April. Average annual precipitation is approximately 50 inches with dry years receiving as little as 13 inches and wet years receiving over 100 inches at higher elevations.

Prevailing Winds

Winds in the project area are predominantly out of the southwest with speeds typically ranging up to 13 miles per hour (mph) with lower speeds occurring more frequently. Winds from 13 to 19 mph occur about seven percent of the year and from 19 to 32 mph approximately five percent of the time. Winds greater than 32 mph and less than 39 mph occur approximately 0.3 percent of the time. Winds from the west-southwest to south-southeast occur approximately 30 percent of the time with winds from the northeast occurring 18 percent of the time. The predominantly southwesterly direction of prevailing winds suggests that, during the majority of the year, winds would generally facilitate the spread of fire towards the north of the project site.

The project site has the potential to be subject to Diablo wind events. Diablos are hot and dry winds that blow through Northern California each year, usually between the months of October and April. Diablos occur when high pressure forms in the Great Basin (Western Utah, much of Nevada, and the Eastern border of California) with lower pressure off the coast of California. This pressure gradient drives airflow toward the Pacific Ocean. As air travels west from the Great Basin, orographic lift dries the air as it rises in elevation over mountain ranges. As air descends from high elevations in the Sierra Nevada, its temperature rises dramatically. A subsequent drop in relative humidity accompanies this rise in temperature. This drying/heating phenomenon is known as a katabatic wind. Relative humidity in Northern California during Diablos is often ten percent or lower. Diablo winds typically blow from the northeast toward the southwest. Sustained Diablo winds of 40 mph with gusts of 60 mph are not uncommon in Northern California.

Fire Agencies and Resources

Several fire agencies provide fire protection services within the project area, including both wildland fire and structural fire response. The BCFD and CAL FIRE provide fire and emergency services to the unincorporated areas of Butte County, protecting over 1,600 square miles of land. Since 1931, the County has contracted with CAL FIRE to provide staffing to the BCFD through an annual cooperative agreement. Under the terms of the agreement, the County funds CAL FIRE professional command, firefighting, and administrative staff to operate the BCFD. Through the arrangement, CAL FIRE and the BCFD function together as a fully consolidated fire protection agency and provide cost-effective fire protection service for Butte County. Therefore, as previously noted, the fire service provider for the area is referred to only as the BCFD. Responsibility for wildland fire suppression at the project site is the sole responsibility of the State

(i.e., the BCFD), given that the project site is located within a SRA. Fire and rescue service for the project site are the responsibility of the BCCFA.

Butte County Cooperative Fire Agencies

The BCCFA would be responsible for providing fire and rescue services to the project site. Butte County and their partner communities (City of Gridley, City of Biggs, City of Oroville, and the Town of Paradise) benefit from an integrated, cooperative regional fire protection system provided by the BCFD through its cooperative fire protection agreements. The parent organization, the BCFD, has brought organizational elements and leadership where the cooperative fire protection system is administered and operated efficiently as one fire department. BCCFA operates 22 career-staffed fire stations and 16 volunteer fire stations that serve the 1,609 square miles of unincorporated communities in Butte County and the cities of Biggs, Gridley, and the Town of Paradise.

From these stations, BCCFA provides full-service fire protection, pre-hospital basic life support emergency medical services, technical rescue services and response to hazardous materials incidents. BCCFA maintains automatic-aid emergency response agreements with all fire protection agencies within and adjacent to the county. The BCFD Butte Unit also protects 97 square miles of southeastern Tehama County.

California Department of Forestry and Fire Protection

Wildland fire protection is provided either by the State (through the BCFD) or the federal government (through the U.S. Forest Service).

The State has direct protection responsibility for all State and private wildlands (or forest lands) in designated areas, and provides support and assistance to local jurisdictions in other areas of the State. The BCFD is responsible for wildland fire response at the project site. The BCFD Butte Unit serves the project area. The BCFD strives to meet the National Fire Protection Association (NFPA) 1710 guideline for fire department response time of five minutes 90 percent of the time.

The nearest BCFD station to the project site is the South Chico Fire Station (Station #44), located at 2334 Fair Street, approximately 6.4 miles west of the project site. Station #44 is a full-time staffed station. The full-time firefighters are augmented by seasonal and volunteer firefighters that support the emergency response capabilities of the BCFD. In addition to legal responsibility for wildland fires in SRAs, where the project site is located, the BCFD has mutual and/or automatic aid agreements, and, thus, may assist local fire agencies with structural fires and medical incidents under the closest resource concept.

Fuel Treatment Efforts

Fuel treatment efforts have been ongoing within the project region. Forest fuel treatments are used by managers for ecological restoration and reducing fire hazards. Due to past management decisions and long-term fire exclusion, forests are denser and are susceptible to severe wildfires. Fuel treatments aim to reduce the intensity and size of wildfires, increase species diversity, and restore forests to their historical condition. Two common types of treatments include:

- Mechanical thinning: cutting and clearing wood and brush; and
- Prescribed fire: burning existing fuel before more accumulates.

Based on proximity to homes and communities, one treatment may be used over the other. Several research studies show a combination of thinning, followed by burning of surface fuels, is most effective in promoting forest resilience to wildfire.[5]

Current fuel reduction efforts (i.e., the Chipper Program) would accomplish fuel reduction treatment efforts. The Butte County Fire Safe Council (BCFSC) Chipper Program provides free brush chipping for residents in Butte County. The Chipper Program continues to be available for local residents seeking to reduce fire hazards and improve defensible space around buildings and structures. The Chipper Program is funded through a National Fire Plan grant from the Cooperative Fire Program of the U.S. Forest Service, Department of Agriculture, Pacific Southwest Region, through the California Fire Safe Council.[6]

In addition, a potential project that is undergoing review for funding from FEMA is a fuels reduction project that has been proposed by Butte County and BCFSC. The project involves hazardous fuels reduction efforts along 12 miles of Skyway. The project would remove brush and small trees up to 35 feet from the edges of the road using masticators mounted on excavators. The project would include brush removal, pruning of trees, removal and chipping of understory trees, and thinning of overstory trees. If awarded, the funding would assist Butte County and BCFSC in implementing the project, which would reduce the risk of wildfire spread and potential impacts to evacuations via Skyway.

Emergency Vehicle Access

Fire access can be described as the means by which firefighters can enter an area to quickly mitigate a wildfire incident prior to spread to adjacent properties and critical infrastructure at risk. Primary access to the project site would be provided by two entrances from Skyway, on the northern border of the project site. In addition, the existing access easement in the western portion of the project site for the adjacent agricultural property would remain and could serve as additional emergency ingress/egress, if needed. Skyway would serve as the primary evacuation route during a wildfire event.

Emergency Evacuation Procedures

Butte County does not currently have an adopted emergency evacuation plan. However, in the event of a disaster or large-scale incident, the Butte County Office of Emergency Management (OEM) coordinates the overall response through the Emergency Operations Center (EOC). The County OEM is to alert and notify appropriate partner agencies and the public once aware of any threat to the Operational Area. When activated, the EOC provides a central location for responding and supporting agencies to collaborate response and recovery efforts, allowing for effective and efficient information dissemination and resource deployment. In non-disaster times, the Butte County OEM supports and coordinates disaster planning, community preparedness, mitigation, and training.

The Butte County Sheriff or his or her designee has the authority to order evacuations and/or shelter-in-place across the County, per California Penal Code Section 409.5. Operational procedures for major evacuations are detailed in the Butte County Emergency Operations Plan

[5] For example, see U.S. Department of Agriculture/Forest Service, Rocky Mountain Research Station. *Review of Fuel Treatment Effectiveness in Forests and Rangelands and a Case Study from the 2007 Megafires in Central Idaho USA (General Technical Report RMRS-GTR-252)*. January 2011.

[6] Butte County Fire Safe Council. *Chipper Program*. Available at: https://buttefiresafe.net/chipper-program/. Accessed January 2023.

(EOP). It is the responsibility of the Director of Emergency Management to implement the procedures through the County EOC. The procedures define the circumstances under which evacuations in the County may be necessary, as well as the roles and responsibilities of local response agencies. In general, any event that requires widespread evacuations including the project area would be managed on a situation-by-situation basis depending on the nature of the emergency and its dynamic development.

The implementation of an evacuation would occur through three operational phases: the decision phase, the evacuation phase, and the re-entry phase. The decision phase is initiated when the EOC and threatened areas determine that implementation of evacuations of vulnerable residents is necessary to preserve life. Upon receiving a recommendation that a regional evacuation may be necessary, and prior to the initiation of an evacuation, the EOC would implement tasks which would include identifying vulnerable areas and coordinating with local agencies regarding evacuation and sheltering resource needs. The evacuation phase is initiated at the time the decision to implement an evacuation is finalized, and would be coordinated by the EOC. The re-entry phase begins immediately following the completion of an evacuation. The decision to allow re-entry into impacted areas following an evacuation will be made jointly by the EOC Director, Law Enforcement, and the Unified Command. Re-entry traffic control would be directed by law enforcement, with support and coordination provided through the EOC. Re-entry would not be allowed until conditions within evacuated areas are favorable for residents to return.

Butte County has developed evacuation plans and maps for sub-regions of the County. The project site is located within the Butte County Evacuation Zone BUT-CSE-367, which includes the area from Butte Creek, south to just north of Neal Road, and SR 99, east to just east of the project site. If an evacuation is ordered due to a large-scale disaster such as a wildfire, residents of the proposed project would be directed to evacuate via Skyway, which is a designated emergency evacuation route.

Public Safety Power Shutoffs

In an effort to prevent fires, the electrical services provider for Butte County, PG&E, initiated public safety power shutoffs (PSPS) in 2019, which may continue in subsequent years until fire risks associated with power lines are decreased. PSPS events involve PG&E turning off electrical service during times when the weather is predicted to have a heightened fire risk from gusty winds and dry conditions. Dependent on the fire risks, the power outage events may occur in specific areas or for all PG&E customers across the County.

The CPUC adopted the High Fire-Threat District Map in 2018, which serves to assist in the public's protection from potential fire hazards associated with overhead powerline facilities and nearby aerial communication facilities by delineating fire-threat areas in the State.[7] Fire-threat areas are designated as Tier 1, 2, or 3, with Tier 1 defined as a High Hazard Zone, Tier 2 as an Elevated Hazard Zone, and Tier 3 as an Extreme Hazard Zone.

The project site is located within a Tier 2 zone, which is an area subject to an elevated risk from wildfires associated with overhead utility powerline facilities, including those that support

[7] California Public Utilities Commission. *Fire-Threat Maps and Fire-Safety Regulations Proceedings*. Available at: https://www.cpuc.ca.gov/industries-and-topics/wildfires/fire-threat-maps-and-fire-safety-rulemaking. Accessed January 2023.

communication facilities (see Figure 4.13-5). Based on the project site's location within a Tier 2 zone, the site could be subject to PSPS events.[8]

Throughout PSPS events, emergency services in Butte County remain functional with back-up power supplies, but many businesses and agencies are not operational, which can result in inadequate access to medical services and exposure to excessive heat or cold.

4.13.3 REGULATORY CONTEXT

The following sections provide a summary of the federal, State and local regulations pertaining to wildfire that are applicable to the proposed project.

Federal Regulations

The following are the federal environmental laws relevant to wildfire.

Healthy Forest Reforestation Act

In recognition of widespread declining forest health, the Healthy Forest Restoration Act (HFRA) was passed in 2003 to expedite the development and implementation of hazardous fuel reduction projects on federal land. A key component of the HFRA is the development of Community Wildfire Protection Plans (CWPP) as a mechanism for public input and prioritization of fuel reduction projects. A CWPP provides background information about a project area, discussion of community values at risk, community base maps, a fire risk assessment, and recommendations that identify treatment areas for reducing fuels and promoting education and awareness about wildland fires, as well as monitoring and assessment strategies. The Butte County CWPP provides a comprehensive analysis of wildfire-related hazards and risks in the WUI areas within the County, such as the communities of Cohasset, Forest Ranch, and Forbestown, and includes recommendations to assist stakeholders in preventing and/or reducing the threat of wildfires.[9]

State Regulations

The following are the State environmental laws and policies relevant to wildfire.

State Responsibility Area

Pursuant to PRC Sections 4125-4128, the Board of Forestry and Fire Protection classifies all lands in the State for the purposes of determining areas in which the financial responsibility of preventing and suppressing wildfire is primarily the responsibility of the State. The classified lands are termed SRA.

Fire Hazard Severity Zones

FHSZs are geographical areas designated pursuant to California PRC Sections 4201 through 4204 and classified as Very High, High, or Moderate in SRAs or as Local Agency Very High FHSZs designated pursuant to California Government Code Sections 51175 through 51189.

The California Code of Regulations (CCR), Title 14, Section 1280 entitles the maps of the geographical areas as "Maps of the Fire Hazard Severity Zones in the State Responsibility Area of California."

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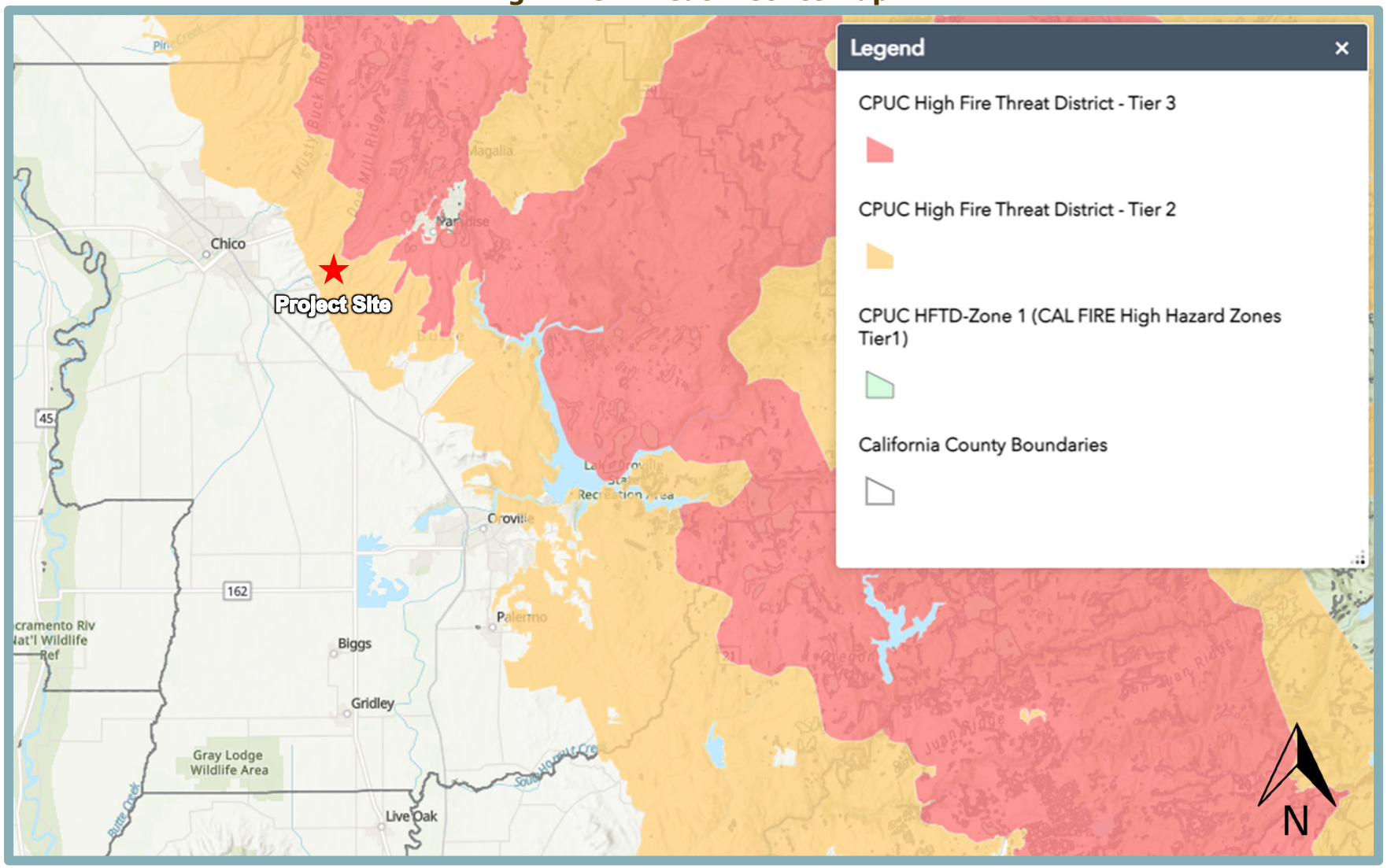
[8] Pacific Gas & Electric Co. *Determining When to Turn Off Power For Safety: Decision-Making for Public Safety Power Shutoffs.* Available at: https://www.pge.com/pge_global/common/pdfs/outages/public-safety-power-shutoff/PSPS-Decision-Making-Technical-Fact-Sheet.pdf. Accessed January 2023.

[9] Butte County. *Butte County Community Wildfire Protection Plan*. May 2022.

Figure 4.13-5
High Fire-Threat District Map



Source: California Public Utilities Commission, CPUC High Fire Threat District (HFTD) Map, 2023.

California Public Resources Code Sections 4920 and 4291

California PRC Section 4920 sets forth minimum fire safety standards related to defensible space for development within SRAs and Very High FHSZs, including related to the following:

- Road standards for fire equipment access;
- Standards for signs identifying streets, roads, and buildings;
- Minimum private water supply reserves for emergency fire use; and
- Fuel breaks and greenbelts.

California PRC Section 4291 sets forth minimum fire safety standards for development in or adjoining WUI zones, such as mountainous areas and forest-covered lands. Provisions of California PRC Section 4291 for such development include, but are not necessarily limited to, the following:

- Defensible space must be maintained 100 feet from the side, front and rear of a structure, or up to the property line where the property line is less than 100 feet from the structure;
- Any tree, shrub, or other plant adjacent to or overhanging a building must be free of dead or dying wood;
- The roof of any structure must be free of leaves, needles, or other vegetative materials;
- Prior to constructing a new building, the owner shall obtain a certification from the local building official that the dwelling or structure, as proposed to be built, complies with all applicable State and local building standards; and
- Prior to final inspection approval of any building, the fire department must inspect the building and the fire suppression facilities to certify that the fire suppression improvements comply with the California Building Code and fire department service requirements.

Minimum Fire Safe Regulations

The State Minimum Fire Safe Regulations are set forth in CCR, Title 14, Section 1270, and constitute the minimum wildfire protection standards of the California Board of Forestry and Fire Protection related to development within SRAs and Very High FHSZs. The wildfire protection standards contained in the State Minimum Fire Safe Regulations include, but are not limited to, regulations pertaining to the provision of basic emergency access; perimeter wildfire protection measures; signing and building numbering; private water supply reserves for emergency fire use; vegetation modification; fuel breaks; greenbelts; and the provision of undeveloped ridgelines.

California Building Code – Chapter 7A (Materials and Construction Methods for Exterior Wildfire Exposure)

Chapter 7A of the California Building Code (CBC) (Title 24 CCR, Part 2) includes definitions and standards for building materials, systems, and/or assemblies to be used for the exterior design and construction of new buildings located within a WUI zone, which is defined by the CBC as a geographical area identified by the State as a "Fire Hazard Severity Zone" in accordance with the PRC Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires.

Chapter 7A of the CBC is intended to establish minimum standards for the protection of life and property by increasing the ability of a building located in any FHSZ within SRAs or any WUI zone to resist the intrusion of flames or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses. All new buildings to be located in a FHSZ or

WUI zone designated by the enforcing agency for which an application for a building permit is submitted on or after July 1, 2008 are required to comply with Chapter 7A of the CBC. Examples of the Chapter 7A standards include, but are not limited to, use of ignition-resistant materials, fire-intrusion design of roofing and vents, and use of glazed exterior windows and doors. The project site is in a WUI zone; therefore, the standards set forth by CBC Chapter 7A related to development in such areas would apply to the proposed project.

Office of the Attorney General Wildfire Analysis Guidance

The State of California Office of the Attorney General, Rob Bonta, issued guidance to help lead agencies comply with CEQA, when considering whether to approve projects in wildfire-prone areas. While the applicable rules, requirements, and analytical tools to reduce wildfire risk are evolving, the wildfire analysis guidance is intended to provide suggestions for how best to comply with CEQA when analyzing and mitigating the wildfire risks of development projects in the wildland-urban interface and other fire prone areas. The *Best Practices for Analyzing and Mitigating Wildfire Impacts of Development Projects Under the California Environmental Quality Act* guidance includes recommendations for analysis of a project's impact on wildfire risks, evacuation and emergency access, and provides recommendations for mitigating wildfire risk, evacuation, and emergency access impacts.[10] The main elements of the wildfire analysis guidance recommendations are related to project density, project location and landscape, water supply and infrastructure, evacuation and emergency access, and fire hardening structures and homes.

Local Regulations

The following local goals and policies related to wildfire are applicable to the proposed project.

2030 Butte County General Plan

The following goals and policies from the 2030 Butte County General Plan are applicable to the proposed project:

Health and Safety Element

Goal HS-11 Reduce risks from wildland and urban fire.

Policy HS-P11.1 Fire hazards shall be considered in all land use and zoning decisions, environmental review, subdivisions review and the provision of public services.

Policy HS-P11.2 Create communities that are resistant to wildfire by supporting the implementation of community wildfire protection plans and wildfire fuel load reduction measures in coordination with the appropriate government, community group, or non-profit organization and California Department of Forestry and Fire Protection (CAL FIRE).

Policy HS-P11.3 The County supports the Wildfire Mitigation Action Plan, the Butte County Local Hazard Mitigation Plan (LHMP), and the Butte Unit Community Wildfire Protection Plan prepared by CAL FIRE and will cooperate with the Butte County Fire

[10] State of California Office of the Attorney General. *Best Practices for Analyzing and Mitigating Wildfire Impacts of Development Projects Under the California Environmental Quality Act*. October 10, 2022.

Department and the Butte County Fire Safe Council in implementing these plans.

Policy HS-P11.4 New development projects shall meet current fire safe ordinance standards for adequate emergency water flow, emergency vehicle access, signage, evacuation routes, fuel management, defensible space, fire safe building construction and wildfire preparedness.

Goal HS-12 Protect people and property from wildland or urban fires.

Policy HS-P12.1 Regulations regarding vegetation clearance around structures, including the removal of ladder fuels, shall be maintained and enforced.

Policy HS-P12.2 Fuel breaks shall be required along the edge of developing areas in High and Very High Fire Hazard Severity Zones, as shown in Figure HS-9 or the most current data available from CAL FIRE.

Policy HS-P12.3 Fire resistant landscaping and fuel breaks shall be required in residential areas.

Policy HS-P12.4 All development projects in wildland urban interface areas in High or Very High Fire Hazard Severity Zones shall provide, at a minimum, small-scale water systems for fire protection.

Policy HS-P12.5 After wildfires, the County shall assess risks of landslide, erosion and flooding in burn areas and cooperate with other appropriate agencies on plans to mitigate these risks.

Goal HS-13 Identify safe and effective evacuation routes and access for fire prevention and suppression.

Policy HS-P13.1 New development in High or Very High Fire Hazard Severity Zones, as shown in Figure HS-9, shall identify access and egress routes and make improvements or contribute to a fund to develop, upgrade and maintain these routes.

Butte County Code of Ordinances

The following applicable codes related to wildfire are from the Butte County Code of Ordinances (County Code).

Emergency Services

The proposed project would be subject to all applicable requirements established in Chapter 8, Emergency Services, of the County Code. Chapter 8 addresses the preparation and execution of plans for the protection of persons, the environment, and property within Butte County in the event of an emergency; the direction of the emergency services organization; and the coordination of

the emergency functions of Butte County with the Cities of Chico, Oroville, Gridley and Biggs, the Town of Paradise, and all other affected public agencies, corporations, organizations, and private persons within Butte County.

Subdivision

The proposed project would be subject to all applicable requirements established in Chapter 20, Subdivision, of the County Code. Chapter 20 lists improvement standards for subdivisions, parcel maps, and site improvements to better execute plans in the event of an emergency.

Fire Prevention and Protection

The proposed project would be subject to all applicable requirements established in Chapter 38A, Fire Prevention and Protection, of the County Code. Chapter 38A supplements fire prevention and protection statutes, regulations, and ordinances enacted by the State, County, and other governmental entities.

Building Code

Buildings constructed within the project site would be subject to the current building standards found in both CBC Chapter 7A and Chapter 26, Buildings, of the County Code. Both State and local requirements would significantly assist in reducing the threat of a wildfire spreading from undeveloped land to a nearby building.

Butte County Office of Emergency Services

Butte County maintains an Office of Emergency Services (OES) to coordinate interagency and intergovernmental comprehensive emergency management planning, operations, and disaster assistance claims management for the County. OES works with State and local agencies to develop effective emergency response systems within the County. OES acts as the requesting and coordinating agency when situations require the involvement of State and other outside agencies.

Butte County Local Hazard Mitigation Plan

The 2014 LHMP was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 so that Butte County would be eligible for the Federal Emergency Management Agency's (FEMA) Pre-Disaster Mitigation and Hazard Mitigation Grant Programs, as well as lower flood insurance premiums. The LHMP is a multi-jurisdictional plan that geographically covers the entire area within Butte County's jurisdictional boundaries. The purpose of the LHMP is to guide hazard mitigation planning and to better protect the people and property of the County from the effects of hazard events. The LHMP demonstrates the community's commitment to reducing risks from hazards and serves as a tool to help decisionmakers direct mitigation activities and resources.

A draft Butte County 2019 LHMP Update was submitted for review to both CalOES and FEMA October 2019. On December 19, 2019, FEMA transmitted an Approval Pending Adoption letter which stipulated that the Butte County 2019 LHMP Update met all the regulatory requirements and was eligible for final adoption. The Butte County Board of Supervisors adopted the Butte County 2019 LHMP on November 5, 2019.

Butte County Emergency Operations Plan

The Butte County EOP serves as the official emergency plan for Butte County.[11] It includes planned operational functions and the overall responsibilities of County departments during an emergency situation. The EOP is designed to focus on potential large-scale disasters, rather than daily emergencies that are regularly handled by local law enforcement and protection agencies. The EOP defines the County's planned response to "extraordinary" emergency situations associated with natural disasters, technological incidents, and nuclear defense operations. The EOP is activated by the following alarms or incidents: An order of the Butte County Board of Supervisors; a state of emergency proclaimed by the Governor; a proclaimed state of war emergency; a presidential declaration of a national emergency; upon receipt of an attack warning; and an indication of a nuclear detonation. The EOP contains a threat summary for Butte County and includes an analysis of natural, technological, and human-caused disasters.

Butte County Community Wildfire Protection Plan

The Butte County CWPP[12] is the result of a communitywide planning effort that included extensive field data gathering, compilation of existing documents and geographic information system (GIS) data, and scientific analyses and recommendations designed to reduce the threat of wildfire-related damages to values at risk. The CWPP provides valuable information related to wildfire to citizens, policymakers, and public agencies throughout Butte County. The primary goal of the CWPP is to protect human life, private property, essential infrastructure, and natural resources through the implementation of fire prevention projects that work to increase public awareness, improve forest health, sustain local wildlife and preserve the natural beauty of the area through a shared responsibility concept. To that end, the CWPP identifies recommendations to aid stakeholders in preventing and/or reducing the threat of wildfire in the County.

4.13.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to wildfire. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an impact related to wildfire is considered significant if the proposed project is located in or near SRAs or lands classified as Very High FHSZs and would:

- Substantially impair an adopted emergency response plan or emergency evacuation plan.
- Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
- Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
- Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

[11] Butte County. *Butte County Operational Area Emergency Operations Plan*. February 2011.
[12] Butte County. *Butte County Community Wildfire Protection Plan*. May 2022.

Method of Analysis

The impact analysis contained in this chapter is based on information contained in the FRRP prepared for the proposed project by Reax Engineering, Inc. (see Appendix M of this EIR). Reax Engineering, Inc. coordinated closely with the BCFD to determine the appropriate inputs and assumptions for the analysis within the FRRP. The BCFD reviewed the FRRP and deemed the report acceptable. The FRRP categorically addressed the main elements of the wildfire analysis guidance recommendations, including project density, project location and landscape, water supply and infrastructure, evacuation and emergency access, and fire hardening structures and homes. The primary objective of the FRRP is to develop a quantitative fire behavior analysis and risk reduction plan for the proposed project. The fire behavior analysis was prepared using WindNinja for spatial wind analysis and FlamMap software for fire behavior modeling. Ultimately, quantitative results are integrated with local code guidance to develop project-site-specific recommendations for fire risk reduction.

As part of preparing the FRRP, Reax Engineering, Inc. identified conditions that define the local fire environment (topography, fuels, and weather) to accomplish fire behavior modeling. FlamMap uses geospatial inputs such as fuel and topography data layers, including elevation, slope, aspect, surface fuel model, canopy height, canopy cover, canopy base height, and canopy bulk density, as well as weather factors, such as wind speed, wind direction, and fuel moisture content, to approximate real-world conditions. The fire behavior modeling conducted for the proposed project used fuel data layers from 2016, before the Camp Fire consumed most fuel in the area, in order to simulate peak fuel loading conditions. Thus, the fire behavior analysis presented in the FRRP is conservative.

Fire behavior metrics, including ember spotting distance, flame length, and rate of spread (ROS), among several other available outputs, were calculated for two scenarios representing historical “Average” and “Extreme” fire weather conditions in the project region. Because of the constant environmental conditions, FlamMap does not model temporal variations caused by weather or diurnal effects. The scenarios considered for modeling are conservative in the sense that meteorological changes that would be expected over any period of time are not accounted for.

Wind Conditions

Both the Average and Extreme scenarios were based on the known topography of the project site, as well as variable fuel moisture content and wind conditions. Fuel moisture values used to model the Average scenario conservatively reflect the average annual lower moisture content values, whereas fuel moisture content values used to calculate the Extreme scenario represent a period of extreme dryness due to prolonged drought conditions. The Average scenario was modeled using average wind speeds of 13 mph from the southwest. A Diablo wind event was used to model wind speeds for the Extreme scenario; sustained winds of 25 mph from the northeast were used to model the Extreme scenario.

Ember Spotting Distance

Embers are glowing or burning pieces of debris that become airborne during a fire. Depending on wind conditions, embers can be carried more than a mile ahead of the main fire front. These embers can land on vegetation and create new fires, cause structural ignitions to vulnerable construction such as roofs or decks, or enter a structure through vents, and open windows and doors. Risk from embers is related to how far ahead of the main fire front winds can transport embers. Under Average scenario conditions, potential maximum spotting distance of fire brands was 1,780 feet with more common distances around 890 feet. The winds in this scenario would

be of minimal assistance in lofting embers due to the relative weakness of the wind. The elevated wind speeds of the Extreme scenario were conducive to longer-range spotting with a maximum spotting distance of 4,100 feet and a more common spotting distance of 2,000 feet.

Flame Length

Direct flame impingement heats building materials, potentially to the extent that those materials ignite or, in the case of glass, break. To assess potential exposure by direct flame impingement, expected flame lengths were determined via modeling. Flame lengths under the Average scenario reached a maximum of 80 feet with the average flame length being eight feet. Extreme scenario conditions may reach well over 140 feet, although average values were nearer 40 feet. The fuels adjacent to the property were capable of flame lengths that would directly impact buildings on the project site if inadequate mitigation measures were taken to reduce and remove hazardous fuels. Even where modeling results showed direct flame contact was not a threat to structures, longer flame lengths correlate with more intense heat and increased potential for ember generation, and therefore still pose danger when encroaching on defensible space.

Rate of Spread

The surface ROS is defined as the speed with which the fire is progressing away from a point. Wind, fuel moisture, and slope drive the rate of spread, creating a wide divergence in rates with small changes in any of these factors. ROS is a valuable metric for estimating the time available for evacuation or time available for the fire service to protect a structure or community. Maximum spread rates in the Average scenario were 2.5 mph with average rates of approximately 0.8 mph. Maximum spread rates in the Extreme scenario were over five mph with average rates of approximately two mph. For both scenarios, fire was expected to spread across vegetation more rapidly upslope in areas with more grass and shrub-type fuels. These fuel-types are typical of residential landscaping and can carry fire quickly.

Emergency Evacuation Analysis

In addition to the two fire scenarios discussed above, the FRRP included modeling of a third fire scenario for input to an evacuation study conducted for the proposed project by Fehr & Peers (included as Attachment A to Appendix M).[13] The overall purpose of the evacuation study is to provide a general assessment of the project impacts on potential evacuations due to a wildfire affecting the greater region, accounting for the expected increase in traffic as a result of the proposed project in comparison to pre-project conditions. The goal of the evacuation study is to provide insight on evacuation impacts and determine if mitigation beyond code requirements are necessary.

Key information provided and described herein includes the description of a fire scenario in which wildfire development and spread triggers evacuations and/or impedes evacuation roadways and associated quantitative metrics of fire arrival time across the landscape. Together, the fire spread scenario and evacuation study constitute a novel approach in assessment methodologies for the emerging field of community-wide wildfire evacuation analysis. The devised approach and interpretation of results are informed by the latest scientific research and expert judgement. Further details regarding the Reax Engineering, Inc. fire spread modeling and Fehr & Peers evacuation study are presented below.

[13] Fehr & Peers. *Tuscan Ridge Transportation Impact Study – Wildfire Assessment*. July 13, 2023.

Fire Spread Scenario

A common evacuation analysis methodology is the concept of safe egress time. In order to ensure safety when evacuating, the available safe egress time must be greater than the required safe egress time. In order to quantify the fire development and spread component of the available safe egress time, the FlamMap software was used to calculate the fire front minimum travel time. Because predicting and planning for every scenario that would cause a wildfire to impact evacuation routes is not feasible, assessment of a Severe Impact scenario is considered for conservatism. The Severe Impact scenario reflects severe fuel moisture conditions and a wind speed of sustained 25 mph, which exceeds the 99th percentile of historic observed conditions, but was chosen to facilitate a more conservative fire spread scenario. Topographical effects, as well as vegetation and landcover conditions from 2016, were considered in the Severe Impact scenario. The Severe Impact scenario assumes three simultaneous ignitions in three locations north of Paradise, near Magalia. The ignition locations were chosen to assume fire growth in the simulation such that the fire would be severe enough to cause widespread evacuations and that require Skyway to be used. The locations are based on historical ignition frequencies, noting that an ignition to the northeast of the project site under a Diablo wind event would result in the greatest impact to evacuations affecting the project region. The results of the fire spread simulation under the Severe Impact scenario were provided to Fehr & Peers for use in the evacuation study.

It should be noted that some elements of the evacuation timeline rely on human or environmental factors that are variable and/or difficult to predict (e.g., impediments due to smoke, which can vary based on weather and fire conditions, and the time it takes to send evacuation notices, a factor which is evolving with advances in notification technologies and planning and adoption by fire prone communities). In addition, occupant decision making regarding time to evacuation is a complex and variable element that has been extensively studied in evacuation of the built environment but lacks similar depth in treatment of egress in wildland fire prone areas. Uncertainty of potential impediments that might delay or hinder evacuation is inherent with or without the proposed project; uncertainty associated with the project's potential impact on evacuation is addressed by analysis of conservative scenarios given a short evacuation window and fire spread under severe environmental conditions.

Evacuation Study

Fehr & Peers conducted an evacuation study to determine the proposed project's potential effects on evacuation travel time. As part of the evacuation study, Fehr & Peers and Reax Engineering, Inc. coordinated to identify potential wildfire evacuation scenarios, including the specific areas to be evacuated, the key routes between evacuation areas, and the final destinations outside the hazard area. The evacuation areas are assumed to be bounded within Paradise, Magalia, and other nearby "North Ridge" communities. The evacuation study compared an analysis of No Project and With Project conditions.

Based on the fire spread simulation under the Severe Impact scenario conducted by Reax Engineering, Inc., as discussed above, the BCFD provided insight to further define evacuation of the Severe Impact scenario, including the following:

- Given the single evacuation route from Magalia south (via Skyway), a phased evacuation would be the best approach, with only the immediately affected zones in Magalia and Paradise placed under an evacuation order or warning;
- The Incident Commander or Chief Officer trigger/decision points would dictate when subsequent zones would move from a warning to an evacuation order. As the fire

progressed to pre-determined decision points, those in an evacuation warning would become an evacuation order, and the zones further to the southwest would become evacuation warnings.

- Contraflow evacuation (i.e., switching all lanes away from danger) on Skyway would be key to the success of moving those in harm's way out of the area if many evacuation zones were ordered to evacuate at once; and
- In terms of evacuating vehicle trips, the following estimations were provided:
    - 75 percent of vehicles would evacuate on Skyway;
    - 15 percent of vehicles would evacuate on Clark Road/SR 191;
    - Five percent of vehicles would evacuate on Pentz Road; and
    - Five percent of vehicles would evacuate on Neal Road.

The basic steps for forecasting evacuation travel times involve forecasting the demand across specific time periods, determining the distribution of associated trips, assigning the trips to specific routes, and analyzing the capacity of the routes to accommodate those trips. After determining the evacuation travel demand and associated transportation network, the Fehr & Peers EVAC+ tool was used to capture the demand and capacity relationship that produces resulting travel speeds and evacuation travel times. The EVAC+ workflow is broken down into three steps:

1. Preparing the sub-area network representing the study area and the associated background trips (some background travel demand occurs on portions of the network from people traveling for common activities and not affected by the evacuation);
2. Forecasting evacuation vehicle trips during the wildfire; and
3. Dynamically assigning trips to the sub-area network.

The Butte County Association of Governments Regional Transportation Plan/Sustainable Communities Plan (BCAG RTP/SCS) model (version 1.2) uses land use and socio-economic data (SED) inputs from Census data to estimate and forecast vehicle trips. The Severe Impact scenario was analyzed for two different time periods – one with a start time of 6:00 AM, when most people would be evacuating from their homes, and another starting at 3:00 PM, when some people would be evacuating from home, but others would be evacuating as employees or visitors from non-residential areas. The Severe Impact Scenario was further broken into two evacuation phases, with the first phase (Phase 1) addressing the immediate areas of concern, followed by a larger geographic area evacuating two hours later (Phase 2). The project site is located in the Phase 2 area. Two time periods are introduced in order to forecast the impacts of a morning (AM Scenario) versus afternoon/evening (PM Scenario). Because the AM Scenario starts in the early morning, employee trips were excluded. The PM Scenario, which starts in the midafternoon, includes employee trips. The general parameters for the Severe Impact scenario under No Project conditions are shown in Table 4.13-2.

Trips were assigned using the Traffic Analysis Zones (TAZs) and existing roadway network extracted from the BCAG RTP/SCS model Version 1.2. Trip tables are then referenced for areas outside of the impacted area to form the "background" traffic estimates on the roadways not affected during an evacuation event. Areas affected by the evacuation event are then processed through EVAC+ to predict the number and sequencing of vehicle trips that occur due to the event. The sub-area extracted network and new trip tables are then input into the model. The model forecasts traffic, speeds, and travel times in 15-minute intervals and, as link congestion builds (roads fill with cars), the model dynamically reassigns traffic to less congested routes. In this way, the modeling is sensitive to building congestion in the network that could occur quickly during an evacuation event.

Table 4.13-2
Extreme Scenario Parameters and Details

Parameters	Phase 1	Phase 2	Overall
Zones Evacuated	328, 296, 318, 9, 16, 93, 19, 21, 20, 92, 104, 122, 123, 13	22, 421, 420, 419, 24, 124, 129, 117, 306, 125, 126, 118, 410, 119, 23, 303, 127, 120, 30, 26, 128, 105, 121, 305, 29, 323, 195, 312, 25, 409, 91, 313, 324, 325	All zones listed under Phase 1 and Phase 2
Time of Day	AM Scenario: 6:00 AM to 8:00 PM	AM Scenario: 8:00 AM to 12:00 PM	AM Scenario: 6:00 AM to 12:00 PM
	PM Scenario: 3:00 PM to 5:00 PM	PM Scenario: 5:00 PM to 9:00 PM	PM Scenario: 3:00 PM to 9:00 PM
Population	2,107	6,578	8,685
Households	786	2,592	3,378
Evacuation Vehicle Trips	Residential: 1,295 Employee: 4,767	Residential: 4,083 Employee: 0	Residential: 5,379 Employee: 4,767
Trip Distribution	South: 20 percent via Clark Road, Neal Road, and Pentz Road, exiting on SR 99 and SR 70. West: 80 percent via Skyway and Neal Road, exiting on East Park Avenue and SR 99.		

Notes:

- The Butte County Evacuation Zones listed correspond with those shown in Figure 4.13-6.
- Household and population estimates are provided by the American Community Survey (U.S. Census Bureau). The number of vehicles evacuating per home was also determined based upon vehicle availability by household size data from the American Community Survey. Employment trips were calculated using total employment estimates in each Traffic Analysis Zone (TAZ), the BCAG RTP/SCS model-estimated automobile mode share and average vehicle occupancy.
- All roadways in the sub-area have a capacity reduction of 50 percent to reflect unideal evacuation conditions, including stopped/stalled vehicles and limited visibility due to smoke.
- The TAZs and Butte County Evacuation Zones do not perfectly overlap. The Evacuation Zones listed represent areas where evacuating TAZs make up the approximate majority of the populated area in the respective zone.

Source: Fehr & Peers, 2023.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in comparison with the standards of significance identified above.

4.13-1 Substantially impair an adopted emergency response plan or emergency evacuation plan. Based on the analysis below, the impact is *less than significant*.

Emergency events, such as wildland fires, are unpredictable. The location of the fire, the time of day an event occurs, the direction of travel, and the rate of spread are unknown. Due to such uncertainty, the use of traditional capacity analysis, such as AM and PM peak hour operations at study intersections, is limited for the analysis of emergency events. Furthermore, while Butte County has an adopted LHMP and EOP, which are both intended to provide emergency resources and plans in response to local hazards, such as wildfires, the County does not have an adopted emergency evacuation plan. However, in the event of an emergency, emergency responders do

have measures that can be deployed to aid in the movement of the public from danger. As described above, the Butte County EOC would implement an evacuation through three operational phases: the decision phase, the evacuation phase, and the re-entry phase.

The fire spread modeling results under the Severe Impact scenario, using the methodology described in the Method of Analysis section above and further presented in Appendix M to this Draft EIR, are presented in Figure 4.13-6. Figure 4.13-6 shows the simulated fire growth and associated fire arrival times over a 30-hour period. Evacuation routes are shown as solid pink lines and evacuation zone boundaries are shown as solid black lines. The evacuation zone ID values in Figure 4.13-6 are unique identifiers for each of the evacuation zones. As shown in Figure 4.13-6, the FRRP determined that an oncoming wildfire that originates north of the Town of Paradise would take approximately 21.7 hours to reach the project site, with an average ROS of 0.32 mph. Skyway is the evacuation route that would serve the project site; a fire spreading under a severe northeast Diablo wind event, as modeled, is not likely to prohibit evacuation along Skyway for those in the area of the project site for the first 21 hours of fire growth. Once evacuees reach SR 99, both north and south directions are available for evacuation for the first 25 hours following ignition.

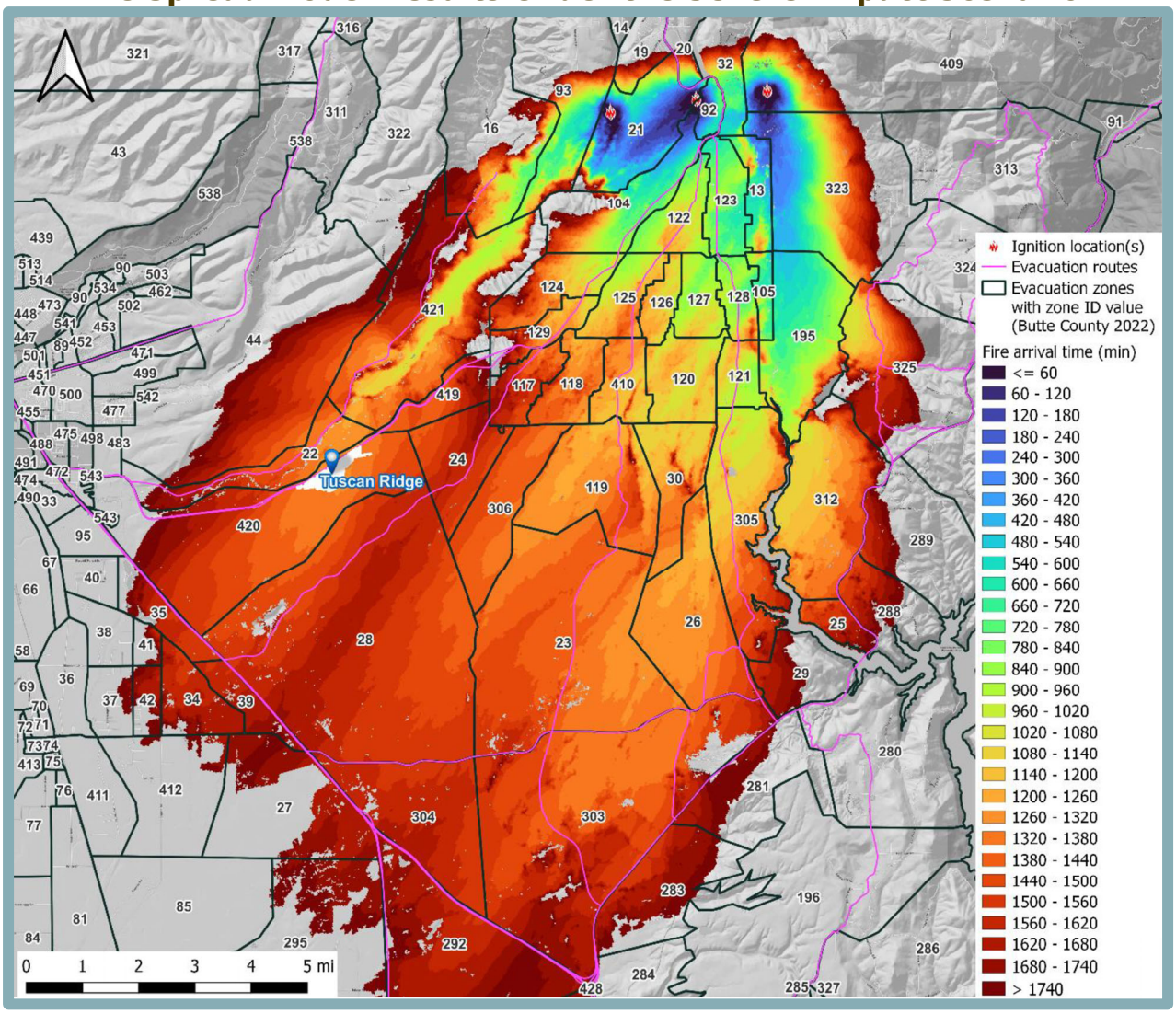
It should be noted that the results do not account for potential impediments due to smoke, the time needed to send evacuation notification, or the time needed for occupants to take protective action. Nonetheless, as noted above, uncertainty of potential impediments that might delay or hinder evacuation is inherent with or without the proposed project. The analysis conducted for the proposed project represents conservative scenarios, given a short evacuation window and fire spread under severe environmental conditions.

Using the results of the fire spread modeling and the methodology presented in the Methods of Analysis section above, Fehr & Peers conducted an evacuation study to determine the proposed project's potential effects on evacuation travel time. The project site is located within evacuation zone 420 and would evacuate in Phase 2.

The travel time forecasts on Skyway from east of Neal Road in Paradise to Fair Street in Chico during the AM and PM scenarios are summarized for both the no project and with project conditions in Table 4.13-3, below.

As shown above, travel times would increase with the proposed project compared to the no project scenario under either evacuation scenario. The first evacuees from the project site would likely experience limited congestion and would have the shortest travel times, closer to 16 minutes in the AM and PM scenarios. As more demand is added to the network, speeds would decline, and travel times would get longer, with the highest travel times reaching approximately 21 minutes in the AM scenario and 51 minutes in the PM scenario. Under no project conditions, the highest travel time would be 47 minutes. Thus, the proposed project would add only four minutes to the estimated travel times, and evacuations would be complete within three hours of initial evacuation orders. For such reasons, the FFRP concluded that a fire spreading under the modeled conditions would be capable of being managed with sufficient time to respond and evacuate, even with the additional traffic that would be created by the proposed project.

Figure 4.13-6
Fire Spread Model Results Under the Severe Impact Scenario



Source: Reax Engineering, Inc., 2023.

Table 4.13-3
Evacuation Travel Time Forecasts

	Evacuation Travel Time (minutes) AM Scenario (6:00 AM – 12:00 PM)		Evacuation Travel Time (minutes) PM Scenario (3:00 PM – 9:00 PM)	
	No Project	**With Project**	**No Project**	**With Project**
Minimum	16.0	16.0	16.0	16.0
Median	19.1	19.7	19.5	20.3
Mean	18.4	18.7	24.5	26.1
Maximum	20.9	21.1	47.0	51.0

Source: Fehr & Peers, 2023.

Implementation of contraflow on Skyway would further reduce travel times; however, the configuration of the contraflow (e.g., all four lanes moving westbound; two regular westbound lanes and one contraflow, with one remaining for emergency vehicles; etc.) would be dependent on the population being evacuated and would be coordinated on a State level.

During wildfire events, emergency responders would be able to access the project site to combat fires, which would serve to reduce the hazardous conditions that precipitate the need for evacuation of patrons and employees. Access to the proposed project would be provided by two entrances from Skyway. The existing entrance located near the center of the site would be improved and a new entrance would be established in the eastern portion of the site. The two proposed access points, as currently configured, would contain full intersections that would allow for left turns from Skyway. The existing access easement in the western portion of the project site for the adjacent agricultural property would remain and could serve as additional emergency ingress/egress, if needed. Accordingly, the proposed project would provide adequate emergency access to the project site and would not be expected to conflict with any potential evacuation routes. Emergency vehicles would be expected to primarily come from Station #44, located at 2334 Fair Street, Chico, California. Given that Station #44 is located approximately 6.4 miles west of the project site, emergency vehicles would be anticipated to arrive on-site within a timely manner.

Based on the above, the proposed project would not substantially impair an adopted emergency response plan or emergency evacuation plan, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.13-2 Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The project site was previously developed with a golf course, and currently contains three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Course, an existing potable water well and associated system, as well as an existing wastewater treatment system, including septic tanks, leach field, and disposal ponds. Vegetation on the site consists primarily of sparse ruderal vegetation, along with scattered oak and pine trees. The following discussions evaluate the potential impacts associated with the proposed project related to the exacerbation of wildfire risks due to factors such as on-site fuel sources, slope, and prevailing winds.

Wildfire Risks Due to Existing On-Site Fuel Sources

CEQA Guidelines Appendix G indicates that the extent and nature of on-site vegetation, which would serve as fuel for a wildfire, should be evaluated to determine the potential for a project to exacerbate wildfire risk. As previously discussed, the project site was developed with the Tuscan Ridge Golf Course before being destroyed by the 2018 Camp Fire. As such, the project site has been subject to previous disturbance, and a substantial portion of the on-site vegetation was removed, either in the process of developing the Tuscan Ridge Golf Course, or as fuel for the Camp Fire. According to the FRRP prepared for the proposed project, the majority of the project site is barren, which would not contribute to the spread of wildfire. However, the project site also contains grasses, shrubs, and multiple types of vegetative litter that have moderate to very high fire ROS and flame lengths. As such, development of the site with the proposed uses would reduce the risk of wildland fire to surrounding areas, because site improvements, such as the internal roadway network and irrigated on-site landscaping, would reduce readily combustible vegetation and act as a fuel break. Additionally, wildfire risks would not be anticipated to be exacerbated during project operation, as residential and commercial uses typically do not involve operation components that would increase the risk of wildfire.

More specifically, the proposed project would reduce on-site fuel sources through the development of 165 residential lots and 15.9 acres of commercial uses, as well as an internal roadway network and stormwater retention basins, which would require removal of a large amount of existing on-site vegetation. However, the proposed project would also include the preservation of approximately 36.7 acres of open space, the majority of which would be located along the site's frontage with Skyway, with a smaller portion of open space located along the southwest border of the project site. Vegetation within such open spaces is not proposed for removal.

The proposed project would be required to comply with all applicable State and local standards and regulations associated with prevention of wildfire hazards, including Chapter 38A of the Butte County Code of Ordinances, which serves to adopt and amend, as applicable, the CFC. The CFC requires that an automatic fire sprinkler and/or fire extinguishing system be installed in residences. Fire flow for the proposed project would be provided by the proposed water system that would be developed on-site, as discussed in detail in Chapter 4.12, Utilities and Service Systems, of this EIR.

In addition, Chapter 7A of the CBC includes definitions and standards for building materials, systems, and/or assemblies to be used for the exterior design and construction of new buildings located within a WUI zone or a FHSZ in a SRA. Chapter 7A establishes minimum standards for the protection of life and property by increasing

the ability of a building located in any FHSZ within SRAs or any WUI zone to resist the intrusion of flames or burning embers projected by a vegetation fire, thereby systematically reducing conflagration-related losses. Examples of the Chapter 7A standards include use of ignition-resistant materials, fire-intrusion design of roofing and vents, and use of glazed exterior windows and doors. As the project site is located within a FHSZ in the SRA, the proposed project would be subject to CBC Chapter 7A standards. Furthermore, Section 38A-6 of the Butte County Code of Ordinances sets forth defensible space and hazardous vegetation management standards for improved parcels with which the proposed project would be required to comply. As part of compliance, the project would be required to maintain a 100-foot firebreak around all proposed structures. In addition, all on-site landscaping would be required to comply with Section 24-116(A) of the Butte County Code of Ordinances, which requires the development of water-efficient irrigation systems, which would ensure the proposed vegetation is sufficiently watered to not result in excessively dry fuel sources.

Overall, because the proposed project would remove a substantial amount of existing fuel sources and would comply with State and local requirements, operation of the project would not exacerbate the risk of a wildfire spreading from undeveloped land to the proposed structures or the potential of fire spreading from the site to surrounding areas. However, the proposed project would preserve approximately 36.7 acres of open space on-site which would maintain fuel sources during project operation. In addition, during project construction, equipment without appropriate spark arrestors could result in direct flame impingement on combustible materials, such as existing on-site vegetation or building construction supplies. Without proper measures to require equipment used during construction activities to be equipped with BCFD-approved spark arrestors, project construction could result in the ignition of on-site fuel sources, which could exacerbate wildfire risks due to on-site vegetation and building construction supplies, thereby exposing residents in the project vicinity to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire, and a significant impact could occur.

Wildfire Risks Due to Slope

As discussed above, elevations in Butte County range from 90 to 7,870 feet above msl. As such, wildfire risks related to topography range from negligible to severe throughout the County. The project site is located within the foothills of Butte County, where wildfire risk related to topography is moderate. Although the project site is located on a ridge where the terrain slopes downward from east to west north of the project site, and from west to east south of the project site, the site itself is relatively flat. In addition, slope was taken into account when performing the modelling and estimation of ROS presented in the FRRP, which is addressed under Impact 4.13-1, above. Thus, the proposed project would not exacerbate wildfire risks due to slope, and a less-than-significant impact would occur.

Wildfire Risks Due to Prevailing Winds

As discussed above, as part of preparing the FRRP for the proposed project, Reax Engineering, Inc. modeled Average and Extreme fire weather conditions. In the Average scenario, southwest winds were anticipated; thus, winds could be reasonably assumed to facilitate spread from south of the project site, which would have the potential to spread wildfire from the open space located along the southern border of

the site towards the north, into the residential portion of the project. In addition, under the Extreme scenario, northeast winds were anticipated, which would have the potential to spread fires from the northeast direction. However, the risk of easterly fires spreading to westerly areas is reduced by graded areas throughout the project site. Furthermore, wildfire risk due to prevailing winds was taken into account in the fire spread modeling as part of the FRRP, and is incorporated into the analysis under Impact 4.13-1, above.

As discussed above, a portion of the on-site fuel sources would be removed as part of development of the proposed project. In addition, the project would comply with State and local standards and regulations associated with prevention of wildfire hazards, including Chapter 38A of the Butte County Code of Ordinances, which serves to adopt and amend, as applicable, the CFC, as well as Chapter 7A of the CBC. The removal of on-site vegetation and compliance with applicable standards and regulations would reduce the proposed project's potential of exacerbating wildfire risk due to prevailing winds during project operation.

Conclusion

Based on the above, the project could exacerbate wildfire risks due to prevailing winds, slope, and other factors, and the project could thereby expose residents in the project vicinity to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Therefore, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.13-2 *In conjunction with the submittal of and prior to the approval of Improvement Plans, the applicant shall submit a Vegetation Management Plan (VMP), as defined in the FRRP prepared for the proposed project, for review and approval by Butte County Fire, BCCFA, and the Butte County Department of Development Services. Proof of compliance with the VMP shall be submitted for review and approval by Butte County Fire annually.*

4.13-3 Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. Based on the analysis below, the impact is *less than significant*.

The proposed project would include installation of various infrastructure components, including an internal roadway network, wastewater infrastructure, and other utilities, including an approximately 487,000-gallon water tank. All potential physical environmental impacts that could result from implementation of the proposed project have been evaluated throughout the technical chapters of this EIR.

The proposed project would be subject to all applicable requirements included in Chapter 38A, Fire Prevention and Protection, of the County Code. For example, Section 38A-6(a)(7) requires a 10-foot vegetation clearance next to roadsides to reduce fire hazards. As such, the proposed roadways would not exacerbate fire risks. In addition, in compliance with Section 38A-6(a)(5), the project would be required to maintain a 100-foot defensible space around all proposed structures.

While the proposed project could include the undergrounding of electrical infrastructure, in order to provide a conservative analysis, this EIR assumes new electrical infrastructure would be installed aboveground. Aboveground utility infrastructure has the potential to exacerbate wildfire risks if the lines come into contact with tree limbs or other overhanging vegetation. However, the utility provider for the proposed project, PG&E, would be required to comply with all applicable regulations related to maintenance of the infrastructures, including the provisions of PRC Sections 4292 and 4293, which set forth clearance requirements such as maintaining a 10-foot firebreak in all directions around each utility pole and trimming of vegetation within specified horizontal distances from roadways and overhead power lines. Compliance with such regulations would ensure that any aboveground utility infrastructure on the project site would not exacerbate wildfire risks.

Furthermore, as discussed above under Impact 4.13-2, structures constructed as part of the proposed project would comply with all applicable standards set forth by the CBC and CFC, including standards set forth in CBC Chapter 7A, which requires the use of ignition-resistant materials, fire-intrusion design of roofing and vents, and use of glazed exterior windows and doors for structures built within a WUI. Therefore, the proposed infrastructure improvements associated with the project would not substantially exacerbate wildfire risk.

While the long-term maintenance of the proposed roadways, emergency water supply connections, power lines, and other utilities would not exacerbate fire risks, the activities associated with the initial construction and placement of the utilities and infrastructure could cause a temporary increase in fire risks due to the use of heavy equipment, which would contain combustible materials such as fuels and oils and ignition sources. The project contractor would be required to comply with all California Health and Safety Codes and local County ordinances regulating the handling, storage, and transportation of hazardous materials, which would help to minimize the potential for accidental conditions, including fire. Furthermore, compliance with Mitigation Measure 4.13-2 would reduce the fire risk during project construction activities.

Therefore, the proposed project would not require the installation or maintenance of infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.13-4 Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Based on the analysis below, the impact is *less than significant*.

Wildfires alter landscapes and can result in post-event hazards triggered primarily by rainfall. Rainfall that is normally captured and stored by vegetation can run off almost instantly, causing creeks and drainage areas to flood much sooner during a storm and with more water than is expected under unburned conditions. Soils burned at moderate and high severity tend to have reduced infiltration capacity and are more easily eroded. The potential post-fire flooding, soil erosion, and debris flows can impact recreational areas, homes, structures, roads, and other infrastructure within, adjacent to, and downstream from burned areas.

Wildfire-related flooding and increased runoff may continue for several years in a burn area. However, post-fire debris flows do not typically occur beyond the second rainy season. Some of the largest debris-flow events happen during the first post-fire storm season. While multiple factors can affect debris-flow occurrence, post-fire debris flows generally are triggered by one of two processes: surface erosion caused by rainfall runoff; and landslides caused by rainfall seeping into the ground. Surface erosion runoff processes are by far the most prevalent contributors to debris flows. Landsliding contributes less to fire-related debris flow, but prolonged heavy rains may increase soil moisture even after a wildfire.[14] The wetted soil can then fail, producing infiltration-triggered landslides. The landslides could be shallow or deep-seated (i.e., greater than 10 to 15 feet deep).

As previously discussed, while the on-site terrain is gently sloped, the project site does not feature steep or significant slopes. In addition, although steep slopes are present to the north and south of the project site, the project site boundaries are located at least 500 feet from such slopes on either side. Given the project site does not contain such features, the proposed project would not be vulnerable to risks such as post-fire downslope flooding or landslides or post-fire slope instability. Additionally, while the project site contains ruderal vegetation and scattered oak and pine trees, through development of the proposed project, a portion of such vegetation would be removed as part of site improvements, thereby reducing the potential for substantial fire-burned areas to occur on-site.

The proposed project would involve the development of new stormwater infrastructure on-site. Stormwater generated on the project site would be collected by surface flow into a system of curbs and gutters, vegetated swales, and drain inlets throughout the site that would allow the collected stormwater to transition to the subsurface stormwater collection system of pipes that would convey the stormwater into strategically located retention basins. In the event that a fire was to occur on-site, the proposed stormwater infrastructure would reduce the potential for substantial amounts

[14] U.S. Geological Survey. *Post-Fire Flooding and Debris Flow*. Available at: https://www.usgs.gov/centers/ca-water/science/post-fire-flooding-and-debris-flow?qt-science_center_objects=0#qt-science_center_objects. Accessed February 2023.

of sediment to be transported off-site by way of post-fire runoff. In addition, as discussed under Impact 4.7-4 in the Hydrology and Water Quality chapter of this EIR, the proposed project would not substantially alter the existing drainage pattern of the site or area in a manner that would result in significant impacts related to on-site or off-site flooding, exceeding the capacity of stormwater drainage systems, and/or generating substantial additional sources of polluted runoff. Furthermore, as discussed above, the proposed project would be required to comply with all applicable CBC and CFC standards and regulations. Implementation of all of the aforementioned measures and standards would ensure that the proposed project's wildfire risks are reduced to the maximum extent feasible. As such, the proposed project would not significantly alter the existing drainage pattern of the site and would, therefore, not expose people or structures in the project vicinity to risks such as downstream flooding as a result of post-fire drainage changes.

Based on the above, the proposed project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Therefore, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

For more details regarding the cumulative setting, refer to Chapter 6, Statutorily Required Sections, of this EIR.

4.13-5 Increase in wildfire risk attributable to the proposed project, in combination with cumulative development. Based on the analysis below, the cumulative impact is *less than significant*.

The cumulative setting for this EIR encompasses all of Butte County. Future development within Butte County would result in changes to the existing land use environment through conversion of vacant land to developed uses that would result in a reduction of existing vegetation. Similar to the project site, the majority of Butte County is located within a Moderate to Very High FHSZ in an SRA. Thus, as with the proposed project, development associated with the County would be required to comply with defensible space standards, pursuant to California PRC Section 4291, and other wildfire risk minimization standards set forth in Chapter 7A of the CBC, including, but not limited to, use of ignition-resistant materials, fire-intrusion design of roofing and vents, and use of glazed exterior windows and doors. All buildings would be required to meet CFC requirements as set forth by the County and the CBC and CFC, as well as the supplemental fire prevention and protection statutes defined in

Chapter 38A of the County Code. Compliance with State and local standards would minimize wildfire risk at each of the project locations. In addition, buildout of the 2030 Butte County General Plan would remove existing fuel sources, thereby reducing the cumulative risk of wildfire hazards.

As discussed under Impact 4.13-1, the FRRP determined that buildout of the proposed project, combined with existing conditions, would not significantly contribute to the evacuation time of the project area. Skyway, the evacuation route for the project vicinity, runs from east to west. In addition, parcels west of the project site are designated for agricultural development, and thus development of such lands would not contribute to the population of the area such that evacuation times would be impacted. Therefore, the portions of Butte County relevant to the cumulative analysis are land uses located east of the project site, along Skyway, which includes the parcels located between the project site and the Town of Paradise, as well as Paradise itself.

As shown in Figure LU-3 of the 2030 Butte County General Plan Land Use Element, parcels located east of the project site, both north and south of Skyway, are designated as Foothill Residential. However, as stated above, the majority of the land north of Skyway is separated from the project site by a significant drop in elevation; the evacuation route for such development is Honey Run Road. Thus, evacuation of existing or future developments located north of Skyway would not contribute to or conflict with evacuation times of the project site. In addition, many parcels located east of the project site and south of Skyway are currently developed with residential units, and, thus, have been included in the calculations presented above as existing conditions. Although the 2030 Butte County General Plan anticipates that the vacant properties east of the project site would be developed with residential uses, a project that would develop such properties is not currently proposed.

The only major source of potential traffic that shares the same evacuation route as the project site is the Town of Paradise. Prior to the 2018 Camp Fire, the population of Paradise was approximately 26,581. Following the Camp Fire, the 2020 U.S. Census found that the Town of Paradise had a population of approximately 4,764; the population is estimated to have grown to 5,268 residents in 2021.[15] As such, the Town of Paradise experienced a ten percent growth between 2020 and 2021. Given the relatively low rate of population growth, rebuilding of the Town of Paradise is not anticipated to result in a cumulative impact regarding emergency evacuation.

Additionally, as set forth by Mitigation Measure 4.13-2, the proposed project would be required to implement a VMP that would include management of on-site fuel sources during project construction and ongoing management of vegetated areas during project operation. The VMP requires, among other things, that during project construction, open space areas be clearly delineated so that minimal damage occurs to natural habitats, and that during project operation, ongoing maintenance of vegetated areas is completed.

Based on the above, the proposed project with implementation of the VMP required by Mitigation Measure 4.13-2, in combination with buildout of the 2030 Butte County

[15] United States Census Bureau. *QuickFacts: Paradise town, California.* Available at: https://www.census.gov/quickfacts/fact/table/paradisetowncalifornia/HSG651221. Accessed February 2023.

General Plan, would have a ***less-than-significant*** cumulative impact related to exacerbating wildfire risk.

Mitigation Measure(s)

None required.

5. Effects Not Found to be Significant

5. EFFECTS NOT FOUND TO BE SIGNIFICANT

5.1 INTRODUCTION

Section 15128 of the CEQA Guidelines requires that an EIR briefly describe why various environmental effects were determined not to be significant and therefore were not discussed in detail in the EIR. The Effects Not Found to be Significant chapter of this EIR summarizes environmental issues that were determined not to be significant with implementation of the proposed project. The reasons for the conclusion of non-significance are provided for each issue area, as applicable, below.

5.2 AGRICULTURAL AND FORESTRY RESOURCES

Consistent with Appendix G of the CEQA Guidelines, the proposed project was determined to have no impact with regard to the following issue areas:

- 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;
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g));
- Result in the loss of forest land or conversion of forest land to non-forest use; and
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

According to the California Department of Conservation Farmland Mapping and Monitoring Program, the project site is designated as Urban and Built-Up Land.[1] Urban and Built-up Land is defined as: "occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. Common examples include residential, industrial, commercial, institutional facilities, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, and water control structures." Therefore, important farmland, including Prime Farmland, Unique Farmland, or Farmland of Statewide Importance does not occur on the site and would not be converted to different land uses as part of the proposed project.

The 2030 Butte County General Plan designates the site as Planned Unit Development (PUD), and the site is zoned Planned Development (PD). In addition, the project site is not subject to a Williamson Act contract, and does not contain any forest land. Furthermore, the project site was previously developed as a golf course. In mid-2018, prior to the Camp Fire, the site was used as a Pacific Gas and Electric Co. (PG&E) vegetation management camp, was subsequently burned during the wildfire, then leveled and graveled for use as a base camp and staging area by PG&E

[1] California Department of Conservation. *California Important Farmland Finder.* Available at: https://maps.conservation.ca.gov/dlrp/ciff/. Accessed February 2023.

and ECC Constructors during the wildfire response. PG&E continued to use portions of the site as a base camp for debris removal until March 2020. As such, the project site has been highly disturbed. Therefore, the proposed project would not conflict with existing zoning for agricultural or forest land, and would not result in the conversion and/or loss of farmland, forest land, or timberland. Accordingly, no impact would occur related to agricultural and forestry resources as a result of the proposed project.

5.3 BIOLOGICAL RESOURCES

Consistent with Appendix G of the CEQA Guidelines, the proposed project was determined to have no impact with regard to the following issue areas:

- Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or State habitat conservation plan.

A proposed county-wide conservation plan called the Butte Regional Conservation Plan has been drafted but has not been formally approved and adopted. Therefore, the proposed project would not be subject to the provisions of any adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or State habitat conservation plan, and no impact would occur.

5.4 HAZARDS AND HAZARDOUS MATERIALS

Consistent with Appendix G of the CEQA Guidelines, the proposed project was determined to have no impact with regard to the following issue areas:

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; and
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area.

The closest school to the project site, Paradise Junior High School, is located approximately six miles to the northeast. Thus, the project site is not located within one-quarter mile of an existing or proposed school. In addition, the proposed project would not be located within two miles of a public or public use airport. The closest public use airport to the project site is the Paradise Airport, which is located approximately five miles east of the site. The project site is not located in the vicinity of any private airstrips. As such, no impacts would occur related to the aforementioned hazards and hazardous materials issues.

5.5 HYDROLOGY AND WATER QUALITY

Consistent with Appendix G of the CEQA Guidelines, the proposed project was determined to have no impact with regard to the following issue areas:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    - Impede or redirect flood flows; or
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

The project site is not located within a flood hazard zone, and, thus, the proposed project would not impede or redirect flood flows. In addition, the project site not located in the proximity of the coast or a closed body of water; as such, the proposed project would not be subject to the risk of release of pollutants due to project inundation. Therefore, no impacts would occur related to the aforementioned hydrology issues.

5.6 LAND USE AND PLANNING/POPULATION AND HOUSING

Consistent with Appendix G of the CEQA Guidelines, the proposed project was determined to have no impact with regard to the following issue areas:

- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

The project site does not currently contain any existing residential structures. The proposed project would include the development of 165 residential units on the projects site. As such, the proposed project would not displace a substantial amount of existing housing or people and would result in the creation of new housing. Therefore, the proposed project would not necessitate the construction of replacement housing elsewhere, and no impact related to such would occur.

5.7 MINERAL RESOURCES

Consistent with Appendix G of the CEQA Guidelines, the proposed project was determined to have no impact with regard to the following issue areas:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; and
- Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

According to the 2030 Butte County General Plan Mineral Resources Element, the County has a history of mining activity, especially in the eastern portions of the County. However, the 2030 Butte County General Plan does not identify the project site as an acceptable location for mineral extraction. Rather, the 2030 Butte County General Plan designates the site as PUD, and the site is zoned PD. Therefore, development of the project site with uses unrelated to mineral extraction has already been anticipated by the County. Furthermore, surface mining at the project site would not be compatible with the existing surrounding land uses, which include rural residences and agricultural land. Therefore, development of the proposed project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State, or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Accordingly, no impact would occur related to mineral resources.

5.8 NOISE

Consistent with Appendix G of the CEQA Guidelines, the proposed project was determined to have no impact with regard to the following issue areas:

- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use

airport, would the project expose people residing or working in the project area to excessive noise levels.

The closest public use airport to the project site is the Paradise Airport, which is located approximately five miles east of the site. The project site is not located in the vicinity of any private airstrips. As such, the project site is not located within the vicinity of an airport, and no impact related to such would occur.

6. Statutorily Required Sections

6. STATUTORILY REQUIRED SECTIONS

6.1 INTRODUCTION

The Statutorily Required Sections chapter of the Draft EIR includes discussions regarding those topics that are required to be included in an EIR, pursuant to CEQA Guidelines, Section 15126.2. The chapter includes a discussion of the proposed project's potential to result in growth-inducing impacts; the cumulative setting analyzed in this EIR; significant irreversible environmental changes; and significant and unavoidable impacts caused by the proposed project.

6.2 GROWTH-INDUCING IMPACTS

State CEQA Guidelines Section 15126.2(d) requires an EIR to evaluate the potential growth-inducing impacts of a proposed project. Specifically, an EIR must discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Growth can be induced in a number of ways, including the elimination of obstacles to growth, or by encouraging and/or facilitating other activities that could induce growth. Examples of projects likely to have growth-inducing impacts include extensions or expansions of infrastructure systems beyond what is needed to serve project-specific demand, and development of new residential subdivisions or office complexes in areas that are currently only sparsely developed or are undeveloped.

The CEQA Guidelines are clear that while an analysis of growth-inducing effects is required, it should not be assumed that induced growth is necessarily significant or adverse. This analysis examines the following potential growth-inducing impacts related to implementation of the proposed project and assesses whether these effects are significant and adverse (see CEQA Guidelines, Section 15126.2[d]):

1. Foster population and economic growth and construction of housing.
2. Eliminate obstacles to population growth.
3. Affect service levels, facility capacity, or infrastructure demand.
4. Encourage or facilitate other activities that could significantly affect the environment.

Foster Population and Economic Growth and Construction of Housing

As discussed in Chapter 4.8, Land Use and Planning/Population and Housing, of this EIR, the proposed 165 residential units would increase the available housing within the Butte County area, which would be expected to increase population in the area. Using the 2.34 persons/household average household size for Butte County, the proposed 165 residential units would be anticipated to house an estimated 386 residents. The 2030 Butte County General Plan EIR and the 2030 Supplemental EIR anticipated that the project site would be built out with a golf course and 165 dwelling units. While development of the proposed project would increase the total current population of the unincorporated areas of Butte County from 63,004 to approximately 63,390, or a 0.6 percent increase, the 2030 Butte County General Plan projected that the unincorporated areas' population could grow to as much as 117,700 residents by buildout. Therefore, although the proposed project would have the potential to increase the population of the area, such an increase in population is planned and would be within the range of growth projections assumed

in the 2030 Butte County General Plan. Furthermore, the infrastructure included in the proposed project would serve only the project.

While construction of the proposed project would result in increased construction employment opportunities, which could potentially result in increased permanent population and demand for housing in the vicinity of the project site, employment patterns of construction workers is such that construction workers would not likely, to any significant degree, relocate their households as a result of the construction-related employment opportunities associated with the proposed project. In addition, although the proposed project would include the development of commercial uses, which was not anticipated for the site in the 2030 General Plan, and could provide additional long-term employment opportunities, such opportunities would not be anticipated to result in a substantial increase in permanent population or demand or housing in the vicinity of the project site. It should be noted that following the release of the Notice of Preparation (NOP) for the proposed project, the County adopted the Butte County General Plan 2040, which amended the project site's Planned Unit Development (PUD) land use designation to allow for residential and commercial uses. As such, the proposed project would be consistent with the site's land use designation, and the proposed development has been anticipated by the County. Therefore, the project would not result in significant long-term employment growth in the area.

Appendix G of CEQA Guidelines has been recently amended to clarify that unplanned population growth would be considered a potentially significant impact. However, growth that is planned, and the environmental effects of which have been analyzed in connection with a land use plan or a regional plan, should not by itself be considered an impact. Consequently, as discussed in further detail under Impacts 4.8-3 and 4.8-5 within the Land Use and Planning/Population and Housing chapter of this EIR, the proposed project would result in population growth within Butte County, but such growth would be within the buildout projections for unincorporated areas within Butte County. Thus, while the project would foster population and economic growth, such growth would be similar to what has been previously anticipated for the project region as well as the project site, and a less-than-significant impact related to population and economic growth would occur.

Eliminate Obstacles to Population Growth

The elimination of either physical or regulatory obstacles to growth is considered to be a growth-inducing effect. A physical obstacle to growth typically involves the lack of public service infrastructure. The extension of public service infrastructure, including roadways, water mains, and sewer lines, into areas that are not currently provided with these services, would be expected to support new development. Similarly, the elimination or change to a regulatory obstacle, including existing growth and development policies, could result in new growth.

As discussed in Chapter 4.12, Utilities and Service Systems, of this EIR, a number of improvements to the existing on-site water system would be required in order to upgrade the system to accommodate the proposed project, including the installation of an additional water supply well, a water treatment system, a water distribution system, water meters at each service connection, and additional water tanks for storage. However, the improved on-site water system would be sized to serve only the proposed project, and would be financed by the project applicant. Similarly, although the proposed project would require improvements to the existing wastewater system, as well as the development of additional infrastructure, in order to adequately handle the wastewater generated by the proposed uses, all such improvements and infrastructure would be developed to accommodate the proposed project only. Consequently, the construction of on-site

utilities infrastructure would not be anticipated to result in elimination of obstacles to population growth in the area.

Although the proposed project would require approval from the Butte Local Agency Formation Commission (LAFCo) of an extraterritorial service agreement or annexation of the project site into the Paradise Irrigation District (PID) service area to operate the on-site water and wastewater treatment systems, the PID would not need to extend existing water and sewer infrastructure through intervening unincorporated County lands where services are not currently provided. Instead, the proposed project would include self-contained water and sewer systems and PID would maintain the project's infrastructure. If annexation of the project site into PID's service area is pursued, annexation of the intervening land could be considered. However, doing so would be anticipated to have a negligible effect on growth, as the intervening lands are within unincorporated Butte County and are designated Agriculture (20-160 ac. minimum), Foothill Residential (with zoning allowing up to 1 du/20 ac.), and Rural Residential (up to 1 du/5ac.) by the Butte County General Plan.

Because implementation of the aforementioned improvements would be developed to serve only the proposed project, such improvements would not be considered to eliminate obstacles to growth in a manner that would encourage previously unplanned growth.

Affect Service Levels, Facility Capacity, or Infrastructure Demand

Increases in population that would occur as a result of a proposed project may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental impacts. As discussed in Chapter 4.10, Public Services and Recreation, of this EIR, increased demands for public services, including fire and police protection services, attributable to the proposed project would not necessitate the construction of new or expanded facilities that could cause significant environmental impacts. In addition, as discussed in Chapter 4.12, Utilities and Service Systems, of this EIR, although the proposed project would include the expansion of the existing on-site wastewater treatment and water supply facilities, through compliance with all applicable federal, State, and County regulations, as well as compliance with Mitigation Measures 4.12-1 and 4.12-3, significant environmental impacts would not occur.

The landfill that would serve the proposed project has adequate capacity to manage the solid waste generated as a result of the project. Furthermore, mitigation measures set forth in Chapter 4.7, Hydrology and Water Quality, of this EIR would ensure that the proposed project would not create or contribute runoff water that would exceed the capacity of the County's stormwater drainage systems. Therefore, the proposed project would not increase population such that service levels, facility capacity, or infrastructure demand would require construction of new facilities that could cause significant environmental impacts.

Encourage or Facilitate other Activities That Could Significantly Affect the Environment

This EIR provides a comprehensive assessment of the potential for environmental impact associated with implementation of the proposed project. Please refer to Chapters 4.1 through 4.13 of this EIR, which comprehensively address the potential for impacts from urban development on the project site.

6.3 CUMULATIVE IMPACTS

CEQA Guidelines, Section 15130 requires that an EIR discuss the cumulative and long-term effects of the proposed project that would adversely affect the environment. "Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines, Section 15355). "[I]ndividual effects may be changes resulting from a single project or a number of separate projects" (CEQA Guidelines, Section 15355, subd. [a]). "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (CEQA Guidelines, Section 15355, subd. [b]).

The need for cumulative impact assessment reflects the fact that, although a project may cause an "individually limited" or "individually minor" incremental impact that, by itself, is not significant, the increment may be "cumulatively considerable," and, thus, significant, when viewed together with environmental changes anticipated from past, present, and probable future projects (CEQA Guidelines, Section 15064, subd. [h(1)], Section 15065, subd. [c], and Section 15355, subd. [b]). Accordingly, particular impacts may be less than significant on a project-specific basis but significant on a cumulative basis if their small incremental contribution, viewed against the larger backdrop, is cumulatively considerable. However, it should be noted that CEQA Guidelines, Section 15064, subdivision (h)(5) states, "[…] the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." Therefore, even where cumulative impacts are significant, any level of incremental contribution is not necessarily deemed cumulatively considerable.

Section 15130(b) of CEQA Guidelines indicates that the level of detail of the cumulative analysis need not be as great as for the project impact analyses, but that analysis should reflect the severity of the impacts and their likelihood of occurrence, and that the analysis should be focused, practical, and reasonable. To be adequate, a discussion of cumulative effects must include the following elements:

> (1) Either (a) a list of past, present and probable future projects, including, if necessary, those outside the agency's control, or (b) a summary of projections contained in an adopted general plan or related planning document, or in a prior certified EIR, which described or evaluated regional or area-wide conditions contributing to the cumulative impact, provide that such documents are reference and made available for public inspection at a specified location;
>
> (2) A summary of the individual projects' environmental effects, with specific reference to additional information and stating where such information is available; and
>
> (3) A reasonable analysis of all of the relevant projects' cumulative impacts, with an examination of reasonable, feasible options for mitigating or avoiding the project's contribution to such effects (Section 15130[b]).

For some projects, the only feasible mitigation measures will involve the adoption of ordinances or regulations, rather than the imposition of conditions on a project-by-project basis (Section 15130[c]). Section 15130(a)(3) states that an EIR may determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable, and thus not

significant, if a project is required to implement or fund the project's fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

A discussion of cumulative impacts is provided within each of the technical chapters of this EIR pursuant to CEQA Guidelines Section 15130.

Cumulative Setting

The lead agency should define the relevant geographic area of inquiry for each impact category (id., Section 15130, subd. [b][3]), and should then identify the universe of "past, present, and probable future projects producing related or cumulative impacts" relevant to the various categories, either through the preparation of a "list" of such projects or through the use of "a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact" (id., subd. [b][1]).

The majority of the cumulative analysis in this EIR is based upon a summary of projections contained in the 2030 Butte County General Plan, as well as other reasonably foreseeable projects within the project region. However, it is noted that planned development is not proposed in the project vicinity. Limited situations exist where geographic setting differs between project chapter analysis within a particular region. Examples include hydrology, for which the cumulative geographic setting is generally limited to the Hamlin Slough subwatershed within the Butte Creek Watershed. Another example is air quality, for which the cumulative geographic setting is the Sacramento Valley Air Basin (SVAB). Global climate change is, by nature, a cumulative impact. Greenhouse gas (GHG) emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change (e.g., sea level rise, impacts to water supply and water quality, public health impacts, impacts to ecosystems, impacts to agriculture, and other environmental impacts). A single project could not generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from a project in combination with other past, present, and future projects could contribute substantially to the world-wide phenomenon of global climate change and the associated environmental impacts. Although the geographical context for global climate change is the Earth, for analysis purposes under CEQA, and due to the regulatory context pertaining to GHG emissions and global climate change applicable to the proposed project, the geographical context for global climate change in this EIR is limited to the State of California.

6.4 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

As established in CEQA Guidelines Section 15126.2(c), this EIR is required to include consideration of significant irreversible environmental changes that would be caused by the proposed project, should the project be implemented. An impact would be determined to be a significant and irreversible change in the environment if:

- Buildout of the project area could involve a large commitment of nonrenewable resources;
- The primary and secondary impacts of development could generally commit future generations to similar uses (e.g., a highway provides access to a previously remote area);
- Development of the proposed project could involve uses in which irreversible damage could result from any potential environmental accidents associated with the project; or
- The phasing and eventual development of the project could result in an unjustified consumption of resources (e.g., the wasteful use of energy).

The proposed project would likely result in, or contribute to, the following significant irreversible environmental changes:

- Conversion of predominantly vacant land to a fully built-out community with residential and commercial uses, thus precluding alternative land uses in the future; and
- Irreversible consumption of goods and services, such as fire, police, and school services, associated with the future population; and
- Irreversible consumption of energy and natural resources, such as water and electricity, associated with the future residential and commercial uses.

6.5 SIGNIFICANT AND UNAVOIDABLE IMPACTS

According to CEQA Guidelines, an EIR must include a description of those impacts identified as significant and unavoidable should the proposed action be implemented (CEQA Guidelines Section 15126.2[b]). Such impacts would be considered unavoidable when the determination is made that either mitigation is not feasible or only partial mitigation is feasible such that the impact is not reduced to a level that is less-than-significant. This section identifies significant impacts that could not be eliminated or reduced to a less-than-significant level by mitigations imposed by the County. The final determination of the significance of impacts and the feasibility of mitigation measures would be made by the County as part of the County's certification action. The significant and unavoidable impacts of the proposed project are summarized below.

Have a substantial adverse effect on a scenic vista or in a non-urbanized area, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point) or, in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality. (Impact 4.1-2)

Implementation of the proposed project would result in a significant impact related to the change of the existing public viewsheds of the predominantly undeveloped landscape to single-family residences and commercial development. Furthermore, while the project site would be required to comply with County Design Guidelines, development of portions of the proposed project would occur within the 350-foot setback for the Scenic Highway (SH) Overlay Zone. Mitigation Measure 4.1-2 requires the project applicant to submit a Landscape Plan, which would be subject to review and approval by the Butte County Department of Development Services, that delineates requirements for the project frontages. As such, the proposed project would be consistent with County Design Guidelines. However, even with the implementation of Mitigation Measure 4.1-2, the proposed project's change in existing public viewsheds of the site would be considered to substantially degrade the existing visual character or quality of public views of the site and its surroundings. Therefore, a significant and unavoidable impact would occur.

Long-term changes in visual character associated with cumulative development of the proposed project in combination with future buildout of the Butte County General Plan. (Impact 4.1-4)

While cumulative buildout in the geographic area would result in a substantial change in visual character of the project region, the 2030 General Plan EIR determined that compliance with the 2030 General Plan's goals, policies, and actions, combined with other State and local regulations, would reduce project-level aesthetic impacts to a less-than-significant level. However, as discussed under Impact 4.1-2, the proposed project would result in new or more impacts related

to scenic vistas and visual character from what has already been anticipated and analyzed for the site in the City's 2030 General Plan EIR and would be considered to substantially degrade the existing visual character or quality of public views of the site and its surroundings. Therefore, the project would result in a significant cumulative impact. Even with the implementation of Mitigation Measure 4.1-2, the proposed project's change in existing public viewsheds of the site would be considered to substantially degrade the existing visual character or quality of public views of the site and its surroundings. Therefore, the significant cumulative impact would remain significant and unavoidable.

Generation of GHG emissions that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. (Impact 4.2-7)

Implementation of the proposed project would cumulatively contribute to increases of GHG emissions that are associated with global climate change. Projects showing consistency with the Butte County Climate Action Plan (CAP) reduction strategies are considered to have a less-than-significant GHG emissions impact. As shown in Table 4.2-12 of this EIR, the proposed project would be consistent with the majority of the applicable County CAP Actions. However, because the proposed project would not be considered infill development, be located contiguous to existing developed areas where infrastructure exists to support connectivity, or reduce trip lengths, as the proposed project would result in a significant and unavoidable impact related to vehicle miles traveled (VMT), the project would not be considered consistent with Action 6f of the County's CAP. Therefore, even with implementation of Mitigation Measure 4.2-7, the proposed project's incremental contribution to the cumulatively significant effects of GHG emissions and global climate change would remain cumulatively considerable and significant and unavoidable.

Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b). (Impact 4.11-3)

The proposed project would generate home-based work VMT per employee below the unincorporated county baseline average; therefore, the proposed project would not result in impacts regarding VMT associated with work-related land uses. However, the proposed project would generate home-based VMT per resident above the unincorporated county baseline average, and a significant impact would occur. Compliance with Mitigation Measure 4.11-3 would reduce project-generated VMT per resident by instituting a Transportation Demand Management (TDM) program to reduce external vehicle trips generated by the proposed project. However, the effectiveness of TDM strategies is uncertain over time. Existing evidence indicates that the effectiveness of TDM strategies with regard to vehicle trip reduction can vary based on a variety of factors, including the context of the surrounding built environment (e.g., urban versus suburban and rural), individual traveler behavior, and the aggregated effect of multiple TDM strategies deployed together. Moreover, many TDM strategies rely on implementation and/or adoption by private entities and by residents to use non-automobile modes to travel outside the project. In addition, even with TDM strategy implementation, the project's home-based VMT per resident would likely still exceed the unincorporated County threshold of 18.7. Therefore, due to uncertainties regarding the ability for the mitigation measure to reduce VMT by at least 70 percent to reduce the impact to a less-than-significant level, VMT impacts would be considered significant and unavoidable.

7. Alternatives Analysis

7. ALTERNATIVES ANALYSIS

7.1 INTRODUCTION

The Alternatives Analysis chapter of the EIR includes consideration and discussion of a range of reasonable alternatives to the proposed project, as required per CEQA Guidelines Section 15126.6. Generally, the chapter includes discussions of the following: the purpose of an alternatives analysis; alternatives considered but dismissed; a reasonable range of project alternatives and their associated impacts in comparison to the proposed project's impacts; and the environmentally superior alternative.

7.2 PURPOSE OF ALTERNATIVES

The primary intent of the alternatives evaluation in an EIR, as stated in Section 15126.6(a) of the CEQA Guidelines, is to "[…] describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." In the context of CEQA Guidelines Section 21061.1, "feasible" is defined as:

> [...]capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.

Section 15126.6(f) of CEQA Guidelines states, "The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice." Section 15126.6(f) of CEQA Guidelines further states:

> The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determined could feasibly attain most of the basic objectives of the project.

In addition, an EIR is not required to analyze alternatives when the effects of the alternative "cannot be reasonably ascertained and whose implementation is remote and speculative."

The CEQA Guidelines provide the following guidance for discussing alternatives to a proposed project:

- An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives (CEQA Guidelines Section 15126.6[a]).
- Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code [PRC] Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if

these alternatives would impede to some degree the attainment of the project objectives, or would be more costly (CEQA Guidelines Section 15126.6[b]).

- The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination […] Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts (CEQA Guidelines Section 15126.6[c]).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison (CEQA Guidelines Section 15126.6[d]).
- If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed (CEQA Guidelines Section 15126.6[d]).
- The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The no project alternative analysis is not the baseline for determining whether the proposed project's environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline (CEQA Guidelines Section 15126.6[e][1]).
- If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines Section 15126.6[e][2]).

Project Objectives

Based on the above, reasonable alternatives to the project must be capable of feasibly attaining most of the basic objectives of the project. The proposed project is being pursued with the following objectives:

1. Establish an approximately 163-acre mixed-use, market rate development that incorporates smart growth principles;
2. Develop a site in the County with approximately 165 market rate single-family residential units and approximately 132,600 square feet of retail/commercial development.
3. Develop a site in the County with existing utility infrastructure and existing capacity to promote efficient use of existing resources;
4. Development of a previously developed site to minimize impacts to agricultural, open space, and habitat areas within Butte County;
5. Provide a land use plan which includes a range of compatible land uses, including market rate single-family residential, commercial, open space, and recreation uses in an area of Butte County that is designated for urban development in the General Plan;
6. Provide a development pattern and uses that promote water conservation;
7. Provide a land use plan with a balance of uses and density that result in increased property and sales tax revenues for the County; and
8. Develop a diversity of lot sizes to promote market rate housing opportunities responsive to the needs of Butte County residents.

Impacts Identified in the EIR

In addition to attaining the majority of project objectives, reasonable alternatives to the project must be capable of reducing the magnitude of, or avoiding, identified significant environmental impacts of the proposed project. The significance levels of impacts identified in the EIR are presented below.

Less Than Significant or No Impact

As discussed within each respective section of this EIR, the proposed project would result in no impact, a less-than-significant impact, or a less than cumulatively considerable contribution to a significant cumulative impact related to the following topics associated with the resource areas indicated, and mitigation would not be required:

- ***Aesthetics***
  - Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway.

- ***Agricultural and Forestry Resources***
  - 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.
  - Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).
  - Result in the loss of forest land or conversion of forest land to non-forest use.
  - Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

- ***Air Quality, Greenhouse Gas Emissions, and Energy***
  - Conflict with or obstruct implementation of the applicable air quality plan during project construction.
  - Expose sensitive receptors to substantial pollutant concentrations.
  - Result in other emissions (such as those leading to odor) adversely affecting a substantial number of people.
  - Result in the inefficient or wasteful use of energy, or conflict with a State or local plan for renewable energy or energy efficiency.

- ***Biological Resources***
  - Impacts to coast horned lizard either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.
  - Impacts to special-status birds either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.

  - Interfere substantially with the movement of any 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 the provisions of an adopted HCP, NCCP, or other approved local, regional, or State habitat conservation plan.

- ***Cultural and Tribal Cultural Resources***
  - Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5.
  - Cause a cumulative loss of cultural and tribal cultural resources.

- ***Geology and Soils***
  - Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, and landslides.
  - Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of wastewater.
  - Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
  - Cumulative increase in the potential for geological related impacts and hazards.

- ***Hazards and Hazardous Materials***
  - Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
  - Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
  - For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area.
  - Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
  - Cumulative exposure to potential hazards and increases in the transport, storage, and use of hazardous materials.

- ***Hydrology and Water Quality***
  - Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.
  - Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flows.
  - In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

  - Cumulative impacts related to the violation of water quality standards or waste discharge requirements, and impacts resulting from the alteration of existing drainage patterns.

- ***Land Use and Planning/Population and Housing***
  - Physically divide an established community.
  - Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.
  - Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure).
  - Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.
  - Cause a significant cumulative environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.
  - Cumulative substantial unplanned population growth.

- ***Mineral Resources***
  - Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
  - Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

- ***Noise***
  - Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
  - Generation of excessive groundborne vibration or groundborne noise levels.
  - For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.
  - Generation of a substantial permanent increase in ambient noise levels associated with the proposed project in combination with cumulative development.

- ***Public Services and Recreation***
  - Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection services.
  - Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police protection services.

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for schools.
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for parks; increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for other public facilities.
- Cumulative impacts to public services.

- ***Utilities and Service Systems***
  - Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, single dry, and multiple dry years.
  - Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals, or conflict with federal, State, and local management and reduction statutes and regulations related to solid waste.
  - Increase in demand for utilities and service systems associated with the proposed project, in combination with future buildout of the Butte County General Plan.

- ***Wildfire***
  - Substantially impair an adopted emergency response plan or emergency evacuation plan.
  - Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
  - Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.
  - Increase in wildfire risk attributable to the proposed project, in combination with cumulative development.

Less Than Significant with Mitigation

Environmental impacts (including cumulative impacts) of the proposed project that have been identified as requiring mitigation measures to ensure that the level of significance is ultimately less than significant include the following:

- ***Aesthetics.*** The EIR determined that because the types of lighting and the specific locations have not yet been determined, implementation of the proposed project could increase the amount of light and glare generated on-site, which could be visible from the surrounding residential development and roadways in the project vicinity, including contributions to nighttime sky glow that deteriorate the "dark sky" setting of the project site and surround environs. The EIR determined that the proposed project's contribution to the significant cumulative impact related to light and glare associated with cumulative development in the vicinity of the project site could be cumulatively considerable. However, the EIR requires mitigation in order to ensure that the project-specific impact is reduced to a less-than-significant level, and the project's incremental contribution to the significant cumulative impact is less than cumulatively considerable.

- ***Air Quality, Greenhouse Gas Emissions, and Energy.*** The EIR determined that implementation of the proposed project could conflict with or obstruct implementation of the applicable air quality plan during project operation. In addition, the EIR determined that implementation of the proposed project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors). However, the EIR requires mitigation in order to ensure that the aforementioned impacts are reduced to a less-than-significant level.

- ***Biological Resources.*** The EIR determined that implementation of the proposed project could result in potential adverse effects to special-status plants, bats, migratory nesting birds and raptors, and ringtail either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. In addition, the project could result in a substantial adverse effect on riparian habitat and/or other sensitive natural communities, or have a substantial adverse effect on federal or State protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. Given that the proposed project would involve the removal of trees, the project could conflict with local policies and/or ordinances that protect biological resources, such as a tree preservation policy or ordinance. Finally, the proposed project could result in the cumulative loss of habitat for special-status species. The EIR requires mitigation in order to ensure that all of the aforementioned impacts related to biological resources would be reduced to less-than-significant and/or less than cumulatively considerable levels.

- ***Cultural and Tribal Cultural Resources.*** The EIR determined that implementation of the proposed project could cause a substantial adverse change in the significance of a unique archaeological resource or disturb human remains, including those interred outside of dedicated cemeteries, and/or tribal cultural resource. However, the EIR requires mitigation in order to ensure that impacts related to cultural and tribal cultural resources would be less than significant.

- ***Geology and Soils.*** The EIR determined that implementation of the proposed project could result in substantial soil erosion or the loss of topsoil, as well as impacts related to being located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse, or be located on expansive soil, as defined in Table

18-1B of the Uniform Building Code. However, the EIR requires mitigation in order to ensure that the aforementioned impacts are reduced to less-than-significant levels.

- ***Hazards and Hazardous Materials.*** The EIR determined that the proposed project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment. However, the EIR requires mitigation in order to ensure that the aforementioned impact is reduced to a less-than-significant level.

- ***Hydrology and Water Quality.*** The EIR determined that implementation of the proposed project could violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water or ground water quality during construction and/or operations. In addition, the EIR determined that the proposed 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 or through the addition of impervious surfaces, in a manner which would: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or 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. However, the EIR requires mitigation in order to ensure that impacts related to hydrology and water quality are reduced to less-than-significant levels.

- ***Transportation.*** The EIR determined that implementation of the proposed project could conflict with a program, plan, ordinance, or policy addressing the circulation system related to bicycle, pedestrian, and transit facilities. In addition, implementation of the proposed project could substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) or result in inadequate emergency access. However, the EIR requires mitigation in order to ensure that the foregoing impacts related to transportation are reduced to less-than-significant levels.

- ***Utilities and Service Systems.*** The EIR determined that implementation of the proposed project could require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. In addition, the EIR concluded that the proposed project could result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. However, the EIR requires mitigation in order to ensure that the project specific impacts are reduced to a less-than-significant level.

- ***Wildfire.*** The EIR determined that implementation of the project could result in a significant impact related to exacerbating wildfire risks due to existing on-site fuel sources and prevailing winds, and thereby exposing project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. However, the EIR requires mitigation to ensure that the aforementioned impact is reduced to a less-than-significant level.

Significant and Unavoidable

The EIR has determined that the following project impacts would remain significant and unavoidable, even after implementation of the feasible mitigation measures set forth in this EIR:

- ***Aesthetics.*** The EIR determined that the proposed project would result in a significant and unavoidable impact related to having a substantial adverse effect on a scenic vista and substantially degrading the existing visual character or quality of public views of the site and its surroundings. In addition, the proposed project's contribution to the long-term changes in visual character associated with cumulative development of the proposed project in combination with future buildout of the project area was determined to be cumulatively considerable and significant and unavoidable.

- ***Air Quality, Greenhouse Gas Emissions, and Energy.*** The EIR determined that the proposed project would result in a cumulatively considerable and significant and unavoidable impact related to the generation of greenhouse gas emissions (GHGs) that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

- ***Transportation.*** The EIR determined that the proposed project would result in a significant and unavoidable impact related to a conflict with CEQA Guidelines section 15064.3, subdivision (b).

7.3 SELECTION OF ALTERNATIVES

The requirement that an EIR evaluate alternatives to the proposed project or alternatives to the location of the proposed project is a broad one; the primary intent of the alternatives analysis is to disclose other ways that the objectives of the project could be attained, while reducing the magnitude of, or avoiding, one or more of the significant environmental impacts of the proposed project. Alternatives that are included and evaluated in the EIR must be feasible alternatives. However, the CEQA Guidelines require the EIR to "set forth only those alternatives necessary to permit a reasoned choice." As stated in Section 15126.6(a), an EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. The CEQA Guidelines provide a definition for "a range of reasonable alternatives" and thus limit the number and type of alternatives that may need to be evaluated in a given EIR. According to the CEQA Guidelines Section 15126.6(f):

> The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determined could feasibly attain most of the basic objectives of the project.

First and foremost, alternatives in an EIR must be feasible. In the context of CEQA Guidelines Section 21061.1, "feasible" is defined as:

> ...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.

Finally, an EIR is not required to analyze alternatives when the effects of the alternative "cannot be reasonably ascertained and whose implementation is remote and speculative."

Alternatives Considered But Dismissed From Further Analysis

Consistent with CEQA, primary consideration was given to alternatives that could reduce significant project impacts, while still meeting most of the basic project objectives.

As stated in Guidelines Section 15126.6(c), among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are:

(i) failure to meet most of the basic project objectives,
(ii) infeasibility, or
(iii) inability to avoid significant environmental impacts.

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

The off-site alternative was considered but dismissed from detailed analysis in this EIR. The reason(s) for dismissal, within the context of the three above-outlined permissible reasons, are provided below.

Off-Site Alternative

As noted previously, the purpose of an alternatives analysis is to develop alternatives to the proposed project that are feasible and able to substantially lessen at least one of the significant environmental effects identified as a result of the project, while still meeting most, if not all, of the basic project objectives. The applicant does not own an alternative location that would be adequate to construct the proposed project. Further, an alternative site within the vicinity of the project site in the County that is planned for development and/or could accommodate buildout similar to the proposed project does not exist. The project site is the only location in the project vicinity that has been subject to previous development or has been previously planned for development. Furthermore, undeveloped areas within the project vicinity do not contain existing utility infrastructure. As such, development of the proposed project at an off-site location would not likely be feasible. Generally assuming that an area of currently undeveloped land within the vicinity could accommodate the proposed project, development of the proposed project at an off-site location would be incapable of meeting Objectives 3 and 4, and would be less practical than the proposed project due to lack of site suitability, economic viability, and availability of infrastructure. In addition, development of any undeveloped sites within the vicinity with the same types and intensity as the proposed project would require the construction and/or extension of utilities infrastructure. Development of such infrastructure would likely result in greater disturbance of previously undeveloped areas than the proposed project, which would use the existing on-site utilities infrastructure. Therefore, an Off-Site Alternative would result in greater environmental impacts than the proposed project. Overall, a feasible off-site location that would meet the requirements of CEQA, as well as meet the basic objectives of the proposed project, does not exist, and an Off-Site Alternative was dismissed from detailed analysis within this EIR.

In addition, as discussed in *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553 (Goleta II), where a project is consistent with an approved general plan, an off-site alternative

is not required to be analyzed in the EIR. The EIR "is not ordinarily an occasion for the reconsideration or overhaul of fundamental land-use policy." (*Goleta II*, *supra*, 52 Cal.3d at p. 573.) In approving a general plan, the local agency has already identified and analyzed suitable alternative sites for particular types of development and has selected a feasible land use plan. "Informed and enlightened regional planning does not demand a project EIR dedicated to defining alternative sites without regard to feasibility. Such ad hoc reconsideration of basic planning policy is not only unnecessary, but would be in contravention of the legislative goal of long-term, comprehensive planning." (*Goleta II*, *supra*, 52 Cal.3d at pp. 572-573.) The project site currently has a land use designation of Planned Unit Development (PUD) within the 2030 General Plan and was assumed to be built out be built out with a golf course and 165 dwelling units. As discussed in the Introduction chapter of this EIR, since the Notice of Preparation (NOP) was circulated for public review, Butte County has updated its General Plan, first by adoption of the 2022-2030 Housing Element of the General Plan on February 22, 2023, and secondly by the adoption of the 2040 Butte County General Plan on March 28, 2023. The land use designation for the site remains PUD under the 2040 General Plan. In addition, the 2040 General Plan includes language that the PUD on the project site would consist of a mix of residential uses, community commercial uses, water and/or sanitary sewer facilities, landscaped areas, and recreational and open space areas. Accordingly, development of the project site has been planned by the County in both the 2030 General Plan, as well as the recently adopted 2040 General Plan, and, thus, in addition to the reasons discussed above, an off-site alternative need not be further discussed in this EIR.

Alternatives Considered in this EIR

The following alternatives are considered and evaluated in this section:

- No Project (No Build) Alternative;
- Minimum High Density Residential Alternative;
- Affordable Housing Alternative; and
- Reduced Footprint Alternative.

Each of the project alternatives is described in detail below, with a corresponding analysis of each alternative's anticipated impacts in comparison to the proposed project. While an effort has been made to include quantitative data for certain analytical topics, where possible, qualitative comparisons of the various alternatives to the project are primarily provided. Such an approach to the analysis is appropriate as evidenced by CEQA Guidelines Section 15126.6(d), which states that the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed. The analysis evaluates impacts that would occur with the alternatives relative to the significant impacts identified for the proposed project. When comparing the potential impacts resulting from implementation of the foregoing alternatives, the following terminology is used:

- "Fewer" = Less than Proposed Project;
- "Similar" = Similar to Proposed Project; and
- "Greater" = Greater than Proposed Project.

When the term "fewer" is used, the reader should not necessarily equate this to elimination of significant impacts identified for the proposed project. For example, in many cases, an alternative would reduce the relative intensity of a significant impact identified for the proposed project, but the impact would still be expected to remain significant under the alternative, thereby requiring

mitigation. In other cases, the use of the term "fewer" may mean the actual elimination of an impact identified for the proposed project altogether. Similarly, use of the term "greater" does not necessarily imply that an alternative would require additional mitigation beyond what has been required for the proposed project. To the extent possible, this analysis will distinguish between the two implications of the comparative words "fewer" and "greater".

See Table 7-1 for a comparison of the environmental impacts resulting from the considered alternatives and the proposed project.

As noted above, the proposed project would result in a significant and unavoidable impact related to vehicle miles traveled (VMT). In their Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity[1], the California Air Pollution Control Officers Association (CAPCOA) sets forth VMT reduction strategies where the effectiveness of the strategies is supported by substantial evidence. Potential CAPCOA VMT reduction strategies should be relevant to the project's location and land use context. It should be noted that most of the CAPCOA VMT reduction strategies also reduce GHG emissions and criteria pollutants, considered co-benefits, by reducing the source metric of VMT (i.e., vehicle ownership, number of vehicle trips, and trip distance). Potential consequences of GHG emissions and climate change for Butte County include more frequent and intense instances of several natural hazards, including, but not limited to, agricultural pests and diseases, drought, extreme heat, human health hazards, severe wind, severe storms, and wildfire. Climate change is currently affecting Butte County and is projected to lead to more severe conditions in the future. Therefore, for the purposes of this EIR, reduction of impacts related to VMT and climate change are considered a high priority due to the potential consequences of climate change for Butte County.

Based on the above, the alternatives considered in this EIR are primarily designed to reduce VMT impacts, and, thus, GHG emissions, as compared to the proposed project. The CAPCOA strategies that could be applicable to the proposed project include, but may not necessarily be limited to, increasing residential density and offering affordable housing. As such, the project alternatives considered and analyzed below incorporate high-density residential uses and affordable housing.

No Project (No Build) Alternative

CEQA requires the evaluation of the comparative impacts of the "No Project" alternative (CEQA Guidelines Section 15126.6[e]). Analysis of the no project alternative shall:

> "… discuss […] existing conditions […] as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services." (*Id.*, subd. [e][2]) "If the project is other than a land use or regulatory plan, for example a development project on identifiable property, the 'no project' alternative is the circumstance under which the project does not proceed. Here the discussion would compare the environmental effects of the property remaining in the property's existing state versus environmental effects that would occur if the project were approved. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this 'no project' consequence should be discussed. In certain instances, the no project alternative means 'no build,' wherein the existing environmental setting is maintained. However, where failure to proceed with the project would not result in preservation of

[1] California Air Pollution Control Officers Association. *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*. December 2021.

> existing environmental conditions, the analysis should identify the practical result of the project's non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment." (*Id.*, subd. [e][3][B]).

The County has decided to evaluate a No Project (No Build) Alternative, which assumes that the current conditions of the project site would remain, and the site would not be developed. As described in this EIR, the project site is currently highly disturbed, with large graveled and/or paved areas void of vegetation, due to damage sustained immediately before, during, and after the 2018 Camp Fire. Vegetation on the site consists primarily of sparse ruderal vegetation, along with scattered oak and pine trees. An existing drainage ravine is located within the northwestern portion of the site, generally parallel with Skyway, and includes a culvert under the main access driveway, as well as under an existing access easement in the western portion of the site. In addition, three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Course currently exist on-site, and an existing potable water well and associated system, as well as an existing wastewater treatment system, including septic tanks, leach field, and disposal ponds, are located in the southwestern portion of the site. The No Project (No Build) Alternative would not meet any of the project objectives and would not meet the overall intent of the County's land use designation for this site.

Aesthetics

The EIR determined that the proposed project would result in a significant and unavoidable impact related to having a substantial adverse effect on a scenic vista and substantially degrading the existing visual character or quality of public views of the site and its surroundings. In addition, the EIR determined that without implementation of Mitigation Measure 4.1-4, the proposed project could create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. The No Project (No Build) Alternative would consist of the continuation of the existing conditions of the project site. Because the No Project (No Build) Alternative would not introduce any new structures or buildings on the site, the Alternative would not substantially degrade the existing visual character or quality of public views of the site and its surroundings, and the creation of new sources of light or glare would not occur. Thus, impacts related to Aesthetics would not occur under the No Project (No Build) Alternative.

Air Quality, Greenhouse Gas Emissions, and Energy

Because the No Project (No Build) Alternative would not involve development of the project site, operational activities would not occur under the alternative. Therefore, the Alternative would not result in operational emissions, and would not generate reactive organic gas (ROG), nitrogen oxides (NO_X), or particulate matter (PM_{10}) emissions in exceedance of the Butte County Air Quality Management District's (BCAQMD's) significance thresholds. Thus, the impact identified for the proposed project related to air quality would not occur under the No Project (No Build) Alternative, and Mitigation Measure 4.2-2 would not be required. In addition, the cumulatively considerable and significant and unavoidable impact related to the proposed project's contribution to the significant effects of GHG emissions and global climate change would not occur under the No Project (No Build) Alternative. Overall, impacts related to Air Quality and GHG emissions would not occur under the No Project (No Build) Alternative.

Biological Resources

Under the No Project (No Build) Alternative, construction activities, including ground disturbance, would not occur on the project site. As such, the Alternative would not have the potential to impact special-status plants, bats, migratory nesting birds and raptors, and ringtail. In addition, the No

Project (No Build) Alternative would not result in a substantial adverse effect on riparian habitat and/or other sensitive natural communities, or have a substantial adverse effect on federal or State protected aquatic resources. The Alternative would not include removal of trees and, thus, would not conflict with local policies and/or ordinances that protect biological resources, such as a tree preservation policy or ordinance. Furthermore, the Alternative would not result in the cumulative loss of habitat for special-status species. As such, none of the mitigation measures related to biological resources required for the proposed project would be required under the Alternative. Overall, the impacts identified for the proposed project related to Biological Resources would not occur under the No Project (No Build) Alternative.

Cultural and Tribal Cultural Resources

Because land disturbance would not occur under the No Project (No Build) Alternative, the Alternative would not have the potential to result in impacts to Cultural or Tribal Cultural Resources. Mitigation Measures 4.4-2 and 4.4-3would not be required. Overall, the impacts identified for the proposed project related to Cultural and Tribal Cultural Resources would not occur under the No Project (No Build) Alternative.

Geology and Soils

Because the No Project (No Build) Alternative would not include grading or other ground-disturbing activities, substantial soil erosion or loss of topsoil would not occur, and the Alternative would not result in impacts related to being located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse, or be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code. Thus, Mitigation Measures 4.5-2 and 4.5-3 would not be required. Overall, impacts related to Geology and Soils would not occur under the No Project (No Build) Alternative.

Hazards and Hazardous Materials

Because the current conditions of the project site would remain under the No Project (No Build) Alternative, the Alternative would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment related to soil contaminants associated with the existing on-site above-ground storage tanks (ASTs). As such, Mitigation Measure 4.6-2 would not be required. Overall, impacts related to Hazards and Hazardous Materials would not occur under the No Project (No Build) Alternative.

Hydrology and Water Quality

The No Project (No Build) Alternative would not include any ground disturbance or otherwise alter existing site conditions and, thus, would not have the potential to violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water or ground water quality during construction and/or operation. Thus, Mitigation Measures 4.7-2(a) through 4.7-2(c) would not be required. In addition, because the No Project (No Build) Alternative would not include any alterations to the project site, the Alternative would not have the potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or 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. As such, Mitigation Measure 4.7-4 would not be required.

Overall, impacts related to Hydrology and Water Quality would not occur under the No Project (No Build) Alternative.

Transportation

The No Project (No Build) Alternative would not generate traffic on local roadways or result in an increase in demand on bicycle, pedestrian, or transit facilities. Therefore, the Alternative would not conflict with a program, plan, ordinance, or policy addressing the circulation system related to bicycle, pedestrian, or transit facilities. In addition, because development of new commercial or residential development would not occur under the No Project (No Build) Alternative, the Alternative would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b), or substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) or result in inadequate emergency access. Thus, Mitigation Measures 4.11-1(a) and 4.11-1(b), 4.11-2, 4.11-3, 4.11-4(a) through 4.11-4(c) would not be required. Overall, impacts related to Transportation would not occur under the No Project (No Build) Alternative.

Utilities and Service Systems

The No Project (No Build) Alternative would not require the relocation or construction of new utilities infrastructure within the project site, and would not increase the demand for the existing utilities or service systems. Thus, Mitigation Measures 4.12-1 and 4.12-3 would not be required. Overall, impacts related to Utilities and Service Systems would not occur under the No Project (No Build) Alternative.

Wildfire

New habitable structures would not be constructed on-site under the No Project (No Build) Alternative. Because the Alternative would not involve construction activities and would not be developed with urban uses, equipment without appropriate spark arrestors that could result in direct flame impingement on combustible materials, such as existing on-site vegetation or building construction supplies, would not be used on-site. As a result, the Alternative would not have the potential to exacerbate wildfire risks or expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Therefore, Mitigation Measure 4.13-2 would not be required. Overall, the impacts identified for the proposed project related to Wildfire would not occur under the No Project (No Build) Alternative.

Minimum High Density Residential Alternative

Under the Minimum High Density Residential Alternative, the portions of the project site identified in Figure 7-1 by the colors red and blue would be developed with high-density multi-family residences, as compared to the currently proposed low-density residences. The portions of the project site identified by the colors red and blue were selected for high-density residential development under the Minimum High Density Residential Alternative because, as shown in Figure 3-3 of this EIR, although the indicated areas are currently proposed for single-family residential units, those portions of the project site are already planned for smaller lot single-family residential (i.e., higher density) development than the rest of the project site. As such, the identified areas would be the most feasible areas for development at an even higher density. In addition, the portion of the site identified with red is located in proximity to the proposed commercial uses, and, thus, would be most suitable for high-density and affordable housing.

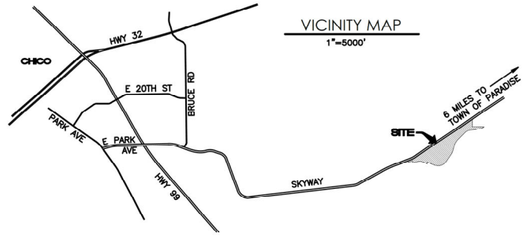
Figure 7-1
Minimum High Density Residential Alternative Land Use Plan

TUSCAN RIDGE - LAND USE PLAN

SCALE: 1"=300'

APPROXIMATE ACREAGE SUMMARY

	COMMERCIAL	15.9 AC.
	OPEN SPACE	36.7 AC.
	SPECIAL UTILITY DISTRICT	49.0 AC.
	LANDSCAPE	4.1 AC.
	ROADS	20.5 AC.
VARIES	RESIDENTIAL	36.9 AC.
	TOTAL	163.1 AC.



TUSCAN RIDGE SUBDIVISION
VESTING TENTATIVE MAP

A PORTION OF THE SW 1/4 OF NE 1/4 S 36 T 22N R 2E
COUNTY OF BUTTE, STATE OF CALIFORNIA
SKYWAY, CHICO, CALIFORNIA

APN 040-520-104 THRU 111

FOR
TUSCAN RIDGE ASSOCIATES, LLC
1420 EAST ROASEVILLE PARKWAY
ROSEVILLE, CA95661
BY

LACO ASSOCIATES
932 W 8TH AVE B
CHICO, CA 95926
PH: (530) 801-6170

DECEMBER 2023

The Minimum High Density Residential Alternative would require the approval of a General Plan Amendment to change the General Plan land use designation of the indicated portions of the project site to High Density Residential (HDR). The HDR land use designation allows higher-density urban residential uses at densities of 14 to 20 dwelling units per acre (du/ac).

The Minimum High Density Residential Alternative would include the development of the identified portions of the project site at a density of 14 du/ac, the minimum allowable density within the HDR land use designation. The 19 low-density residences proposed along the southern portion of the project site would not be modified as part of the Alternative. As such, a total of 424 HDR units and 19 low-density residential units would be developed, for a total of 443 overall residential units, which would result in an overall project residential density of 10.05 du/ac. In addition, the 190 HDR units located within the portion of the project site identified in Figure 7-1 by the color red would be affordable housing units, which would constitute 42.89 percent of all proposed residences.

The proposed development area of the project site would not change under the Minimum High Density Residential Alternative, and all other site improvements required under the proposed project would still be developed under the Minimum High Density Residential Alternative, including an internal roadway network and utilities improvements. The Minimum High Density Residential Alternative would involve the same type and amount of commercial uses and open space areas as the proposed project.

The Alternative would still require the approval of a Planned Development Rezone, Vesting Tentative Subdivision Map, and Minor Use Permit for development within the Scenic Highway (SH) Overlay Zone, as well as additional Minor Use Permits and/or Conditional Use Permits for specific commercial uses in the future. In addition, similar to the proposed project, the Alternative would require approval from the Butte Local Agency Formation Commission (LAFCo) of either an extraterritorial service agreement or annexation of the project site into the Paradise Irrigation District (PID) service area for water and sewer service. If annexation is required, a Sphere of Influence (SOI) amendment would also be required to amend PID's SOI to include the project site. Furthermore, although the Minimum High Density Residential Alternative would generally result in similar development as the proposed project, because the Alternative would include the development of some high-density residential uses, some of which would be affordable housing rather than market rate, as well as more housing units than the proposed project, Objectives 1, 2, 5, and 8 would only be partially met. The remaining project objectives would be met by the Minimum High Density Residential Alternative.

Aesthetics

Similar to the proposed project, the Minimum High Density Residential Alternative would include the development of the project site with residential and commercial uses, as well as recreation areas, open space, roadways, and a sanitary waste disposal station. As such, the Minimum High Density Residential Alternative would have the same development footprint as the proposed project, and would include the construction of similar urban uses. Similar to the proposed project, buildout of the Alternative would change the existing public viewsheds of the site from a predominantly undeveloped landscape to residential and commercial development. Further, the portions of the site designated HDR may be developed with multi-story buildings, which would have the potential to degrade the visual character and quality of views from Skyway to a greater degree than the proposed project. While the Alternative would be required to comply with County Design Guidelines, portions of the development under the Minimum High Density Residential

Alternative would occur within the 350-foot setback for the SH Overlay zone. As such, even with implementation of Mitigation Measure 4.1-2, which requires the preparation of a Landscape Plan to install screening along the proposed development areas closest to Skyway, significant and unavoidable impact would still occur. Similarly, even with the implementation of Mitigation Measure 4.1-4, the project's incremental contribution to the significant cumulative impact related to visual character would remain cumulatively considerable and significant and unavoidable under the Alternative.

In addition, similar to the proposed project, development of the Minimum High Density Residential Alternative would introduce new sources of light and glare to the project site where none currently exist. Such sources would include, but would not be limited to, streetlights within internal street systems, vehicle headlights, exterior lighting fixtures, interior light spilling through windows, and light reflected off of windows. As discussed above, the Alternative would result in the development of 443 residential units, which would be 278 more residential units than what is planned under the proposed project. Therefore, the Alternative would be considered to result in a greater intensity of light and glare as compared to the proposed project. In addition, because the portions of the site designated HDR may be developed with multi-story buildings, light and glare associated with such would be more visible from Skyway, as compared to the proposed project. The Minimum High Density Residential Alternative would be subject to compliance with the applicable sections of Chapter 24, Article III, Division 4, Outdoor Lighting, of the County's Code of Ordinances related to light pollution, including, but not limited to, shielding of fixtures such that direct rays do not pass property lines or into the public right-of-way. However, because the types of lighting and the specific locations are not known for the Minimum High Density Residential Alternative, Mitigation Measure 4.1-3, which requires the project applicant to submit a lighting plan to reduce light or glare which could adversely affect day or nighttime views of the area, would still be required.

Overall, impacts related to Aesthetics would be greater under the Minimum High Density Residential Alternative as compared to the proposed project. As discussed above, the project-specific and cumulative significant and unavoidable impacts related to substantially degrading the existing visual character or quality of public views of the site and its surroundings would still occur under the Alternative.

Air Quality, Greenhouse Gas Emissions, and Energy

While the Minimum High Density Residential Alternative would include the same commercial development as the proposed project, the Alternative would involve the development of 278 more residential units. The increase in residential units would result in an associated increase in traffic, as well as a greater number of mobile and stationary emission sources. Thus, operation of the Minimum High Density Residential Alternative would result in a greater contribution of pollutant emissions than the proposed project. As a result, the Alternative would have the potential to exceed the BCAQMD's thresholds of significance such that the Alternative could conflict with the BCAQMD's adopted attainment plans and could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard. Therefore, similar mitigation to Mitigation Measure 4.2-2, which requires compliance with BCAQMD's Off-site Mitigation Program, would be required. In addition, as discussed in further detail below, although the Minimum High Density Residential Alternative would result in a reduction in VMT as compared to the proposed project, VMT levels would not be reduced below the applicable threshold. Thus, similar to the proposed project, the Minimum High Density Residential Alternative's incremental contribution to the cumulatively significant effects of GHG emissions and global climate change would be cumulatively

considerable and significant and unavoidable. Nonetheless, although the Alternative's contribution of pollutant emissions would be greater than the proposed project, the reduction in VMT would result in a proportional reduction in GHG emissions and contributions to climate change. Overall, impacts related to Air Quality, GHG Emissions, and Energy under the Minimum High Density Residential Alternative would be similar to the proposed project.

Biological Resources

Similar to the proposed project, the Minimum High Density Residential Alternative would include ground-disturbing activities on the project site, and would have the same development footprint as the proposed project. Thus, the Alternative would have the potential to impact special-status plants, bats, migratory nesting birds and raptors, and ringtail either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. In addition, the Alternative could result in a substantial adverse effect on riparian habitat and/or other sensitive natural communities, or have a substantial adverse effect on federal or State protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. Similar to the proposed project, the Minimum High Density Residential Alternative would also involve the removal of trees, and, thus, the Alternative could conflict with local policies and/or ordinances that protect biological resources, such as a tree preservation policy or ordinance. Finally, the Minimum High Density Residential Alternative could result in the cumulative loss of habitat for special-status species. As such, Mitigation Measures 4.3-1(a) through 4.3-1(c), 4.3-4(a) and (b), 4.3-5(a) through 4.3-5(c), and 4.3-6(a) and (b), which require species-specific pre-construction surveys to be conducted, as well as Mitigation Measure 4.3-7, which requires the project applicant to conduct a formal wetland delineation prior to the initiation of ground-disturbing activities, would still be required. Similarly, Mitigation Measures 4.3-9(a) through 4.3-9(c), which require avoidance, minimization, and compensation related to the removal of on-site trees, and Mitigation Measure 4.3-10, which requires implementation of all the foregoing measures, would still be required under the Alternative. Therefore, overall impacts to Biological Resources would be similar under the Alternative as compared to the proposed project.

Cultural and Tribal Cultural Resources

While the Minimum High Density Residential Alternative would result in the development of 278 more residential units that the proposed project, all other components would be the same under the Alternative, and the overall development footprint would not change. As such, the Alternative's potential to cause a substantial adverse change in the significance of a unique archaeological resource or disturb human remains, including those interred outside of dedicated cemeteries, and/or tribal cultural resource would be the same as the proposed project, and Mitigation Measures 4.4-2 and 4.4-3, which require appropriate measures should Cultural or Tribal Cultural Resources be discovered on-site, would still be required. Therefore, potential impacts related to Cultural and Tribal Cultural Resources would be similar under the Minimum High Density Residential Alternative to the proposed project.

Geology and Soils

As noted above, the Minimum High Density Residential Alternative would include the same overall area of disturbance as the proposed project. Consequently, the potential for the Alternative to result in substantial soil erosion or the loss of topsoil, as well as impacts related to being located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse, or be located on expansive soil, would be similar to the proposed project. As such,

Mitigation Measure 4.5-2, which requires the preparation of a Storm Water Pollution Prevention Plan (SWPPP), and Mitigation Measure 4.5-3, which requires the recommendations of the project-specific Geotechnical Engineering Report to be implemented in improvement plans, would still be required. Overall, impacts related to Geology and Soils would be similar under the Minimum High Density Residential Alternative compared to the proposed project.

Hazards and Hazardous Materials

Because the overall disturbance area for the Minimum High Density Residential Alternative would be the same as the proposed project, all recognized environmental conditions (RECs) identified on the project site would still occur under the Alternative. Thus, similar to the proposed project, the Minimum High Density Residential Alternative could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment related to soil contamination associated with the railroad tracks along the southern boundary of the site, two above-ground storage tanks (ASTs) located within the southeastern portion of the site, and a mobile fueling area that was previously located in the central portion of the site. As such, Mitigation Measures 4.6-2(a) and (b), which require the project applicant to complete testing of on-site soils in the vicinity of the aforementioned RECs and complete any necessary remediation activities prior to initiation of ground-disturbing activities, would still be required under the Alternative. Overall, impacts related to Hazards and Hazardous Materials under the Minimum High Density Residential Alternative would be similar to the proposed project.

Hydrology and Water Quality

Given that the Minimum High Density Residential Alternative would include a similar overall area of disturbance compared to the proposed project, the potential for the Alternative to result in construction and operational impacts related to water quality would be similar to the proposed project. As such, Mitigation Measure 4.7-1, which requires the preparation and implementation of a SWPPP, and Mitigation Measures 4.7-2(a) through 4.7-2(c), which require the preparation and implementation of a detailed Best Management Practice (BMP) and water quality maintenance plan and requires the project applicant to obtain applicable permits related to on-site water and wastewater infrastructure improvements, would still be required. Although the Alternative would include greater residential density than the proposed project, the overall area of disturbance would be the same as the proposed project. Thus, the Minimum High Density Residential Alternative would result in similar alterations to the existing drainage pattern of the site as compared to the proposed project. For example, the number of impervious surfaces developed under the Alternative would be similar to the proposed project. Thus, similar to the proposed project, the 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 or through the addition of impervious surfaces, in a manner which would: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or 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. Therefore, implementation of Mitigation Measure 4.7-4, which requires the preparation and implementation of a final drainage report, would still be required. Overall, impacts related to Hydrology and Water Quality under the Minimum High Density Residential Alternative would be similar to the proposed project.

Transportation

The Minimum High Density Residential Alternative would result in 424 HDR units, 19 low-density residential units, and a total of 443 overall residential units. The Alternative would also include

commercial uses, similar to the proposed project. Thus, the Alternative would have the potential to be inconsistent with policies and the planned facilities detailed in the Butte County Bicycle Plan and the 2030 Butte County General Plan. As such, Mitigation Measures 4.11-1(a) and 4.11-1(b), which require the applicant to establish bicycle lanes on-site consistent with the applicable County Plans, would still be required. Similarly, Mitigation Measure 4.11-2, which includes design requirements for the primary project entrance to include deceleration and acceleration lanes, as well as to allow for bus turnaround, would be required to ensure that the Alternative would not conflict with a program, plan, ordinance, or policy addressing the circulation system related to bicycle, pedestrian, and transit facilities. In addition, due to temporary construction activities and the increase in total residential units under the Alternative relative to the proposed project, Mitigation Measures 4.11-4(a) through 4.11-4(c), which require the project applicant to install a signal at the primary project entrance, a right-turn only intersection at the secondary project entrance, and submit a Construction Traffic Management Plan, would still be required to ensure that the Alternative would not substantially increase hazards due to a geometric design feature or incompatible uses, or result in inadequate emergency access.

While the Minimum High Density Residential Alternative would include the same commercial uses as the proposed project, the Alternative would incorporate both high-density and affordable housing, which are both CAPCOA VMT reduction strategies, and thus, would result in a reduction in VMT as compared to the proposed project. Specifically, the Minimum High Density Residential Alternative would result in a 14.6 percent reduction from the home-based VMT per resident associated with the proposed project of 31.9, resulting in a home-based VMT per resident of 27.24. Because the Alternative would still result in a home-based VMT per resident that would exceed the applicable threshold of 18.7, Mitigation Measure 4.11-3 would still be required under the Alternative. Mitigation Measure 4.11-3 requires the implementation of a Transportation Demand Management (TDM) program to reduce external vehicle trips generated by the project; potential strategies required by the TDM program include implementing a carshare program, implementing commute trip reduction marketing, subsidizing or discounting regional transit, and/or providing community-based travel planning. However, the effectiveness of TDM strategies is uncertain over time and is dependent on various factors, such as individual traveler behavior and the context of the surrounding built environment. Therefore, similar to the proposed project, even with implementation of Mitigation Measure 4.11-3, the home-based VMT per resident could still exceed the applicable threshold of 18.7. Therefore, the significant and unavoidable impact related to Transportation would still occur under the Alternative. Nonetheless, because the Minimum High Density Residential Alternative would result in a reduction in VMT as compared to the proposed project, impacts related to Transportation under the Minimum High Density Residential Alternative would be fewer than the proposed project.

Utilities and Service Systems

As discussed above, the Minimum High Density Residential Alternative would require the development of the same utility infrastructure as the proposed project. As such, implementation of Mitigation Measures 4.12-1 and 4.12-3, which require the project applicant to obtain applicable permits related to the installation of the proposed water supply and wastewater infrastructure, would still be required to ensure that the Alternative would not result in adverse impacts related to the proposed water supply and wastewater infrastructure improvements. In addition, similar to the proposed project, water supply and wastewater infrastructure constructed under the Minimum High Density Residential Alternative would be required to be adequately sized to serve the increase in population associated with the Alternative, in compliance with the applicable sections of the Butte County Public Works Improvement Standards. However, because the Minimum High

Density Residential Alternative would include the development of 278 more residential units than the proposed project, and would incorporate 424 multi-family residential units, the Alternative would generate a higher increase in demand for utilities and service systems than the proposed project. Therefore, impacts related to Utilities and Service Systems under the Minimum High Density Residential Alternative would be greater than the proposed project.

Wildfire

As discussed above, the disturbance area under the Minimum High Density Residential Alternative would be the same as under the proposed project. As such, although the residential portion of the project would be developed at a greater density under the Minimum High Density Residential Alternative as compared to the proposed project, the Alternative would still preserve approximately 36.7 acres of open space on-site which would maintain fuel sources during project operation. In addition, the Alternative would be subject to the same fire risk related to construction activities, specifically the potential use of equipment without spark arrestors, as well as wildfire risks during operation due to existing on-site fuel sources and prevailing winds. Therefore, Mitigation Measure 4.13-2, which requires the project applicant to submit a Vegetation Management Plan (VMP), would still be required. Overall, the impacts identified for the proposed project related to Wildfire would be similar under the Minimum High Density Residential Alternative.

Affordable Housing Alternative

Similar to the Minimum High Density Residential Alternative, under the Affordable Housing Alternative, the portions of the project site identified in Figure 7-2 by the colors red and blue would be developed with high density multi-family residences, as compared to the currently proposed low-density residences. As noted above, the portions of the project site identified by the colors red and blue were selected for high-density residential development because those portions of the project site are already planned for smaller lot single-family residential (i.e., higher density) development as compared to the rest of the project site. In addition, the portion of the site identified with red is located in proximity to the proposed commercial uses, and, thus, would be most suitable for high-density and affordable housing.

The Affordable Housing Alternative would require the approval of a General Plan Amendment to change the General Plan land use designation of the indicated portions of the project site to HDR. The HDR land use designation allows higher-density urban residential uses at densities of 14 to 20 du/ac. Similar to the Minimum High Density Residential Alternative, the Affordable Housing Alternative would include the development of the identified portions of the project site at a density of 14 du/ac, the minimum allowable density within the HDR land use designation. The 19 low-density residences proposed along the southern portion of the project site would not be modified as part of the Alternative. As such, a total of 424 HDR units and 19 low-density residential units would be developed, for a total of 443 overall residential units, which would result in an overall project residential density of 10.05 du/ac.

Under the Affordable Housing Alternative, the 358 HDR units located within the portion of the project site identified in Figure 7-2 by the color red would be affordable housing units, which would constitute 80.8 percent of all proposed residences. However, the HDR area identified by the color blue, as well as the 19 low-density residential units, would be market-rate housing.

Figure 7-2
Affordable Housing Alternative Land Use Plan

The proposed development area of the project site would not change under the Affordable Housing Alternative, and all other site improvements required under the proposed project would still be developed under the Affordable Housing Alternative, including an internal roadway network and utilities improvements. The Affordable Housing Alternative would also include the same type and amount of the commercial uses and open space areas as the proposed project.

In addition, the Alternative would still require the approval of a Planned Development Rezone, Subdivision Map, and Minor Use Permit for development within the SH Overlay Zone, as well as additional Minor Use Permits and/or Conditional Use Permits for specific commercial uses in the future. Similar to the proposed project, the Alternative would require approval from the Butte LAFCo of either an extraterritorial service agreement or annexation of the project site into PID service area for water and sewer service. If annexation is required, an SOI Amendment would also be required to amend PID's SOI to include the project site. Furthermore, although the Affordable Housing Alternative would generally result in similar development as the proposed project, because the Alternative would include the development of some high-density residences, some of which would be affordable housing rather than market rate, as well as more housing units than the proposed project, Objectives 1, 2, 5, and 8 would only be partially met. The remaining project objectives would be met by the Affordable Housing Alternative.

Aesthetics

Similar to the proposed project, the Affordable Housing Alternative would include the development of the project site with residential and commercial uses, as well as recreation areas, open space, roadways, and a sanitary waste disposal station. As such, the Alternative would have the same development footprint as the proposed project, and would include the construction of similar urban uses. Similar to the proposed project, buildout of the Alternative would change the existing public viewsheds of the site from a predominantly undeveloped landscape to residential and commercial development. Further, the portions of the site designated HDR may be developed with multi-story buildings, which would have the potential to degrade the visual character and quality of views from Skyway to a greater degree than the proposed project. While the Alternative would be required to comply with County Design Guidelines, portions of the development under the Affordable Housing Alternative would occur within the 350-foot setback for the SH Overlay zone. As such, even with the implementation of Mitigation Measure 4.1-2, which requires the preparation of a Landscape Plan to install screening along the proposed development areas closest to Skyway, a significant and unavoidable impact would still occur. Similarly, even with the implementation of Mitigation Measure 4.1-4, the project's incremental contribution to the significant cumulative impact related to visual character would remain cumulatively considerable and significant and unavoidable under the Alternative.

In addition, similar to the proposed project, development of the Affordable Housing Alternative would introduce new sources of light and glare to the project site where none currently exist. Such sources would include, but would not be limited to, streetlights within internal street systems, vehicle headlights, exterior lighting fixtures, interior light spilling through windows, and light reflected off of windows. As discussed above, the Alternative would result in the development of 443 residential units, which would be 278 more residential units than what is planned under the proposed project. Therefore, the Alternative would be considered to result in a greater intensity of light and glare as compared to the proposed project. In addition, because the portions of the site designated HDR may be developed with multi-story buildings, light and glare associated with such would be more visible from Skyway, as compared to the proposed project. The Affordable Housing Alternative would be subject to compliance with the applicable sections of Chapter 24,

Article III, Division 4 Outdoor Lighting of the County's Code of Ordinances related to light pollution, including, but not limited to, shielding of fixtures such that direct rays do not pass property lines or into the public right-of-way. However, because the types of lighting and the specific locations are not known for the Affordable Housing Alternative, Mitigation Measure 4.1-3, which requires the project applicant to submit a lighting plan to reduce light or glare which could adversely affect day or nighttime views of the area, would still be required.

Overall, impacts related to Aesthetics would be greater under the Affordable Housing Alternative as compared to the proposed project. As discussed above, the project-specific and cumulative significant and unavoidable impacts related to substantially degrading the existing visual character or quality of public views of the site and its surroundings would still occur under the Alternative.

Air Quality, Greenhouse Gas Emissions, and Energy

While the Affordable Housing Alternative would include the same commercial development as the proposed project, the Alternative would involve the development of 278 more residential units. The increase in residential units would result in an associated increase in traffic, as well as a greater number of mobile and stationary emissions sources. Thus, operation of the Affordable Housing Alternative would result in a greater contribution of pollutant emissions than the proposed project; as a result, the Alternative would have the potential to exceed the BCAQMD's thresholds of significance such that the Alternative could conflict with the BCAQMD's adopted attainment plans and could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard. Therefore, similar mitigation to Mitigation Measure 4.2-2, which requires compliance with BCAQMD's Off-site Mitigation Program, would be required. In addition, as discussed in further detail below, although the Affordable Housing Alternative would result in a 25.4 percent reduction in VMT as compared to the proposed project, VMT levels would not be reduced below the applicable threshold. Thus, similar to the proposed project, the Affordable Housing Alternative's incremental contribution to the cumulatively significant effects of GHG emissions and global climate change would be cumulatively considerable and significant and unavoidable. Nonetheless, although the Alternative's contribution of pollutant emissions would be greater than the proposed project, the reduction in VMT would result in a proportional reduction in GHG emissions and contributions to climate change. Overall, impacts related to Air Quality, GHG Emissions, and Energy under the Affordable Housing Alternative would be similar to the proposed project.

Biological Resources

Similar to the proposed project, the Affordable Housing Alternative would include ground-disturbing activities on the project site, and would have the same development footprint as the proposed project. Thus, the Alternative would have the potential to impact special-status plants, bats, migratory nesting birds and raptors, and ringtail either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. In addition, the Alternative could result in a substantial adverse effect on riparian habitat and/or other sensitive natural communities, or have a substantial adverse effect on federal or State protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. Similar to the proposed project, because the Affordable Housing Alternative would also involve the removal of trees, the Alternative could conflict with local policies and/or ordinances that protect biological resources, such as a tree preservation policy or ordinance. Finally, the Affordable

Housing Alternative could result in the cumulative loss of habitat for special-status species. As such, Mitigation Measures 4.3-1(a) through 4.3-1(c), 4.3-4(a) and (b), 4.3-5(a) through 4.3-5(c), and 4.3-6(a) and (b), which require species-specific pre-construction surveys to be conducted, as well as Mitigation Measure 4.3-7, which requires the project applicant to conduct a formal wetland delineation prior to the initiation of ground-disturbing activities, would still be required. Similarly, Mitigation Measures 4.3-9(a) through 4.3-9(c), which require avoidance, minimization, and compensation related to the removal of on-site trees, and Mitigation Measure 4.3-10, which requires implementation of all the foregoing measures, would still be required under the Alternative. Therefore, overall impacts to Biological Resources would be similar under the Affordable Housing Alternative as compared to the proposed project.

Cultural and Tribal Cultural Resources

While the Affordable Housing Alternative would result in the development of 278 more residential units that the proposed project, all other components would be the same under the Alternative, and the overall development footprint would not change. As such, the Alternative's potential to cause a substantial adverse change in the significance of a unique archaeological resource or disturb human remains, including those interred outside of dedicated cemeteries, and/or Tribal Cultural Resource would be the same as the proposed project, and Mitigation Measures 4.4-2 and 4.4-3, which require appropriate measures should Cultural or Tribal Cultural Resources be discovered on-site, would still be required. Therefore, potential impacts related to Cultural and Tribal Cultural Resources under the Affordable Housing Alternative would be similar to the proposed project.

Geology and Soils

As noted above, the Affordable Housing Alternative would include the same overall area of disturbance as the proposed project. Consequently, the potential for the Alternative to result in substantial soil erosion or the loss of topsoil, as well as impacts related to being located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse, or be located on expansive soil, would be similar to the proposed project. As such, Mitigation Measure 4.5-2, which requires the preparation of a SWPPP, and Mitigation Measure 4.5-3, which requires the recommendations of the project-specific Geotechnical Engineering Report to be implemented in improvement plans, would still be required. Overall, impacts related to Geology and Soils would be similar under the Affordable Housing Alternative compared to the proposed project.

Hazards and Hazardous Materials

Because the overall disturbance area for the Affordable Housing Alternative would be the same as the proposed project, all RECs identified on the project site would still occur under the Alternative. Thus, similar to the proposed project, the Affordable Housing Alternative could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment related to soil contamination associated with the railroad tracks along the southern boundary of the site, two ASTs located within the southeastern portion of the site, and a mobile fueling area that was previously located in the central portion of the site. As such, Mitigation Measures 4.6-2(a) and (b), which require the project applicant to complete testing of on-site soils in the vicinity of the aforementioned RECs and complete any necessary remediation activities prior to initiation of ground-disturbing activities, would still be required under the Alternative. Overall, impacts

related to Hazards and Hazardous Materials under the Affordable Housing Alternative would be similar to the proposed project.

Hydrology and Water Quality

Given that the Affordable Housing Alternative would include a similar overall area of disturbance compared to the proposed project, the potential for the Alternative to result in construction and operational impacts related to water quality would be similar to the proposed project. As such, Mitigation Measure 4.7-1, which requires the preparation and implementation of a SWPPP, and Mitigation Measures 4.7-2(a) through 4.7-2(c), which require the preparation and implementation of a detailed BMP and water quality maintenance plan and requires the project applicant to obtain applicable permits related to on-site water and wastewater infrastructure improvements, would still be required. Although the Alternative would include greater residential density than the proposed project, because the overall area of disturbance would be the same as the proposed project, the Affordable Housing Alternative would result in similar alterations to the existing drainage pattern of the site as compared to the proposed project. For example, the number of impervious surfaces developed under the Alternative would be similar to the proposed project. Thus, similar to the proposed project, the 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 or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or 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. Therefore, implementation of Mitigation Measure 4.7-4, which requires the preparation and implementation of a final drainage report, would still be required. Overall, impacts related to Hydrology and Water Quality under the Affordable Housing Alternative would be similar to the proposed project.

Transportation

The Affordable Housing Alternative would result in 443 residential units, which would be 278 more residential units than what is planned under the proposed project. Thus, the Alternative would have the potential to be inconsistent with policies and the planned facilities detailed in the Butte County Bicycle Plan and the 2030 Butte County General Plan. As such, Mitigation Measures 4.11-1(a) and 4.11-1(b), which require the applicant to establish bicycle lanes on-site consistent with the applicable County Plans, would still be required. Similarly, Mitigation Measure 4.11-2, which includes design requirements for the primary project entrance to include deceleration and acceleration lanes, as well as to allow for bus turnaround, would be required to ensure that the Alternative would not conflict with a program, plan, ordinance, or policy addressing the circulation system related to bicycle, pedestrian, and transit facilities. In addition, because the site plan of the Alternative would be similar to the proposed project, Mitigation Measures 4.11-4(a) through 4.11-4(c), which require the project applicant to install a signal at the primary project entrance, a right-turn only intersection at the secondary project entrance, and submit a Construction Traffic Management Plan, would still be required to ensure that the Alternative would not substantially increase hazards due to a geometric design feature or incompatible uses, or result in inadequate emergency access.

While the Alternative would include the same commercial uses as the proposed project, the Affordable Housing Alternative would incorporate both high-density and affordable housing, which are both CAPCOA VMT reduction strategies, and thus, would result in a reduction in VMT as compared to the proposed project. Specifically, the Affordable Housing Alternative would result in a 25.4 percent reduction from the home-based VMT per resident associated with the proposed

project of 31.9, resulting in a home-based VMT per resident of 23.8. Because the Alternative would still result in a home-based VMT per resident that would exceed the applicable threshold of 18.7, Mitigation Measure 4.11-3 would still be required under the Alternative. Mitigation Measure 4.11-3 requires the implementation of a TDM program to reduce external vehicle trips generated by the project; potential strategies required by the TDM program include implementing a carshare program, implementing commute trip reduction marketing, subsidizing or discounting regional transit, and/or providing community-based travel planning. However, the effectiveness of TDM strategies is uncertain over time and is dependent on various factors, such as individual traveler behavior and the context of the surrounding built environment. Therefore, similar to the proposed project, even with implementation of Mitigation Measure 4.11-3, the home-based VMT per resident could still exceed the applicable threshold of 18.7. Therefore, the significant and unavoidable impact related to Transportation would still occur under the Alternative. Nonetheless, because the Affordable Housing Alternative would result in a reduction in VMT as compared to the proposed project, impacts related to Transportation under the Affordable Housing Alternative would be fewer than the proposed project.

Utilities and Service Systems

As discussed above, the Affordable Housing Alternative would require the development of the same utility infrastructure as the proposed project. As such, implementation of Mitigation Measures 4.12-1 and 4.12-3, which require the project applicant to obtain applicable permits related to the installation of the proposed water supply and wastewater infrastructure, would still be required to ensure that the Alternative would not result in adverse impacts related to the installation of water supply and wastewater infrastructure. In addition, similar to the proposed project, water supply and wastewater infrastructure constructed under the Affordable Housing Alternative would be required to be adequately sized to serve the increase in population associated with the Alternative, in compliance with the applicable sections of the Butte County Public Works Improvement Standards. However, because the Affordable Housing Alternative would include the development of 278 more residential units than the proposed project, and would incorporate multi-family residential units, the Alternative would generate a higher increase in demand for utilities and service systems than the proposed project. Therefore, impacts related to Utilities and Service Systems under the Affordable Housing Alternative would be greater than the proposed project.

Wildfire

As discussed above, the disturbance area under the Affordable Housing Alternative would be the same as under the proposed project. As such, although the residential portion of the project would be developed at a greater density under the Affordable Housing Alternative as compared to the proposed project, the Alternative would still preserve approximately 36.7 acres of open space on-site which would maintain fuel sources during project operation. In addition, the Alternative would be subject to the same fire risk related to construction activities, specifically the potential use of equipment without spark arrestors, as well as wildfire risks during operation due to existing on-site fuel sources and prevailing winds. Therefore, Mitigation Measure 4.13-2, which requires the project applicant to submit a VMP, would still be required. Overall, the impacts identified for the proposed project related to Wildfire would be similar under the Affordable Housing Alternative.

Reduced Footprint Alternative

Similar to the proposed project, under the Reduced Footprint Alternative, the project site would be developed with a total of 165 single-family residential units. However, whereas the proposed project would include 165 single-family residential lots, under the Reduced Footprint Alternative,

the proposed residential development would consist of a mix of single-family residential types such as duplexes, triplexes, and/or townhomes. While the Reduced Footprint Alternative would still involve 165 single-family residential units, the units would be clustered, allowing for a reduced development area. Under the Reduced Footprint Alternative, development would be set back further from Skyway, outside of the SH Overlay Zone. Therefore, a Minor Use Permit for development within the SH Overlay Zone would not be required for the Alternative.

All other site improvements required under the proposed project would still be developed under the Reduced Footprint Alternative, including an internal roadway network and utilities improvements. The Reduced Footprint Alternative would also include the same type and amount of commercial development as the proposed project. In addition, because the residential portion of the project would result in a reduced footprint as compared to the proposed project, more of the site would be preserved as open space.

In addition, the Alternative would still require the approval of a Planned Development Rezone, Vesting Tentative Subdivision Map, and additional Minor Use Permits and/or Conditional Use Permits for specific commercial uses in the future. In addition, similar to the proposed project, the Alternative would require approval from the Butte LAFCo of either an extraterritorial service agreement or annexation of the project site into PID service area for water and sewer service. If annexation is required, an SOI Amendment would also be required to amend PID's SOI to include the project site. Furthermore, because the Reduced Footprint Alternative would generally result in similar development as the proposed project, all project objectives would be met.

Aesthetics

Similar to the proposed project, the Reduced Footprint Alternative would include the development of the project site with residential and commercial uses, as well as recreation areas, open space, roadways, and a sanitary waste disposal station. However, the design of the Reduced Footprint Alternative would differ from the proposed project in that the development footprint would not overlap with the SH Overlay Zone. Therefore, although the Alternative would still require Mitigation Measure 4.1-2, which requires the preparation of a Landscape Plan to install screening along the proposed development areas closest to Skyway to ensure compliance with County Design Guidelines, under the Reduced Footprint Alternative, impacts related to substantially degrading the existing visual character or quality of public views of the site and its surroundings would be reduced from significant and unavoidable to a less-than-significant and less than cumulatively considerable level, as compared to the proposed project.

Similar to the proposed project, development of the Reduced Footprint Alternative would introduce new sources of light and glare to the project site where none currently exist. Such sources would include, but would not be limited to, streetlights within internal street systems, vehicle headlights, exterior lighting fixtures, interior light spilling through windows, and light reflected off of windows. Because the Reduced Footprint Alternative would include the development of the same number of residential units and commercial uses as the proposed project, the Alternative would result in a similar intensity of light and glare as compared to the proposed project. The Reduced Footprint Alternative would be subject to compliance with the applicable sections of Chapter 24, Article III, Division 4, Outdoor Lighting, of the County's Code of Ordinances related to light pollution, including, but not limited to, shielding of fixtures such that direct rays do not pass property lines or into the public right-of-way. However, because the types of lighting and the specific locations are not known for the Reduced Footprint Alternative, Mitigation Measure 4.1-3, which requires the project applicant to submit a lighting plan to reduce

light or glare which could adversely affect day or nighttime views of the area, would still be required.

Overall, impacts related to Aesthetics would be fewer under the Reduced Footprint Alternative as compared to the proposed project. As discussed above, the project-specific and cumulative significant and unavoidable impacts related to substantially degrading the existing visual character or quality of public views of the site and its surroundings would be reduced under the Alternative.

Air Quality, Greenhouse Gas Emissions, and Energy

While the Reduced Footprint Alternative would involve a smaller area of disturbance than the proposed project, the Alternative would include the development of the same amount of commercial and residential development. As such, similar to the proposed project, the Alternative would have the potential to exceed the BCAQMD's thresholds of significance such that the Alternative could conflict with the BCAQMD's adopted attainment plans and could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard. Therefore, implementation of Mitigation Measure 4.2-2, which requires compliance with BCAQMD's Off-site Mitigation Program, would still be required. As discussed in further detail below, the Reduced Footprint Alternative would result in similar VMT impacts as compared to the proposed project. Therefore, similar to the proposed project, the Reduced Footprint Alternative's incremental contribution to the cumulatively significant effects of GHG emissions and global climate change would be cumulatively considerable and significant and unavoidable. Overall, impacts related to Air Quality, GHG Emissions, and Energy under the Reduced Footprint Alternative would be similar to the proposed project.

Biological Resources

Similar to the proposed project, the Reduced Footprint Alternative would include ground-disturbing activities on the project site. Thus, the Alternative would have the potential to impact special-status plants, bats, migratory nesting birds and raptors, and ringtail either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. In addition, similar to the proposed project, the Alternative could result in a substantial adverse effect on riparian habitat and/or other sensitive natural communities, or have a substantial adverse effect on federal or State protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. However, because the Reduced Footprint Alternative would shift development away from Skyway, development under the Alternative would have the potential to better avoid the existing creek that runs parallel to Skyway than the proposed project. Thus, the Reduced Footprint Alternative has the potential to result in fewer impacts to aquatic resources as compared to the proposed project. Furthermore, although the Alternative could conflict with local policies and/or ordinances that protect biological resources, such as a tree preservation policy or ordinance, due to the tree removal required by the Alternative, the Alternative would result in a smaller area of disturbance. Therefore, fewer trees would be subject to removal under the Alternative as compared to the proposed project. Finally, the Reduced Footprint Alternative could result in the cumulative loss of habitat for special-status species. As such, Mitigation Measures 4.3-1(a) through 4.3-1(c), 4.3-4(a) and (b), 4.3-5(a) through 4.3-5(c), and 4.3-6(a) and (b), which require species-specific pre-construction surveys to be conducted, as well as Mitigation Measure 4.3-7, which requires the project applicant to conduct a formal wetland delineation prior to the initiation of ground-disturbing activities, would still be required. Similarly,

Mitigation Measures 4.3-9(a) through 4.3-9(c), which require avoidance, minimization, and compensation related to the removal of on-site trees, and Mitigation Measure 4.3-10, which requires implementation of all the foregoing measures, would still be required under the Alternative.

Although the foregoing impacts upon biological resources would still have the potential to occur under the Alternative, because a smaller amount of land would be impacted by development of the Alternative, the amount of habitat disturbed, and the associated potential to impact special-status species, would be reduced. Therefore, overall impacts to Biological Resources would be fewer under the Alternative as compared to the proposed project.

Cultural and Tribal Cultural Resources

Because the Reduced Footprint Alternative would involve a smaller disturbance area than the proposed project, the Alternative would have a reduced potential to encounter cultural or tribal cultural resources during construction. Thus, the Alternative's potential to cause a substantial adverse change in the significance of a unique archaeological resource or disturb human remains, including those interred outside of dedicated cemeteries, and/or tribal cultural resource would be reduced as compared with the proposed project. However, because the Reduced Footprint Alternative would include development of the same residential and commercial uses, and ground disturbance would still occur, Mitigation Measures 4.4-2 and 4.4-3, which require appropriate measures should Cultural or Tribal Cultural Resources be discovered on-site, would still be required. Overall, due to the Reduced Footprint Alternative's reduced area of disturbance, the Alternative would have fewer potential impacts related to Cultural and Tribal Cultural Resources than the proposed project.

Geology and Soils

Because the Reduced Footprint Alternative would involve a smaller disturbance area than the proposed project, the potential for the Alternative to result in substantial soil erosion or the loss of topsoil, as well as impacts related to being located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse, or be located on expansive soil, would be reduced as compared with the proposed project. However, because the Alternative would still involve ground-disturbing activities in the same general area as the proposed project, Mitigation Measure 4.5-2, which requires the preparation of a SWPPP, and Mitigation Measure 4.5-3, which requires the recommendations of the project-specific Geotechnical Engineering Report to be implemented in improvement plans, would still be required. Overall, impacts related to Geology and Soils would be fewer under the Reduced Footprint Alternative compared to the proposed project.

Hazards and Hazardous Materials

Although the Reduced Footprint Alternative would have a smaller overall disturbance area than the proposed project, the RECs identified on-site may still occur under the Alternative. Thus, similar to the proposed project, the Reduced Footprint Alternative could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment related to soil contamination associated with the railroad tracks along the southern boundary of the site, two ASTs located within the southeastern portion of the site, and a mobile fueling area that was previously located in the central portion of the site. As such, Mitigation Measures 4.6-2(a) and (b), which require the project applicant to complete testing of on-site soils in the vicinity of the

aforementioned RECs and complete any necessary remediation activities prior to initiation of ground-disturbing activities, would still be required under the Alternative. Overall, impacts related to Hazards and Hazardous Materials under the Reduced Footprint Alternative would be similar to the proposed project.

Hydrology and Water Quality

As noted above, because the Reduced Footprint Alternative would involve a smaller disturbance area than the proposed project, the potential for the Alternative to result in construction and operational impacts related to water quality would be reduced as compared to the proposed project. However, because the Alternative would still involve ground-disturbing activities, Mitigation Measure 4.7-1, which requires the preparation and implementation of a SWPPP, and Mitigation Measures 4.7-2(a) through 4.7-2(c), which require the preparation and implementation of a detailed BMP and water quality maintenance plan and requires the project applicant to obtain applicable permits related to on-site water and wastewater infrastructure improvements, would still be required. In addition, because buildout under the Reduced Footprint Alternative would result in the construction of less impervious surfaces relative to the proposed project, impacts under the Reduced Footprint Alternative related to substantially altering the existing drainage pattern of the site or area would be fewer than those identified for the proposed project; however, implementation of Mitigation Measure 4.7-4, which requires the preparation and implementation of a final drainage report, would still be required. Overall, impacts related to Hydrology and Water Quality under the Reduced Footprint Alternative would be fewer than the proposed project.

Transportation

Because the Reduced Footprint Alternative would include development similar to the proposed project, the Alternative would have the potential to be inconsistent with policies and the planned facilities detailed in the Butte County Bicycle Plan and the 2030 Butte County General Plan. As such, Mitigation Measures 4.11-1(a) and 4.11-1(b), which require the applicant to establish bicycle lanes on-site consistent with the applicable County Plans, would still be required. Similarly, Mitigation Measure 4.11-2, which includes design requirements for the primary project entrance to include deceleration and acceleration lanes, as well as to allow for bus turnaround, would be required to ensure that the Alternative would not conflict with a program, plan, ordinance, or policy addressing the circulation system related to bicycle, pedestrian, and transit facilities. In addition, because the Alternative would result in similar development to the proposed project, Mitigation Measures 4.11-4(a) through 4.11-4(c), which require the project applicant to install a signal at the primary project entrance, a right-turn only intersection at the secondary project entrance, and submit a Construction Traffic Management Plan, would still be required to ensure that the Alternative would not substantially increase hazards due to a geometric design feature or incompatible uses, or result in inadequate emergency access. Although the development footprint of the Reduced Footprint Alternative would be smaller than the proposed project, the Alternative would include the same number of dwelling units and types of uses as the proposed project. Therefore, VMT would remain the same as the proposed project, and, thus, even with implementation of TDM program, as required by Mitigation Measure 4.11-3, a significant and unavoidable impact would occur. Overall, impacts related to Transportation under the Reduced Footprint Alternative would be similar to the proposed project.

Utilities and Service Systems

As discussed above, the Reduced Footprint Alternative would require development of the same utility infrastructure as the proposed project. As such, implementation of Mitigation Measures 4.12-1 and 4.12-3, which require the project applicant to obtain applicable permits related to the

installation of the proposed water supply and wastewater infrastructure, would still be required to ensure that the Alternative would not result in adverse impacts related to the installation of water supply and wastewater infrastructure. In addition, because the Reduced Footprint Alternative would include the development of the same number of residential units and types of commercial uses as the proposed project, the associated utilities demand would also be the same. Therefore, impacts related to Utilities and Service Systems under the Reduced Footprint Alternative would be similar to the proposed project.

Wildfire

The Reduced Footprint Alternative would be subject to the same fire risk as the proposed project related to construction activities, specifically use of equipment without spark arrestors, as well as wildfire risks during operation due to existing on-site fuel sources and prevailing winds. Therefore, Mitigation Measure 4.13-2, which requires the project applicant to submit a VMP, would still be required. In addition, because the Reduced Footprint Alternative would involve a smaller disturbance area than the proposed project, a greater portion of the project site would be preserved as open space. As a result, the Alternative would maintain a greater amount of on-site fuel sources during project operation, thereby potentially exacerbating wildfire risk. Overall, the impacts identified for the proposed project related to Wildfire could be greater under the Reduced Footprint Alternative.

7.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. The environmentally superior alternative is generally the alternative that would be expected to generate the least amount of significant impacts. However, the lead agency may consider certain issue areas at a higher priority than others. For the purposes of this EIR, reduction of impacts related to VMT and climate change are considered a high priority due to the potential consequences of climate change for Butte County. Identification of the environmentally superior alternative is an informational procedure and the alternative selected may not be the alternative that best meets the goals or needs of the County. Section 15126(e)(2) of the CEQA Guidelines requires that an environmentally superior alternative be designated and states, “If the environmentally superior alternative is the ‘no project’ alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.” In this case, the No Project (No Build) Alternative would be considered the environmentally superior alternative, because the project site is assumed to remain in its current condition under the alternative. Consequently, none of the impacts resulting from the proposed project would occur under the Alternative, as shown in Table 7-1 below.

The No Project (No Build) Alternative would not meet any of the project objectives and would not provide housing on a disturbed site that has been designated for housing in the County’s 2030 General Plan. Although the Minimum High Density Residential Alternative and the Affordable Housing Alternative would both include residential and commercial development similar to the proposed project, the Alternatives would include the development of high-density residential uses, some of which would be affordable housing rather than market rate, as well as more housing units than the proposed project. Thus, Objectives 1, 2, 5, and 8, which specify market rate units and/or single-family residences, would only be partially met. Both the Minimum High Density Residential Alternative and the Affordable Housing Alternative would meet the remaining project objectives. Because the Reduced Footprint Alternative would generally result in similar development as the proposed project, all project objectives would be met.

As discussed throughout this chapter and shown in Table 7-1, both the Minimum High Density Residential Alternative and the Affordable Housing Alternative would result in fewer impacts related to Transportation, greater impacts related to Aesthetics and Utilities and Service Systems, and similar impacts as the proposed project for the remaining issue areas for which project impacts were identified. Neither of the Alternatives would avoid the significant and unavoidable impacts related to Aesthetics, Air Quality, GHG Emissions, and Energy, and Transportation. The Reduced Footprint Alternative would result in fewer impacts than the proposed project related to five of the 10 issue areas for which project impacts were identified; similar impacts related to four of the issue areas; and greater impacts related to one of the issue areas. Although the significant and unavoidable impacts related to Air Quality, GHG Emissions, and Energy and Transportation would still occur under the Reduced Footprint Alternative, the Alternative would avoid the significant and unavoidable impact related to Aesthetics.

Although the Reduced Footprint Alternative would result in fewer impacts than the proposed project related to five of the 10 issue areas and would avoid the significant and unavoidable impact related to Aesthetics, impacts related to Wildfire would be greater and the significant and unavoidable impacts related to Air Quality, GHG Emissions, and Energy and Transportation that were identified for the proposed project would still occur under the Alternative and would not be reduced. As discussed previously, the alternatives considered in this EIR are primarily designed to reduce VMT impacts, and, thus, GHG emissions and climate change, as compared to the proposed project, due to the County's high priority of reducing such impacts. Both the Minimum High Density Residential Alternative and the Affordable Housing Alternative would result in a reduction in VMT, and an associated reduction in GHG emissions, as compared to the proposed project. The Affordable Housing Alternative would result in a greater reduction in VMT than the Minimum High Density Residential Alternative, and would, thus, result in a greater reduction in VMT and GHG emissions as compared to the proposed project. Therefore, the Affordable Housing Alternative would be considered the Environmentally Superior Alternative.

Table 7-1
Comparison of Environmental Impacts for Project Alternatives

Resource Area	Proposed Project	No Project (No Build) Alternative	Minimum High Density Residential Alternative	Affordable Housing Alternative	Reduced Footprint Alternative
Aesthetics	Less-Than-Significant with Mitigation and Significant and Unavoidable	None	Greater*	Greater*	Fewer
Air Quality, Greenhouse Gas Emissions, and Energy	Less-Than-Significant with Mitigation and Significant and Unavoidable	None	Similar*	Similar*	Similar*
Biological Resources	Less-Than-Significant with Mitigation	None	Similar	Similar	Fewer
Cultural and Tribal Cultural Resources	Less-Than-Significant with Mitigation	None	Similar	Similar	Fewer
Geology and Soils	Less-Than-Significant with Mitigation	None	Similar	Similar	Fewer
Hazards and Hazardous Materials	Less-Than-Significant with Mitigation	None	Similar	Similar	Similar
Hydrology and Water Quality	Less-Than-Significant with Mitigation	None	Similar	Similar	Fewer
Transportation	Less-Than-Significant with Mitigation and Significant and Unavoidable	None	Fewer*	Fewer*	Similar*
Utilities and Service Systems	Less-Than-Significant with Mitigation	None	Greater	Greater	Similar
Wildfire	Less-Than-Significant with Mitigation	None	Similar	Similar	Greater
Total Greater:		**0**	**2**	**2**	**1**
Total Fewer:		**10**	**1**	**1**	**5**
Total Similar:		**0**	**7**	**7**	**4**

Note: No Impact = "None;" Greater than the Proposed Project = "Greater," Less than Proposed Project = "Fewer;" and Similar to Proposed Project = "Similar"

* Significant and Unavoidable impact(s) determined for the proposed project would still be expected to occur under the Alternative.

8. EIR Authors and Persons Consulted

8. EIR AUTHORS AND PERSONS CONSULTED

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Butte County

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Sonia Anthoine	Senior Transportation Planner

19six Architects (formerly Williams + Paddon)

Jiajia Feng	Architectural Designer

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9. REFERENCES

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Appendix A

DATE: February 23, 2022

TO: California State Clearinghouse
Responsible and Trustee Agencies
Interested Parties and Organizations

SUBJECT: **Notice of Preparation of an Environmental Impact Report for the Proposed Tuscan Ridge Project**

REVIEW PERIOD: **February 23, 2022 to March 24, 2022**

Butte County is the lead agency for the preparation of an Environmental Impact Report (EIR) for the Tuscan Ridge Project (proposed project) in accordance with the California Environmental Quality Act (CEQA), Section 15082. The purpose of the Notice of Preparation (NOP) is to provide responsible agencies and interested persons with sufficient information in order to enable them to make meaningful comments regarding the scope and content of the EIR. Your timely comments will ensure an appropriate level of environmental review for the project.

Project Location: The project site consists of approximately 165 acres located on the southeast side of Skyway Road, in unincorporated Butte County, between Chico and Paradise, California, and is identified by eight Assessor's Parcel Numbers (APNs) 040-520-104, 040-520-105, 040-520-106, 040-520-107, 040-520-108, 040-520-109, 040-520-110, and 040-520-111. The site is located approximately three miles southwest of the Town of Paradise, 0.5-mile northeast of the Rocky Bluffs residential subdivision, across the Skyway, and four miles east of the City of Chico. The project site is situated on a prominent ridge, which is the location of the previous Tuscan Ridge Golf Club. Skyway, which is identified by the Butte County General Plan as a County Scenic Highway, runs the entire length of the northwest site boundary and Paradise Rod & Gun Club is located adjacent to the northeast of the site.

Project Description Summary: The proposed project would include subdivision of the project site to develop a total of 165 single-family residential lots. The lots would range in size from 4,000 square feet (sf) to 40,000 sf. The proposed project would additionally include commercial development occupying approximately 17.3 acres of the project site, including approximately four acres for improved buildings and parking and approximately 13.3 acres for mini storage units (53,000 square feet) and outdoor RV and boat storage. The proposed project would also include the development of a sanitary waste disposal station. Additionally, approximately 49.4 acres of the site would consist of landscaped areas, as well as recreational and open space areas to include bicycle and pedestrian trails. Various associated improvements would be included in the development of the proposed project infrastructure. Access to the site would be provided through the existing driveway from Skyway Road near the center of the site, which would be improved as part of the project, and a new access near the eastern end of the site. Internal roadways throughout the site would be public, to be dedicated to the County for maintenance. The area of the project site within 350 feet of the centerline of Skyway Road is within the associated Scenic Highway (SH) Overlay Zone. The proposed project would require County approval of a General Plan Text Amendment; Planned Development (PD) Rezone; Subdivision Map; and a Minor Use Permit for development within the SH Overlay Zone. Additional Minor Use Permits and/or Conditional Use Permits may subsequently be required in the future for specific commercial uses. Other approvals necessary to implement the proposed project would include annexation of the project site into the service area of the Paradise Irrigation District (PID) for the operation of the on-site water and wastewater facilities, subject to approval by the Butte Local Agency Formation Commission (LAFCo), and formation of a Permanent Road Division for maintenance of the proposed roads, drainage facilities and lighting.

Contact Information: For more information regarding the proposed project, please refer to the following detailed project description or contact Kevin Valente, Contract Planner, at (916) 372-6100 or kvalente@raneymanagement.com. A copy of the NOP is available for review at the Butte County Public Library located at 1108 Sherman Avenue, Chico, CA, 95926; the Butte County Development Services Department located at 7 County Center Drive, Oroville, CA, 95965; and on the Butte County website at:

https://www.buttecounty.net/dds/Planning/Notable-Projects

NOP Comment Period: Written comments should be submitted at the earliest possible date, but not later than 5:00 PM on March 24, 2022 to Kevin Valente, Contract Planner, by mail at 1501 Sports Drive, Suite A, Sacramento, California, 95834; by fax at (916) 419-6108; or by email at kvalente@raneymanagement.com. Please limit public comments to the scope of the EIR as described in this NOP.

NOP Scoping Meeting: In addition to the opportunity to submit written comments, a NOP scoping meeting will be held in person and virtually via WebEx to inform interested parties about the proposed project, and to provide agencies and the public with an opportunity to provide comments on the scope and content of the EIR. Further information on the date and time of the scoping meeting is provided below.

EIR Scoping Meeting on the Tuscan Ridge Project
Monday | March 14, 2022 | 10:00AM
Butte County Human Resources
3 County Center Drive
Oroville, CA
or
Teleconference Meeting
WebEx: https://bit.ly/Scoping_Attendee
Phone: 1+ (844) 992 4726 | Meeting Number: 2553 102 8723 | Password: Scoping

1.0 PROJECT DESCRIPTION

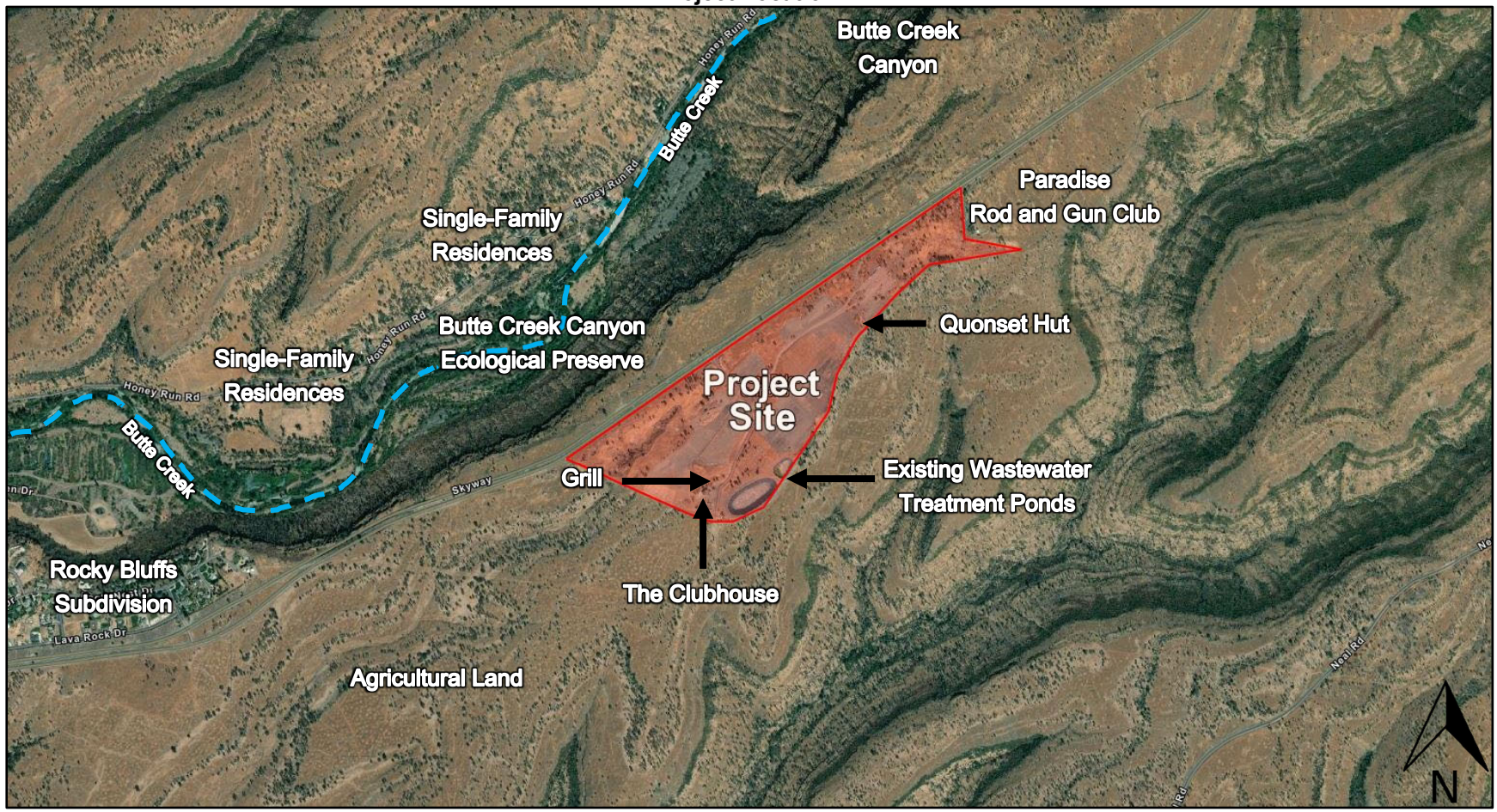
1.1 Location and Setting

The project site consists of approximately 165 acres of what was formerly the Tuscan Ridge Golf Club, located on the southeast side of the Skyway, in unincorporated Butte County, between Chico and Paradise, California. The Skyway is the sole roadway in the immediate project vicinity and is identified by the Butte County General Plan as a County Scenic Highway. Currently, access is provided through an existing driveway from Skyway near the center of the site, which has boulder accent walls on either side and two metal gates prohibiting public entry. State Route (SR) 99 lies approximately four miles to the west and SR 191 is approximately five miles to the east (see Figure 1).

The project site is predominantly bound by large undeveloped parcels to the east, south, and west, with the exception of Paradise Rod & Gun Club, which is located adjacent to the northeast border of the site (see Figure 2). The site is currently highly disturbed, with large graveled and/or paved areas void of vegetation, due to damage sustained immediately before, during, and after the 2018 Camp Fire. In mid-2018, prior to the Camp Fire, the site was used as a Pacific Gas and Electric Co. (PG&E) vegetation management camp. The site was subsequently burnt during the wildfire, then leveled and graveled for use as a base camp and staging area by PG&E and ECC Constructors during the wildfire response. PG&E continued to use portions of the site as a base camp for debris removal until March 2020. A secondary access point from the Skyway was created in the northeastern portion of the site during the site's use as a base camp, but has since been blocked off by boulders and is currently inaccessible. A small area near the secondary access point location is currently being leased by Henkels & McCoy for materials storage and a portable administrative building.

Figure 1
Regional Location

Figure 2
Project Location



The terrain of the site is varied from flat to gently sloped, with elevations ranging from approximately 650 feet above mean sea level (amsl) in the west to approximately 925 feet amsl in the east. Vegetation on the site consists primarily of sparse ruderal vegetation, along with scattered oak and pine trees. An existing drainage ravine is located within the northwestern portion of the site, generally parallel with Skyway, and includes a culvert under the main access driveway, as well as under an existing access easement in the western portion of the site. An existing outfall is located near the westernmost border of the site. A number of easements are present throughout the project site, including the access easement within the western portion of the site for the adjacent agricultural property, as well as power utility easements across the site. The access easement is currently used only occasionally by the adjacent property owner to move small pieces of equipment to and from their property.

Three unused and unoccupied structures associated with the previous Tuscan Ridge Golf Club currently exist on-site: a 2,440-sf grill building, an 1,830-sf clubhouse, and a Quonset hut. In addition, an existing potable water well and associated system, as well as an existing wastewater treatment system, including septic tanks, leach field, and disposal ponds, are located in the southwestern portion of the site. The existing potable water and wastewater treatment systems are described in further detail in the Public Services and Utilities section of the Project Components description below.

1.2 Surrounding Land Uses

With the exception of the Paradise Rod & Gun Club adjacent to the northeast of the site boundaries, the land surrounding the project site is undeveloped. The Paradise Rod & Gun Club consists of two buildings with associated parking spaces, and two outdoor shooting ranges. Agricultural land, primarily used for grazing, is located to the south and southwest of the site. As shown in Figure 2, Butte Creek is located to the north of, and runs roughly parallel to, the Skyway. The Butte Creek Ecological Preserve is also located north of the site, across the Skyway, with Butte Creek Canyon located further to the northeast. Butte Creek and the Butte Creek Ecological Preserve are separated from the project site by the Skyway and an approximately 380-foot decline in elevation. The nearest existing residential uses to the project site would be the Rocky Bluffs residential subdivision located approximately 4,100 feet to the southwest, across the Skyway, and a number of rural single-family residences located along Honey Run Road, approximately 2,700 feet to the north of the project site, across the Skyway. The rural residences are separated from the project site by Butte Creek, the Butte Creek Ecological Preserve, the Skyway, and an associated decline in elevation of approximately 434-feet.

1.3 Existing Land Use and Zoning Designations

The project site currently has a County of Butte General Plan land use designation of Planned Unit Development (PUD) and is zoned Planned Development (PD). In adopting the Butte County 2030 General Plan, the County prepared an EIR in 2010 and a subsequent EIR (SEIR) in 2012. Both the 2010 EIR and 2012 SEIR assume that the project site will be built out with a golf course and 165 dwelling units (see, e.g., 2010 Draft EIR, pg. 3-49 [Table 3-5]; and 2012 Draft SEIR, pg. 3-45 [Table 3-5].) In addition, the Skyway is identified by the Butte County 2030 General Plan as a County Scenic Highway; thus, the area extending 350 linear feet from the centerline of the roadway is considered to be a SH Overlay Zone and is subject to the requirements of Section 24-42 of the Butte County Code.

The land to the south of the project site is designated Agriculture (AG) in the General Plan and zoned Agricultural with a minimum parcel size of 40 acres and a maximum of one unit per parcel (AG-40). The land across the Skyway, north of the project site, is designated as Foothill Residential (FR) and zoned Foothill Residential with a maximum of one unit per 20-acre parcel (FR-20). The area designated FR is separated from the project site by an approximately 2,700-foot distance and an approximately 434-foot decline in elevation. The Rocky Bluffs subdivision, located approximately 4,100 feet to the southwest of the project site, is designated and zoned Medium Density Residential (MDR), which allows for a maximum density of six dwelling units per acre.

1.4 Project Components

The proposed project would include subdivision of the project site to develop a total of 165 residential units, commercial development, recreation areas, open space, various on-site road improvements, and a sanitary waste disposal station. The proposed project would require County approval of a General Plan (GP) Text Amendment; Planned Development (PD) Rezone; Subdivision Map; and a Minor Use Permit for development within the SH Overlay Zone. Other approvals necessary to implement the proposed project would include annexation of the project site into the service area of the Paradise Irrigation District (PID), subject to approval by the Butte LAFCo. The proposed project components, along with all required entitlements and approvals, are described in further detail below.

General Plan Text Amendment

A General Plan Text Amendment is requested to revise Section D, *Future Planned Unit Developments, Area Plans, and Specific Plans*, on page 4-31 of the Land Use Element of the General Plan, as shown below. The requested General Plan Text Amendment would remove the requirement to retain a golf course on-site and add commercial uses. As previously mentioned, the former Tuscan Ridge Golf Course was destroyed by the Camp Fire.

> *"The Tuscan Ridge PUD will determine the mix of uses that will occur in a ~~172~~ 165-acre area located along the Skyway at the site of the previously existing Tuscan Ridge Golf Course. ~~Residential~~ A mix of residential uses, community commercial uses, water and/or sanitary sewer facilities provided by a public or private entity may be developed in this area~~, provided that the golf course is also maintained~~."*

Planned Development Rezone

The site currently has a Butte County land use designation of PUD and a zoning designation of PD. The land use and zoning designations of the site were approved by the Board of Supervisors as part of the development of the Butte County General Plan 2030 and the 2012 Zoning Map update, respectively, at the request of the property owner. According to Article II, Division 6, Section 24-28 (D) of the Butte County Code, the purpose of the PD zone is to allow for high-quality development that deviates from standards and regulations applicable to other zones within the County. The PD zone is intended to promote creativity in building design, flexibility in permitted land uses, and innovation in development concepts. The PD zone is also intended to ensure project consistency with the General Plan, sensitivity to surrounding land uses, and the protection of sensitive natural resources. The PD zone provides land owners with enhanced flexibility to take advantage of unique site characteristics to develop projects that will provide public benefits for residents, employees, and visitors to Butte County. Accordingly, the PD zone is intended to allow for a variety of uses and development.

Pursuant to Article II, Division 6, Section 24-32, *Planned Development Zone Requirements*, and Article VI, Division 4, *Zoning Ordinance Amendments*, of the Butte County Code, the proposed project would require a PD rezoning to specifically allow for the proposed uses. The proposed Land Use Plan (see Figure 3) provides a visual depiction of the anticipated land uses proposed as part of the project.

Subdivision

The proposed project would include a Vesting Tentative Subdivision Map (see Figure 4) to subdivide the project into 165 single-family residential lots, five commercial use lots, 49.4 acres of open space, a 3.7-acre amenity center, and 36.4 acres of special utility district associated with the on-site water and sewer systems, as shown in Table 1.

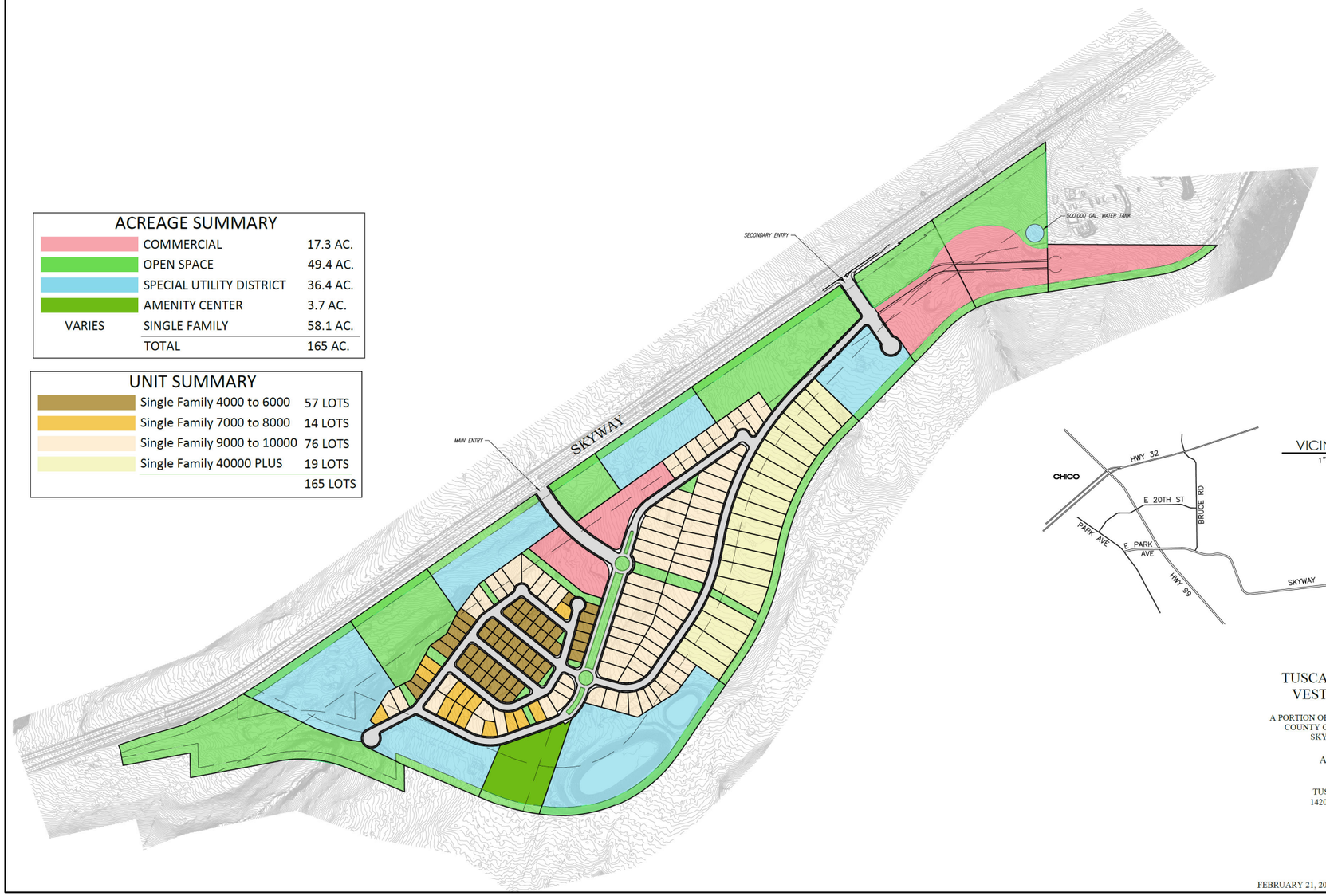
Figure 3
Land Use Plan

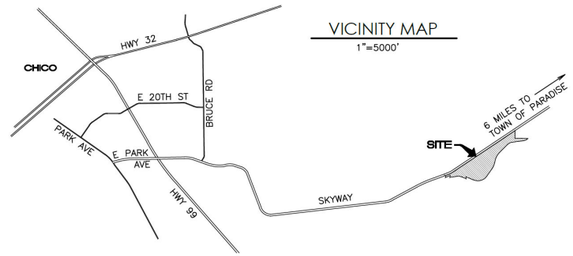
TUSCAN RIDGE - LAND USE PLAN

SCALE: 1"=300'

ACREAGE SUMMARY		
	COMMERCIAL	17.3 AC.
	OPEN SPACE	49.4 AC.
	SPECIAL UTILITY DISTRICT	36.4 AC.
	AMENITY CENTER	3.7 AC.
VARIES	SINGLE FAMILY	58.1 AC.
	TOTAL	165 AC.

UNIT SUMMARY	
Single Family 4000 to 6000	57 LOTS
Single Family 7000 to 8000	14 LOTS
Single Family 9000 to 10000	76 LOTS
Single Family 40000 PLUS	19 LOTS
	165 LOTS





TUSCAN RIDGE SUBDIVISION
VESTING TENTATIVE MAP

A PORTION OF THE SW 1/4 OF NE 1/4 S 36 T 22N R 2E
COUNTY OF BUTTE, STATE OF CALIFORNIA
SKYWAY, CHICO, CALIFORNIA

APN 040-520-104 THRU 111

FOR
TUSCAN RIDGE ASSOCIATES, LLC
1420 EAST ROASEVILLE PARKWAY
ROSEVILLE, CA95661
BY

LACO ASSOCIATES
932 W 8TH AVE B
CHICO, CA 95926
PH: (530) 801-6170

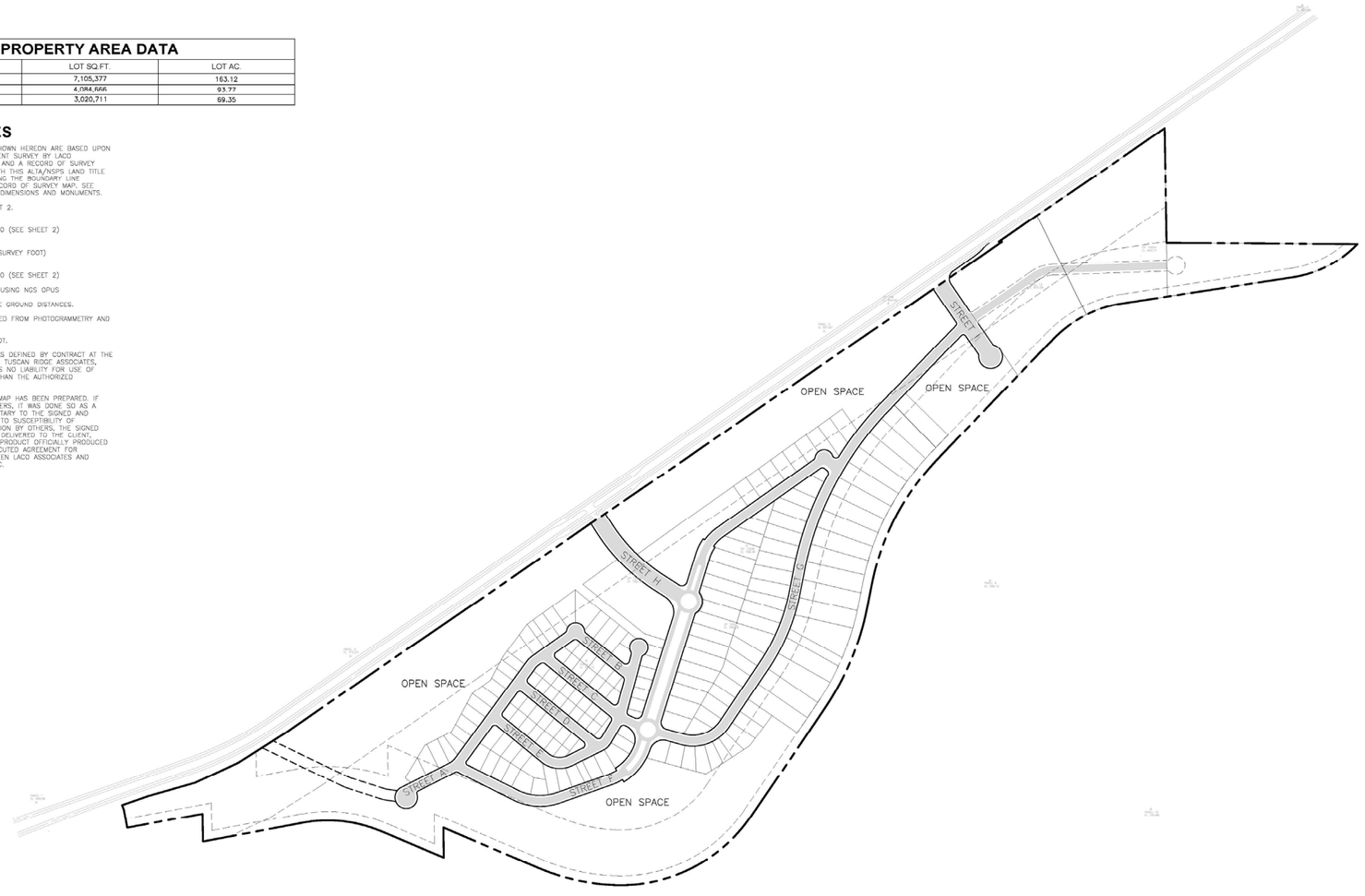
FEBRUARY 21, 2022

Figure 4
Tentative Subdivision Map

PROPERTY AREA DATA		
LOT NAME	LOT SQ.FT.	LOT AC.
OVERALL GROSS AREA	7,105,377	163.12
OPEN SPACE, EASEMENTS	4,084,666	93.77
NET AREA	3,020,711	69.35

GENERAL NOTES

1. BOUNDARY LINE DIMENSIONS SHOWN HEREON ARE BASED UPON A BOUNDARY LINE ESTABLISHMENT SURVEY BY LACO ASSOCIATES IN OCTOBER 2020 AND A RECORD OF SURVEY PREPARED IN CONJUNCTION WITH THIS ALTA/NSPS LAND TITLE SURVEY. FOR DETAILS REGARDING THE BOUNDARY LINE RESOLUTION REFER TO THE RECORD OF SURVEY MAP. SEE SHEET 2 FOR BOUNDARY LINE DIMENSIONS AND MONUMENTS.
2. BASIS OF BEARINGS: SEE SHEET 2.
3. BASIS OF COORDINATES:
   SURVEY CONTROL POINT #10000 (SEE SHEET 2)
   NORTHING: 2386212.26
   EASTING: 6643603.26
   (NAD83, CA SPC ZONE II, US SURVEY FOOT)
4. BASIS OF ELEVATIONS:
   SURVEY CONTROL POINT #10000 (SEE SHEET 2)
   ELEVATION: 762.79 NAVD88
   FROM STATIC GPS PROCESSED USING NGS OPUS
5. DISTANCES SHOWN HEREON ARE GROUND DISTANCES.
6. TOPOGRAPHIC MAPPING COMPILED FROM PHOTOGRAMMETRY AND SUPPLEMENTAL SURVEYING.
7. CONTOUR INTERVAL IS ONE FOOT.
8. THE CONTENT OF THIS MAP WAS DEFINED BY CONTRACT AT THE REQUEST OF SCOTT BATES AND TUSCAN RIDGE ASSOCIATES, LLC. LACO ASSOCIATES ACCEPTS NO LIABILITY FOR USE OF THIS MAP BY ANYONE OTHER THAN THE AUTHORIZED REPRESENTATIVE THEREOF.
9. AN ELECTRONIC FILE OF THIS MAP HAS BEEN PREPARED. IF TRANSMITTED FOR USE BY OTHERS, IT WAS DONE SO AS A COURTESY AND IS SUPPLEMENTARY TO THE SIGNED AND SEALED ELECTRONIC PDF. DUE TO SUSCEPTIBILITY OF ELECTRONIC FILES TO CORRUPTION BY OTHERS, THE SIGNED AND SEALED ELECTRONIC PDF, DELIVERED TO THE CLIENT, CONSTITUTES THE ONLY WORK PRODUCT OFFICIALLY PRODUCED IN ACCORDANCE WITH THE EXECUTED AGREEMENT FOR PROFESSIONAL SERVICES BETWEEN LACO ASSOCIATES AND TUSCAN RIDGE ASSOCIATES, LLC.



SCALE: 1"=300'

OVERALL SITE PLAN

TUSCAN RIDGE SUBDIVISION
VESTING TENTATIVE MAP

A PORTION OF THE SW 1/4 OF NE 1/4 S 36 T 22N R 2E
COUNTY OF BUTTE, STATE OF CALIFORNIA
SKYWAY, CHICO, CALIFORNIA

APN 040-520-104 THRU 111

FOR
TUSCAN RIDGE ASSOCIATES, LLC
1420 EAST ROASEVILLE PARKWAY
ROSEVILLE, CA95661
BY

LACO ASSOCIATES
932 W 8TH AVE B
CHICO, CA 95926
PH: (530) 801-6170 FX: (707) 123-4567
NOVEMBER 3, 2021 SHEET3 OF 12

Table 1 Proposed Land Uses	
Proposed Land Use	**Acreage**
Single-Family Residential	58.1
Commercial	17.3
Amenity Center	3.7
Open Space	49.4
Special Utility District	36.4
Total	**165.0**

Single-Family Residential

The proposed 165 residential lots would range from 4,000 sf to 40,000 sf. The residences would generally be located in the center of the site, with the largest residential lots located nearest to the southern border of the project site, where expansive views are available to the south. The Amenity Center would include the existing clubhouse, which would be used as a community space for the residents and for back-of-house operations.

Commercial Development

The proposed project would include 17.3 acres divided into five lots for commercial uses. As currently designed, the proposed project would include an approximately 3,600-sf gas station/convenience store with up to 16 fuel dispensers and up to approximately 76,000 sf of commercial space, across one- and two-story buildings, along the primary site entrance. Additionally, the eastern portion of the project site would be developed with a mini storage use with outdoor RV and boat storage. The mini storage would offer up to approximately 53,000 sf of space for storage units. While the specific uses within the approximately 76,000 sf of commercial space near the main entry is currently unknown, the uses under the PD zoning would be limited to the permitted and conditionally permitted uses allowed within the General Commercial (GC) and Neighborhood Commercial (NC) zoning districts, pursuant to Table 24-22-1, *Permitted Land Uses in the Commercial and Mixed Use Zones*, of the County Code. In addition, as part of the PD zoning, the maximum floor area ratio would be limited to 0.4 and the maximum height would be limited to 50 feet, as required for development within the GC zoning district. The anticipated gas station/convenience store and mini storage uses would be consistent with the allowable uses under the GC and NC zoning districts. The following list of additional commercial uses that would be consistent with the GC and NC zoning districts, subject to the permit or approval noted, would be permissible through the PD zoning:

- Drive-Through Facility – subject to a Minor Use Permit;
- Offices, Professional – Permitted, subject to a Zoning Clearance;
- Personal Services – Permitted, subject to a Zoning Clearance;
- Restaurant – Permitted, subject to a Zoning Clearance;
- Retail, General – Permitted, subject to a Zoning Clearance;
- Commercial Recreation, Indoor – subject to a Minor Use Permit;
- Construction, Maintenance and Repair Services – subject to a Minor Use Permit;
- Child Care Center (facility providing child care) – subject to a Minor Use Permit;
- Child Day Care, Large (home providing child care for seven to fourteen children) – subject to a Minor Use Permit;
- Child Day Care, Small (home providing child care for eight or fewer children) – Permitted, subject to a Zoning Clearance;
- Community Centers – subject to a Conditional Use Permit;
- Medical Office and Clinic – Permitted, subject to a Zoning Clearance; and
- Bars, Nightclubs, Lounges – subject to a Conditional Use Permit.

Access and Circulation

Access to the proposed project would be provided by two entrances from the Skyway, as shown in Figure 3 and Figure 4. The existing entrance located near the center of the site would be improved and a new entrance would be established in the eastern portion of the site. The two proposed access points, as currently configured, would contain full intersections that would allow for left turns from the Skyway. The existing access easement in the western portion of the project site for the adjacent agricultural property would remain and could serve as additional emergency ingress/egress, if needed.

The main entrance from the Skyway would connect to the internal roadways at a roundabout, from which the internal roadways would extend to the northeast and southwest, providing access to the residences. The main entry road would be designed with a 96-foot right-of way with a greenway and sidewalk along both sides. The proposed gas station/convenience store and up to approximately 76,000 sf of commercial space would be located along the main entry road. The internal roadway extending to the northeast from the roundabout would consist of an 80-foot right-of-way before transitioning to the typical internal roadway design of a 60-foot right-of-way, containing two 12-foot lanes and allowing eight feet for street parking on both sides. The internal roadway extending to the southwest from the main entry roundabout would consist of a 110-foot right-of-way to a four-way roundabout further southwest, where the main roadway would then transition from a 90-foot right-of-way to the typical internal roadway design of a 60-foot right-of-way. All project roadways would be public and would be dedicated to the County for maintenance.

The eastern driveway from Skyway Road would be located at the currently blocked-off access point that was previously used during wildfire response efforts. The eastern entrance would primarily serve the proposed sanitary waste disposal station and mini storage use proposed in the eastern portion of the site, while also providing secondary access to the residences within the northeastern portion of the site. The intersection would also provide more convenient access to patrons of the Paradise Rod & Gun Club, located east of the project site, traveling westbound along Skyway Road.

Open Space, Trails, and Landscaping

As part of the proposed project, a total of approximately 49.4 acres of open space is proposed within the project site (see Figure 3), which would primarily be located within an approximately 300- to 400-foot area along the frontage of the Skyway, within the SH Overlay Zone. In addition, open space would be located along the southwest border of the project site, thinning to a 50-foot area between the southeasternmost residential lots and the eastern edge of the project site, as well as within landscaped areas along internal roadways. Throughout the open space, predominantly within the northern portion of the project site, multi-use trails would be developed to allow for passive recreation, such as walking, jogging, and bicycling. A formal improved park space is not proposed.

Landscaping on the project site would reflect the native vegetation in the area. For example, landscaping within the open space areas would include the planting of native vegetation along the sound wall proposed for the eastern border of the site, adjacent to the Paradise Rod & Gun Club, and revegetation of any disturbed areas with native vegetation, consistent with the surrounding area.

Public Services and Utilities

The existing on-site water system consists of an on-site well at a depth of 735 feet. Water produced from the well is currently sent to two 10,000-gallon above-ground storage tanks using a 75 horse power (hp) turbine pump, and subsequently pulled from the tank using two 10 hp pumps and pressurized into a distribution system through four pressure tanks. The water system is generally located near the center of the southern border of the project site. The existing well was initially installed in 1999 for the purposes of irrigating the Tuscan Ridge Golf Course and providing services to the associated bistro. The well was subsequently used for potable water purposes by PG&E and ECC Constructors during their occupation of the site. The water system is currently permitted as a domestic water supply through the Butte County Environmental Health Division (Permit Number 04-09182) and the State Water Resources Control Board (SWRCB) Division of Drinking Water.

A number of improvements to the existing on-site water system would be required in order to upgrade the system to accommodate the proposed project, including the installation of an additional water supply well, a water treatment system, a water distribution system, water meters at each service connection, and additional water tanks for storage. The proposed water system would be subject to the standards and monitoring requirements set forth by federal, State, and local laws, including, but not limited to, public health standards of Title 22 of the California Code of Regulations (CCR), the California Safe Drinking Water Act, and Butte County standards. The water distribution system and proposed second well would be constructed in accordance with the California Waterworks Standards (Title 22, Chapter 16). The water system would be capable of meeting the maximum daily demand of the proposed project, in accordance with Title 22, Section 64554(c). Any additional water tanks needed to support the proposed development would be constructed using materials that meet appropriate California Department of Forestry and Fire Protection (CAL FIRE) standards. A minimum of 300,000 gallons of water storage is anticipated to be required to meet minimum fire flows; however, the water storage requirements would be determined in consultation with the Butte County Fire Department and CAL FIRE. A 500,000-gallon water tank is anticipated to be located in the easternmost portion of the project site. A new permit through the SWRCB and/or Butte County Environmental Health Division would be required to allow use of the system as a community water system.

The existing wastewater treatment system was constructed to serve the temporary base camp that provided wildfire response efforts and currently operates under the SWRCB General Order 2014-0153-DWQ-R5309. The existing system is currently designed with a peak flow capacity of 100,000 gallons per day (gpd), with the capability to expand to up to 150,000 gpd. The treatment process currently include solids separation and anaerobic digestion, aerobic digestion, media filtration, and ultraviolet light (UV) disinfection. Processing is accomplished using septic tanks, aerobic treatment modules, and UV disinfection units. More specifically, wastewater is pumped through four 40,000-gallon septic tanks then through one of four 25,000 gpd Presby multi-level treatment beds. Effluent from each Presby module is collected via gravity to a connected 3,000-gallon collection pump tank with UV treatment, providing tertiary treatment. The treated effluent is then routed through a two-inch force main to the evaporative ponds with bottom-mounted aerators for disposal. The two ponds, located in the southernmost portion of the project site, are 48.6 and 6.1 acre-feet and have 3:1 (Horizontal:Vertical) interior and external slopes and a minimum 15-foot wide crest that provides access around the perimeter. The containment system for the ponds consists of a 40-mil high-density polyethylene (HDPE) geosynthetic liner, eight-ounce non-woven geotextile fabric, and a leak collection/detection system to fully contain the treated effluent.

In order to adequately handle the wastewater generated by the proposed uses and the associated wastewater characteristics, improvements to the existing wastewater system and additional infrastructure are needed. For example, a new sewer collection system would be required in order to collect and convey the wastewater from the proposed residential and commercial land uses to the treatment system. In addition to the proposed residential and commercial land uses, the proposed project would include a new sanitary waste disposal station that would be located at a cul-de-sac at the end of the proposed eastern entryway to the project site, which would also serve as the main entrance to the mini storage use. The sanitary waste disposal station is primarily intended to serve future patrons of the mini storage use, particularly by providing a convenient location for dumping sewage waste from RVs and boats stored on-site. The sanitary waste disposal station would include an adjacent 20,000-gallon septic tank, which would connect to the on-site wastewater treatment system. Wastewater generated by the proposed uses, including wastewater from the septic tank associated with the sanitary waste disposal station, would flow by gravity through a network of eight- and 10-inch sewer laterals and mains located within the internal roadways to two new 20,000-gallon equalization tanks located near the existing wastewater treatment system in the southwestern portion of the project site. Grease interceptors would be installed, where necessary, to intercept fats, oils, and grease (FOG) prior to entering the collection system. From the equalization tanks, wastewater would be pumped through a new headworks/bar screen before being processed through the existing wastewater treatment system (e.g., septic tanks, Presby modules, and UV disinfection). Effluent from the wastewater treatment system would continue to be disposed of through the existing evaporative ponds, as well as pumped through a new three-inch effluent force main to proposed spray dispersal fields to be located within the open space area adjacent to the Skyway. A new Waste Discharge Requirements (WDR) Permit from the SWRCB would be required for the proposed improvements to the existing wastewater treatment system. Due to the capacity of the on-site wastewater treatment system, the opportunity exists for the sanitary waste

disposal station to accept sewage from additional sources, subject to SWRCB permitting requirements. Additional specificity and analysis regarding the proposed sanitary waste disposal station will be included in the EIR.

As noted in further detail below, the proposed on-site water and sewer systems are anticipated to be owned, operated, and maintained by the PID, subject to Butte LAFCo approval of annexation into the District.

Stormwater generated on the project site would be collected by surface flow into a system of curbs and gutters, vegetated swales, and drain inlets throughout the site that would allow the collected stormwater to transition to the subsurface stormwater collection system of pipes that would convey the stormwater into strategically located retention basins. The proposed stormwater drainage system would be designed in compliance with the standards and requirements of Chapter 50, *Stormwater Management and Discharge Control*, of the Butte County Code.

PG&E will provide electricity to the site by way of an existing on-site connection. Natural gas would not be used at the site; however, propane or another form of gas may be used by both residential and commercial users, for residential and commercial applications. As propane supply is not part of the proposed project, it would be the responsibility of individual users to establish propane service from a local provider such as Suburban Propane or Hunt Propane, both of which are located in Chico, California. Additionally, the proposed project would be served by the Butte County Sheriff's Department, California Highway Patrol (CHP), Butte County Fire, and Chico Unified School District (grades K-12). Law enforcement would be provided by the Sheriff's Department, while traffic-related enforcement services would be provided by CHP. The nearest Butte County Fire Station is South Chico Fire Station, located at 2334 Fair Street, Chico, which is approximately 6.5 miles west from the site by road.

Minor Use Permit

The proposed project would include a request for the approval of a Minor Use Permit to allow for development within the 350-foot SH Overlay Zone from Skyway Road pursuant to Section 24-42 C, *Scenic highway overlay zone*, of the Butte County Code. While the majority of the proposed development would be set back beyond the 350-foot SH Overlay Zone, the site entrances, as well as portions of the access roads, sound walls, some residential backyards, and limited portions of the commercial development would be located within the SH Overlay Zone.

Service Area Annexation

The proposed project would require annexation into the PID service area for water and sanitary sewer service, subject to approval by Butte LAFCo. The annexation would apply only to the project site itself, rather than the intervening area between the site and Paradise, California. Connections to PID's existing water distribution system would not be extended to the project site. Upon approval of all pertinent permits, the PID would own, operate, and maintain the water and wastewater systems as an independent utility. The existing permits to own and operate the water distribution and wastewater system would be transferred to PID upon completion of the annexation process through Butte LAFCo.

1.5 Requested Entitlements

The proposed project would require County approval of the following:

- General Plan Text Amendment;
- PD Rezone;
- Subdivision Map; and
- Minor Use Permit for development within the SH Overlay Zone.

It should be noted that additional Minor Use Permits and/or Conditional Use Permits may subsequently be required for specific commercial uses in the future.

In addition to the above County approvals, the project would also require the following approval by the Butte LAFCo, as a Responsible Agency:

- Annexation of the project site into PID service area for water and sewer service.

2.0 PROBABLE ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR

Consistent with Appendix G of the CEQA Guidelines, the County anticipates that the EIR will contain the following chapters:

- Aesthetics
- Air Quality, Greenhouse Gas Emissions, and Energy
- Biological Resources
- Cultural and Tribal Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning/Population and Housing
- Noise
- Public Services and Recreation
- Transportation
- Utilities and Service Systems
- Wildfire
- Effects Not Found to be Significant
- Statutorily Required Sections
- Alternatives Analysis

Each chapter of the EIR will include identification of the thresholds of significance, identification of project-level and cumulative impacts, and the development of mitigation measures and monitoring strategies, as required. The proposed EIR will incorporate by reference the Butte County General Plan, Butte County General Plan EIR, and project-specific technical studies. The EIR will also include analysis necessary for Butte LAFCo to use the EIR for their actions as a Responsible Agency.

The following paragraphs summarize the anticipated analyses that will be included in the EIR.

Aesthetics: The Aesthetics chapter of the EIR will summarize existing regional and project area aesthetics and visual setting. To the extent applicable, the chapter will describe project-specific aesthetics issues such as the SH Overlay Zone, scenic vistas, trees, historic buildings, existing visual character or quality of the project area, as well as light and glare. Pursuant to Appendix G of the CEQA Guidelines, the focus of the analysis concerning the project's effects on visual character or quality of the project site and the surrounding area will be on whether the proposed project will substantially degrade the existing visual character or quality of public views of the site and the surrounding area. The chapter will be based in part on photo simulations, which would show pre- and post-project views of the project site from key public vantage points.

Air Quality, Greenhouse Gas Emissions, and Energy. The air quality and greenhouse gas (GHG) emissions analysis for the proposed project will be performed using the California Emissions Estimator Model (CalEEMOD) software program and following Butte County Air Pollution Control District (BCAPCD) CEQA Guidelines.

The air quality impact analysis will include a quantitative assessment of short-term (i.e., construction) and long-term (i.e., operational) increases of criteria air pollutant emissions of primary concern (i.e., ROG, NO_X, and PM_{10}). The project's cumulative contribution to regional air quality will be discussed, based in part on the modeling conducted at the project level. The analysis will also address any potential odor impacts that may occur, as well as toxic air contaminant (TAC) emissions.

The GHG emissions analysis will include a quantitative estimate of carbon dioxide equivalent emissions from the proposed project, including indirect emissions (e.g., electricity, propane) and construction emissions. The chapter will include an analysis of the project's consistency with the 2021 Butte County Climate Action Plan (CAP).

The significance of air quality and GHG impacts will be determined in comparison to BCAPCD significance thresholds. BCAPCD-recommended mitigation measures will be incorporated, if needed, to reduce any significant air quality impacts, and anticipated reductions in emissions associated with proposed mitigation measures will be quantified.

The chapter will also evaluate whether the proposed project could result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. The discussion will also evaluate whether the proposed project would conflict with or obstruct a State or local plan for renewable energy. The chapter will review the 2021 Butte County CAP to identify energy-related measures that may be applicable to the proposed project.

Biological Resources. The Biological Resources chapter of the EIR will summarize the setting and describe the potential project effects to plant communities, oak woodlands, wildlife, and wetlands, including adverse effects on rare, endangered, candidate, sensitive, and other special-status species for the project site. Effects associated with all on-site and off-site improvements will be included in the analysis. Analysis in the chapter will be based on a Biological Evaluation Report and the proposed project will be evaluated for consistency with the Butte Regional Conservation Plan (BRCP).

Cultural and Tribal Cultural Resources. The Cultural Resources analysis will describe the potential effects to historical and archaeological resources from buildout of the proposed project. Analysis in the chapter will be based on an Archaeological Inventory Survey prepared for the proposed project, which will include the results of a field survey and records search. Effects associated with all on-site and off-site improvements will be included in the analysis.

The Tribal Cultural Resources analysis will describe the potential effects to tribal cultural resources from buildout of the proposed project. The County will conduct Native American tribal consultation pursuant to Assembly Bill (AB) 52 and Senate Bill (SB) 18, the latter of which is required for the proposed project due to the proposed General Plan Amendment. Any input from tribes will be incorporated into the Tribal Cultural Resources chapter. Feasible and appropriate mitigation measures to avoid or reduce adverse impacts will be identified, as needed.

Geology and Soils. The Geology and Soils chapter of the EIR will summarize the setting and describe the potential effects from soil erosion, earthquakes, liquefaction, expansive/unstable soils, as well as identify any known paleontological resources or unique geological features within the project area. The chapter will be based primarily on a site-specific Geotechnical Engineering Report prepared for the proposed project, as well as a paleontological records search.

Hazards and Hazardous Materials. The Hazards and Hazardous Materials chapter of the EIR will summarize the setting and describe any potential for existing or possible hazardous materials within the project area. The chapter will also assess the potential for the proposed project to create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials.

Impacts of the environment on a project (as compared to impacts of a project on the environment) are beyond the scope of required CEQA review. The California Supreme Court has held that, “CEQA does not generally require an agency to consider the effects of existing environmental conditions on a proposed project’s future users or residents. What CEQA does mandate… is an analysis of how a project might exacerbate existing environmental hazards” (*California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369, 392). As such, the mere presence of possible hazardous materials at the site or in the vicinity, should such exist, would be considered an existing environmental condition and, thus, would not be considered an impact under CEQA. Rather, the proposed project could have the potential to result in an impact associated with possible hazardous materials should the proposed project exacerbate the existing conditions (e.g., contaminated soils become airborne during ground-disturbing activities and expose construction workers or future residents of the proposed project). The chapter will be based primarily on site-specific Phase I Environmental Site Assessment.

Hydrology and Water Quality. The Hydrology and Water Quality chapter of the EIR will summarize setting information and identify potential impacts on stormwater drainage, flooding, groundwater, and water quality, including stormwater runoff water quality. The Hydrology and Water Quality chapter will evaluate project-related increases in impervious surfaces and stormwater flows, groundwater recharge and depletion, increases in downstream flooding, and on-site facilities necessary to treat and possibility detain on-site runoff. In addition, the chapter will evaluate impacts associated with alteration of the 100-year floodplain limits and existing drainage patterns.

Land Use and Planning/Population and Housing. The Land Use and Planning/Population and Housing chapter of the EIR will evaluate the consistency of the proposed project with the policies and regulations included in the Butte County General Plan and County Code adopted for the purpose of avoiding or mitigating an environmental effect. In addition, the chapter will include an evaluation of the potential for the project to induce substantial unplanned population growth in the area, either directly or indirectly (e.g., through extension of roads or other infrastructure). Additionally, the chapter will include a discussion of Butte County's affordable housing requirements. The chapter will rely on information from the California Department of Finance and the Butte County General Plan Housing Element.

Noise. The Noise chapter of the EIR will be based on a project-specific Noise Study. The chapter will address potential noise impacts resulting from project construction and operation, including existing and future traffic noise levels on the local roadway network. Noise-sensitive land uses or activities in the project vicinity will be identified and ambient noise and vibration level measurements on, and in the vicinity of, the project site will be conducted to quantify existing background noise and vibration levels for comparison to the predicted project-generated levels. Operational noise levels will also be evaluated. Noise exposure levels will then be compared to applicable significance criteria in the Butte County General Plan Noise Element and CEQA. Feasible and appropriate mitigation measures to avoid or reduce adverse impacts will be identified, as needed.

Public Services and Recreation. The Public Services and Recreation chapter of the EIR will evaluate whether the proposed project could increase demands upon local services including fire, law enforcement, schools, parks, and recreation. In accordance with Appendix G, the focus of the analysis will be on whether the project's demand would require physical alteration of, or need for new governmental facilities, in order to maintain acceptable service ratios, response times, or other performance objectives, the construction of which could cause significant environmental impacts.

Transportation. The Transportation chapter of the EIR will be based on a Transportation Impact Study (TIS) prepared specifically for the proposed project. Impact determination for CEQA purposes will be based on vehicle miles traveled (VMT), consistent with CEQA Guidelines Section 15064.3, which became effective statewide on July 1, 2020. The VMT analysis will be quantitative in nature and will be prepared consistent with Butte County's current guidance regarding analysis of VMT.

The proposed project's impacts to alternative modes such as pedestrian, bicycle and transit facilities will be assessed based on their significance criteria contained in the adopted Butte County guidelines. The EIR chapter will also include an analysis of the proposed project's potential impacts related to conflicting with applicable programs, policies, and ordinances addressing the circulation system, vehicle safety hazards, and emergency access. Feasible and appropriate mitigation measures to avoid or reduce adverse impacts will be identified, as needed.

Utilities and Service Systems. The Utilities and Service Systems chapter will evaluate the proposed project's increase in water supply demand and wastewater generation and identify any needed improvements to the existing water and sewer infrastructure systems to accommodate demands from the proposed project. The chapter will also evaluate the receiving landfill's capacity to accommodate the increase in solid waste associated with the proposed project. Electricity and propane service will also be addressed in the chapter. The chapter will be based on existing information from the Butte County General Plan and information obtained from direct consultation with appropriate service providers.

Wildfire. The Wildfire chapter of the EIR will address the questions in Section XX, Wildfire, of Appendix G of the CEQA Guidelines. Specifically, the proposed project will be evaluated to determine if the project would substantially impair an adopted emergency response plan or emergency evacuation plan. This will include an evaluation of how the proposed project may impact evacuation patterns of nearby residents. In addition, the chapter will consider whether the proposed project would exacerbate fire risk, as well as whether the project would expose people or structures to significant post-fire risks, including downslope or downstream flooding or landslides. Mapping prepared by CAL FIRE regarding fire hazard severity zones will be reviewed, and the analysis will include consultation with CAL FIRE. The chapter will include information from an Emergency Preparedness and Evacuation Plan (EPEP) to be prepared for the proposed project.

Effects Not Found to be Significant. Section 15128 of the CEQA Guidelines states that an EIR shall contain a brief statement indicating the reasons that various possible significant effects of a project were determined not to be significant and were, therefore, not discussed in detail in the EIR. Accordingly, the Effects Not Found to be Significant chapter of the EIR will include abbreviated discussions of impacts determined not to be significant.

Statutorily Required Sections. Pursuant to CEQA Guidelines Section 21100(B)(5), the Statutorily Required Sections chapter of the EIR will address the potential for growth-inducing impacts of the proposed project, focusing on whether removal of any impediments to growth would occur with the proposed project. A summary of the significant and unavoidable impacts identified within the EIR will be included in this chapter, as well as a discussion of significant irreversible impacts. The chapter will generally describe the cumulative setting for the proposed project; however, a detailed description of the subject-specific cumulative setting, as well as analysis of the cumulative impacts, will be included in each technical chapter of the EIR.

Alternatives Analysis. In accordance with Section 15126.6(a) of the CEQA Guidelines, the EIR will include an analysis of a range of alternatives, including a No Project Alternative. Consideration will be given to potential off-site locations consistent with CEQA Guidelines, Section 15126.6(f)(2), and such locations will be determined in consultation with County staff. If it is determined that an off-site alternative is not feasible, the EIR will include a discussion describing why such a conclusion was reached. The project alternatives will be selected when more information related to project impacts is available in order to be designed to reduce significant project impacts. The chapter will also include a section of alternatives considered but dismissed, if necessary. The Alternatives Analysis chapter will describe the alternatives and identify the environmentally superior alternative. The alternatives will be analyzed at a level of detail less than that of the proposed project; however, the analyses will include sufficient detail to allow a meaningful comparison of the impacts. Such detail may include conceptual site plans for each alternative, basic quantitative traffic information (e.g., trip generation), as well as a table that will compare the features and the impacts of each alternative.

APPENDIX B

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

February 24, 2022

Mark Michelena
Butte County Development Services Department
7 County Center Drive
Oroville, CA 95965

Re: 2022020536, Tuscan Ridge Project, Butte County

Dear Mr. Michelena:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).

2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.

3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).

4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:

- **a.** The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
- **b.** Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:

- **a.** If part or all of the APE has been previously surveyed for cultural resources.
- **b.** If any known cultural resources have already been recorded on or adjacent to the APE.
- **c.** If the probability is low, moderate, or high that cultural resources are located in the APE.
- **d.** If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.

- **a.** The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
- **b.** The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Cameron.Vela@nahc.ca.gov.

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

cc: State Clearinghouse

Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Gavin Newsom
Governor

March 16, 2022

Mr. Mark Michelena
Butte County Development Service Department
7 County Center Drive
Oroville, CA 95965
mmichelena@buttecounty.net

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED TUSCAN RIDGE PROJECT – DATED FEBRUARY 23, 2022
(STATE CLEARINGHOUSE NUMBER: 2022020536)

Dear Mr. Michelena:

The Department of Toxic Substances Control (DTSC) received a Notice of Preparation of an Environmental Impact Report (EIR)for the Proposed Tuscan Ridge Project (Project). The Lead Agency is receiving this notice from DTSC because the Project includes one or more of the following: groundbreaking activities, work in close proximity to a roadway, work in close proximity to mining or suspected mining or former mining activities, presence of site buildings that may require demolition or modifications, importation of backfill soil, and/or work on or in close proximity to an agricultural or former agricultural site.

DTSC recommends that the following issues be evaluated in the Hazards and Hazardous Materials section of the EIR:

1. The EIR should acknowledge the potential for historic or future activities on or near the project site to result in the release of hazardous wastes/substances on the project site. In instances in which releases have occurred or may occur, further studies should be carried out to delineate the nature and extent of the contamination, and the potential threat to public health and/or the environment should be evaluated. The EIR should also identify the mechanism(s) to initiate any required investigation and/or remediation and the government agency who will be responsible for providing appropriate regulatory oversight.

2. Refiners in the United States started adding lead compounds to gasoline in the 1920s in order to boost octane levels and improve engine performance. This practice did not officially end until 1992 when lead was banned as a fuel additive in California. Tailpipe emissions from automobiles using leaded gasoline contained lead and resulted in aerially deposited lead (ADL) being deposited in and along roadways throughout the state. ADL-contaminated soils still exist along roadsides and medians and can also be found underneath some existing road surfaces due to past construction activities. Due to the potential for ADL-contaminated soil DTSC, recommends collecting soil samples for lead analysis prior to performing any intrusive activities for the project described in the EIR.

3. If any sites within the project area or sites located within the vicinity of the project have been used or are suspected of having been used for mining activities, proper investigation for mine waste should be discussed in the EIR. DTSC recommends that any project sites with current and/or former mining operations onsite or in the project site area should be evaluated for mine waste according to DTSC's 1998 Abandoned Mine Land Mines Preliminary Assessment Handbook.

4. If buildings or other structures are to be demolished on any project sites included in the proposed project, surveys should be conducted for the presence of lead-based paints or products, mercury, asbestos containing materials, and polychlorinated biphenyl caulk. Removal, demolition and disposal of any of the above-mentioned chemicals should be conducted in compliance with California environmental regulations and policies. In addition, sampling near current and/or former buildings should be conducted in accordance with DTSC's 2006 *Interim Guidance Evaluation of School Sites with Potential Contamination from Lead Based Paint, Termiticides, and Electrical Transformers*.

5. If any projects initiated as part of the proposed project require the importation of soil to backfill any excavated areas, proper sampling should be conducted to ensure that the imported soil is free of contamination. DTSC recommends the imported materials be characterized according to *DTSC's 2001 Information Advisory Clean Imported Fill Material*.

6. If any sites included as part of the proposed project have been used for agricultural, weed abatement or related activities, proper investigation for organochlorinated pesticides should be discussed in the EIR. DTSC recommends the current and former agricultural lands be evaluated in accordance with DTSC's 2008 *Interim Guidance for Sampling Agricultural Properties (Third Revision)*.

DTSC appreciates the opportunity to comment on the Notice of Preparation of an EIR. Should you need any assistance with an environmental investigation, please visit DTSC's Site Mitigation and Restoration Program page to apply for lead agency oversight. Additional information regarding voluntary agreements with DTSC can be found at DTSC's Brownfield website.

If you have any questions, please contact me at (916) 255-3710 or via email at Gavin.McCreary@dtsc.ca.gov.

Sincerely,

Gavin McCreary
Project Manager
Site Evaluation and Remediation Unit
Site Mitigation and Restoration Program
Department of Toxic Substances Control

cc: (via email)

Governor's Office of Planning and Research
State Clearinghouse
State.Clearinghouse@opr.ca.gov

Mr. Dave Kereazis
Office of Planning & Environmental Analysis
Department of Toxic Substances Control
Dave.Kereazis@dtsc.ca.gov

DEPARTMENT OF CALIFORNIA HIGHWAY PATROL
Chico Area
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March 21, 2022

File No.: 241.15477.14768

Butte County Developmental Services Department
7 County Center Drive
Oroville, CA 95965

RE: SCH # 2022020536

The CHP Chico Area of the California Highway Patrol received a "Notice of Preparation" for the proposed Tuscan Ridge Project for State Clearinghouse SCH # 2022020536. After review, we have concerns with the potential impact this project could have on traffic congestion.

Our concern relates to traffic safety, not only in the in the construction phase, but also upon completion of the 165 single-family residence and commercial development. Specifically, Skyway eastbound and Skyway westbound consists of two-lanes in both directions divided by a dirt center divider. The speed limit in this section is 55 mph. The concern is with the safety of ingress and egress traffic onto Skyway to and from the proposed residential/commercial neighborhood. This project could have a negative impact on our operations due to the increased traffic congestion and/or traffic collisions, which could necessitate the need for additional traffic control measures to mitigate the potential increase in traffic collisions within our jurisdiction.

If you have any questions regarding these concerns, please contact me at (530) 332-2800.

Sincerely,

E. L. WALKER, Captain
Commander
Chico Area

Attachments

cc: Valley Division

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
North Central Region
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670-4599
916-358-2900
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

March 22, 2022

Kevin Valente, Senior Planner
Raney Management
kvalente@raneymanagement.com
1504 Sports Drive, Suite A
Sacramento CA 95834

Subject: NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE TUSCAN RIDGE PROJECT, SCH# 2022020536.

Dear Mr. Valente:

The California Department of Fish and Wildlife (CDFW) received and reviewed the Notice of Preparation of an Environmental Impact Report (EIR) from the Butte County Development Services Department (County) for the Tuscan Ridge Project (Project) in Butte County pursuant the California Environmental Quality Act (CEQA) statute and guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish, wildlife, plants and their habitats. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may need to exercise its own regulatory authority under the Fish and Game Code (Fish & G. Code).

CDFW ROLE

CDFW is California's Trustee Agency for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a).). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (*Id.*, § 1802.). Similarly, for purposes of CEQA, CDFW provides, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

1 CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

CDFW may also act as a Responsible Agency under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority. (Fish & G. Code, § 1600 et seq.) Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code.

PROJECT DESCRIPTION SUMMARY

The proposed Project would include subdivision of the Project site to develop a total of 165 single-family residential lots. The lots would range in size from 4,000 square feet (sf) to 40,000 sf. The proposed Project would additionally include commercial development occupying approximately 17.3 acres of the Project site, including approximately four acres for improved buildings and parking and approximately 13.3 acres for mini storage units (53,000 sf) and outdoor RV and boat storage. The proposed Project would also include the development of a sanitary waste disposal station. Additionally, approximately 49.4 acres of the site would consist of landscaped areas, as well as recreational and open space areas to include bicycle and pedestrian trails. Various associated improvements would be included in the development of the proposed Project infrastructure. Access to the site would be provided through the existing driveway from Skyway Road near the center of the site, which would be improved as part of the Project, and a new access near the eastern end of the site. Internal roadways throughout the site would be public, to be dedicated to the County for maintenance. Currently, the Project site includes a 2,440 sf grill building, 1,830-sf clubhouse, a Quonset hut, and on-site water and wastewater treatment systems.

The 165-acre Project site is located on the southeast side of Skyway Road, in unincorporated Butte County, California, and is identified by eight Assessor's Parcel Numbers (APNs) 040-520-104, 040-520-105, 040-520-106, 040-520-107, 040-520-108, 040- 520-109, 040-520-110, and 040-520-111. The site is located within the previous Tuscan Ridge Golf Course, approximately three miles southwest of the Town of Paradise and four miles east of the City of Chico.

The Project site is currently highly disturbed, with large graveled and/or paved areas void of vegetation, due to damage sustained immediately before, during, and after the 2018 Camp Fire. In mid-2018, prior to the Camp Fire, the site was used as a Pacific Gas and Electric Co. vegetation management camp. The site subsequently burned during the wildfire and was then leveled and graveled for use as a base camp and staging area. A secondary access point from the Skyway was created in the northeastern portion of the site during the site's use as a base camp but has since been blocked off by boulders and is currently inaccessible.

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations presented below to assist the County in adequately identifying and/or mitigating the Project's significant, or potentially significant, impacts on biological resources. The comments and recommendations are also offered to enable CDFW to adequately review and comment on the proposed Project with respect to impacts on biological resources. CDFW recommends that the forthcoming EIR address the following:

Assessment of Biological Resources

Section 15125(c) of the CEQA Guidelines states that knowledge of the regional setting of a project is critical to the assessment of environmental impacts and that special emphasis should be placed on environmental resources that are rare or unique to the region. To enable CDFW staff to adequately review and comment on the Project, the EIR should include a complete assessment of the flora and fauna within and adjacent to the Project footprint, with emphasis on identifying rare, threatened, endangered, and other sensitive species and their associated habitats. CDFW recommends that the EIR specifically include:

1. An assessment of all habitat types located within the Project footprint, and a map that identifies the location of each habitat type. CDFW recommends that floristic, alliance- and/or association-based mapping and assessment be completed following *The Manual of California Vegetation*, second edition (Sawyer 2009). Adjoining habitat areas should also be included in this assessment where site activities could lead to direct or indirect impacts offsite. Habitat mapping at the alliance level will help establish baseline vegetation conditions.

2. A general biological inventory of the fish, amphibian, reptile, bird, and mammal species that are present or have the potential to be present within each habitat type onsite and within adjacent areas that could be affected by the Project. CDFW recommends that the California Natural Diversity Database (CNDDB), as well as previous studies performed in the area, be consulted to assess the potential presence of sensitive species and habitats. A nine United States Geologic Survey 7.5-minute quadrangle search is recommended to determine what may occur in the region, larger if the Project area extends past one quad (see *Data Use Guidelines* on the Department webpage www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data). Please review the webpage for information on how to access the database to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code, in the vicinity of the Project. CDFW recommends that CNDDB Field Survey Forms be completed and submitted to CNDDB to document survey results. Online forms can be obtained and submitted at: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data.

Please note that CDFW's CNDDB is not exhaustive in terms of the data it houses, nor is it an absence database. CDFW recommends that it be used as a starting point in gathering information about the *potential presence* of species within the general area of the Project site. Other sources for identification of species and habitats near or adjacent to the Project area should include, but may not be limited to, State and federal resource agency lists, California Wildlife Habitat Relationship System, California Native Plant Society Inventory, agency contacts, environmental documents for other projects in the vicinity, academics, and professional or scientific organizations.

3. A complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the Project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern and California Fully Protected Species (Fish & G. Code § 3511). Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. The EIR should include the results of focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable. Species-specific surveys should be conducted in order to ascertain the presence of species with the potential to be directly, indirectly, on or within a reasonable distance of the Project activities. CDFW recommends the County rely on survey and monitoring protocols and guidelines available at: www.wildlife.ca.gov/Conservation/Survey-Protocols. Alternative survey protocols may be warranted; justification should be provided to substantiate why an alternative protocol is necessary. Acceptable species-specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary. Some aspects of the Project may warrant periodic updated surveys for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought or deluge.

4. A thorough, recent (within the last two years), floristic-based assessment of special-status plants and natural communities, following CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (see www.wildlife.ca.gov/Conservation/Plants).

5. Information on the regional setting that is critical to an assessment of environmental impacts, with special emphasis on resources that are rare or unique to the region (CEQA Guidelines § 15125[c]).

Analysis of Direct, Indirect, and Cumulative Impacts to Biological Resources

The EIR should provide a thorough discussion of the Project's potential direct, indirect, and cumulative impacts on biological resources. To ensure that Project impacts on biological resources are fully analyzed, the following information should be included in the EIR:

1. The EIR should define the threshold of significance for each impact and describe the criteria used to determine whether the impacts are significant (CEQA Guidelines, § 15064, subd. (f)). The EIR must demonstrate that the significant environmental impacts of the Project were adequately investigated and discussed, and it must permit the significant effects of the Project to be considered in the full environmental context.

2. A discussion of potential impacts from lighting, noise, human activity, and wildlife-human interactions created by Project activities especially those adjacent to natural areas, exotic and/or invasive species occurrences, and drainages. The EIR should address Project-related changes to drainage patterns and water quality within, upstream, and downstream of the Project site, including: volume, velocity, and frequency of existing and post-Project surface flows; polluted runoff; soil erosion and/or sedimentation in streams and water bodies; and post-Project fate of runoff from the Project site.

3. A discussion of potential indirect Project impacts on biological resources, including resources in areas adjacent to the Project footprint, such as nearby public lands (e.g. National Forests, State Parks, etc.), open space, adjacent natural habitats, riparian ecosystems, wildlife corridors, and any designated and/or proposed reserve or mitigation lands (e.g., preserved lands associated with a Conservation or Recovery Plan, or other conserved lands).

4. A cumulative effects analysis developed as described under CEQA Guidelines section 15130. The EIR should discuss the Project's cumulative impacts to natural resources and determine if that contribution would result in a significant impact. The EIR should include a list of present, past, and probable future projects producing related impacts to biological resources or shall include a summary of the projections contained in an adopted local, regional, or statewide plan, that consider conditions contributing to a cumulative effect. The cumulative analysis shall include impact analysis of vegetation and habitat reductions within the area and their potential cumulative effects. Please include all potential direct and indirect Project-related impacts to riparian areas, wetlands, wildlife corridors or wildlife movement areas, aquatic habitats, sensitive species and/or special-status species, open space, and adjacent natural habitats in the cumulative effects analysis.

Mitigation Measures for Project Impacts to Biological Resources

The EIR should include appropriate and adequate avoidance, minimization, and/or mitigation measures for all direct, indirect, and cumulative impacts that are expected to occur as a result of the construction and long-term operation and maintenance of the Project. CDFW also recommends that the environmental documentation provide scientifically supported discussion regarding adequate avoidance, minimization, and/or mitigation measures to address the Project's significant impacts upon fish and wildlife and their habitat. For individual projects, mitigation must be roughly proportional to the level of impacts, including cumulative impacts, in accordance with the provisions of

CEQA (Guidelines § § 15126.4(a)(4)(B), 15064, 15065, and 16355). In order for mitigation measures to be effective, they must be specific, enforceable, and feasible actions that will improve environmental conditions. When proposing measures to avoid, minimize, or mitigate impacts, CDFW recommends consideration of the following:

1. *Fully Protected Species*: Fully Protected Species (Fish & G. Code § 3511) have the potential to occur within or adjacent to the Project area, including, but not limited to: white-tailed kite (*Elanus leucurus*) and ring-tail (*Genus Bassariscus*). Fully protected species may not be taken or possessed at any time. Project activities described in the EIR should be designed to completely avoid any fully protected species that have the potential to be present within or adjacent to the Project area. CDFW also recommends that the EIR fully analyze potential adverse impacts to fully protected species due to habitat modification, loss of foraging habitat, and/or interruption of migratory and breeding behaviors. CDFW recommends that the County include in the analysis how appropriate avoidance, minimization and mitigation measures will reduce indirect impacts to fully protected species.

2. *Species of Special Concern*: Several Species of Special Concern (SSC) have the potential to occur within or adjacent to the Project area, including, but not limited to: western spadefoot (*Spea hammondii*), coast horned lizard *(Phrynosoma blainvillii),* loggerhead shrike (*Lanius ludovicianus*), western red bat (*Lasiurus blossevillii*), Townsend's big eared bat (*Corynorhinus townsendii*), burrowing owl (*Athene cunicularia*), and pallid bat (*Antrozous pallidus*). Project activities described in the EIR should be designed to avoid any SSC that have the potential to be present within or adjacent to the Project area. CDFW also recommends that the EIR fully analyze potential adverse impacts to SSC due to habitat modification, loss of foraging habitat, and/or interruption of migratory and breeding behaviors. CDFW recommends the County include in the analysis how appropriate avoidance, minimization and mitigation measures will reduce impacts to SSC.

3. *Sensitive Plant Communities*: CDFW considers sensitive plant communities to be imperiled habitats having both local and regional significance. Plant communities, alliances, and associations with a statewide ranking of S-1, S-2, S-3, and S-4 should be considered sensitive and declining at the local and regional level. These ranks can be obtained by querying the CNDDB and are included in *The Manual of California Vegetation* (Sawyer 2009). The EIR should include measures to fully avoid and otherwise protect sensitive plant communities from Project-related direct and indirect impacts.

4. *Native Wildlife Nursey Sites:* CDFW recommends the EIR fully analyze potential adverse impacts to native wildlife nursey sites, including but not limited to bat maternity roosts. Based on review of Project materials, aerial photography, and observation of the site from public roadways, the Project site contains potential nursery site habitat for structure and tree roosting bats and is near potential foraging habitat. Bats are considered non-game mammals and are afforded

protection by state law from take and/or harassment, (Fish & G. Code, § 4150; Cal. Code of Regs, § 251.1). CDFW recommends that the EIR fully identify the Project's potential impacts to native wildlife nursery sites, and include appropriate avoidance, minimization and mitigation measures to reduce impacts or mitigate any potential significant impacts to bat nursery sites.

5. *Mitigation*: CDFW considers adverse Project-related impacts to sensitive species and habitats to be significant to both local and regional ecosystems, and the EIR should include mitigation measures for adverse Project-related impacts to these resources. Mitigation measures should emphasize avoidance and reduction of Project impacts. For unavoidable impacts, onsite habitat restoration, enhancement, or permanent protection should be evaluated and discussed in detail. If onsite mitigation is not feasible or would not be biologically viable and therefore not adequately mitigate the loss of biological functions and values, offsite mitigation through habitat creation and/or acquisition and preservation in perpetuity should be addressed.

   The EIR should include measures to perpetually protect the targeted habitat values within mitigation areas from direct and indirect adverse impacts in order to meet mitigation objectives to offset Project-induced qualitative and quantitative losses of biological values. Specific issues that should be addressed include restrictions on access, proposed land dedications, long-term monitoring and management programs, control of illegal dumping, water pollution, increased human intrusion, etc.

6. *Habitat Revegetation/Restoration Plans*: Plans for restoration and revegetation should be prepared by persons with expertise in the regional ecosystems and native plant restoration techniques. Plans should identify the assumptions used to develop the proposed restoration strategy. Each plan should include, at a minimum: (a) the location of restoration sites and assessment of appropriate reference sites; (b) the plant species to be used, sources of local propagules, container sizes, and seeding rates; (c) a schematic depicting the mitigation area; (d) a local seed and cuttings and planting schedule; (e) a description of the irrigation methodology; (f) measures to control exotic vegetation on site; (g) specific success criteria; (h) a detailed monitoring program; (i) contingency measures should the success criteria not be met; and (j) identification of the party responsible for meeting the success criteria and providing for conservation of the mitigation site in perpetuity. Monitoring of restoration areas should extend across a sufficient time frame to ensure that the new habitat is established, self-sustaining, and capable of surviving drought.

   CDFW recommends that local onsite propagules from the Project area and nearby vicinity be collected and used for restoration purposes. Onsite seed collection should be appropriately timed to ensure the viability of the seeds when planted. Onsite vegetation mapping at the alliance and/or association level should be used to develop appropriate restoration goals and local plant palettes. Reference areas should be identified to help guide restoration efforts. Specific

restoration plans should be developed for various Project components as appropriate. Restoration objectives should include protecting special habitat elements or re-creating them in areas affected by the Project. Examples may include retention of woody material, logs, snags, rocks, and brush piles. Fish and Game Code sections 1002, 1002.5 and 1003 authorize CDFW to issue permits for the take or possession of plants and wildlife for scientific, educational, and propagation purposes. Please see our website for more information on Scientific Collecting Permits at www.wildlife.ca.gov/Licensing/Scientific-Collecting#53949678-regulations-.

7. *Nesting Birds:* Please note that it is the Project proponent's responsibility to comply with all applicable laws related to nesting birds and birds of prey. Migratory non-game native bird species are protected by international treaty under the federal Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et seq.*). CDFW implemented the MBTA by adopting the Fish and Game Code section 3513. Fish and Game Code sections 3503, 3503.5 and 3800 provide additional protection to nongame birds, birds of prey, their nests and eggs. Sections 3503, 3503.5, and 3513 of the Fish and Game Code afford protective measures as follows: section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the Fish and Game Code or any regulation made pursuant thereto; section 3503.5 states that is it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by the Fish and Game Code or any regulation adopted pursuant thereto; and section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

   Potential habitat for nesting birds and birds of prey is present within the Project area. The Project should disclose all potential activities that may incur a direct or indirect take to nongame nesting birds within the Project footprint and its vicinity. Appropriate avoidance, minimization, and/or mitigation measures to avoid take must be included in the EIR.

   CDFW recommends that the EIR include specific avoidance and minimization measures to ensure that impacts to nesting birds or their nests do not occur. Project-specific avoidance and minimization measures may include, but not be limited to: Project phasing and timing, monitoring of Project-related noise (where applicable), sound walls, and buffers, where appropriate. The EIR should also include specific avoidance and minimization measures that will be implemented should a nest be located within the Project site. In addition to larger, protocol level survey efforts (e.g. Swainson's hawk surveys) and scientific assessments, CDFW recommends a final preconstruction survey be required no more than three (3) days prior to vegetation clearing or ground disturbance activities, as instances of nesting could be missed if surveys are conducted earlier.

8. *Moving out of Harm's Way:* The Project is anticipated to result in the clearing of natural habitats that support native species. To avoid direct mortality, the County may condition the EIR to require that a qualified biologist with the proper permits be retained to be onsite prior to and during all ground- and habitat-disturbing activities. The qualified biologist with the proper permits may move out of harm's way special-status species or other wildlife of low or limited mobility that would otherwise be injured or killed from Project-related activities. Movement of wildlife out of harm's way should be limited to only those individuals that would otherwise be injured or killed, and individuals should be moved only as far as necessary to ensure their safety (i.e., CDFW does not recommend relocation to other areas). It should be noted that the temporary relocation of onsite wildlife does not constitute effective mitigation for habitat loss.

9. *Translocation of Species*: CDFW generally does not support the use of relocation, salvage, and/or transplantation as the sole mitigation for impacts to rare, threatened, or endangered species as these efforts are generally experimental in nature and largely unsuccessful.

The EIR should incorporate mitigation performance standards that would ensure that impacts are reduced to a less-than-significant level. Mitigation measures proposed in the EIR should be made a condition of approval of the Project. Please note that obtaining a permit from CDFW by itself with no other mitigation proposal may constitute mitigation deferral. CEQA Guidelines section 15126.4, subdivision (a)(1)(B) states that formulation of mitigation measures should not be deferred until some future time. To avoid deferring mitigation in this way, the EIR should describe avoidance, minimization and mitigation measures that would be implemented should the impact occur.

California Endangered Species Act

CDFW is responsible for ensuring appropriate conservation of fish and wildlife resources including threatened, endangered, and/or candidate plant and animal species, pursuant to the CESA. CDFW recommends that a CESA Incidental Take Permit (ITP) be obtained if the Project has the potential to result in "take" (Fish & G. Code § 86 defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") of State-listed CESA species, either through construction or over the life of the Project.

CESA-listed species with the potential to occur in the area include, but are not limited to: Swainson's hawk (*Buteo swainsonii*), Butte County meadowfoam (*Limnanthes floccosa ssp. californica*), and slender Orcutt grass (*Orcuttia tenuis*).

The EIR should disclose the potential of the Project to take CESA-listed species and how the impacts will be avoided, minimized, and mitigated. Please note that mitigation measures that are adequate to reduce impacts to a less-than significant level to meet CEQA requirements may not be enough for the issuance of an ITP. To issue an ITP, CDFW must demonstrate that the impacts of the authorized take will be minimized and fully mitigated (Fish & G. Code §2081 (b)). To facilitate the issuance of an ITP, if

applicable, CDFW recommends the EIR include measures to minimize and fully mitigate the impacts to any State-listed species the Project has potential to take. CDFW encourages early consultation with staff to determine appropriate measures to facilitate future permitting processes and to engage with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service to coordinate specific measures if both state and federally listed species may be present within the Project vicinity.

Native Plant Protection Act

The Native Plant Protection Act (Fish & G. Code §1900 *et seq*.) prohibits the take or possession of State-listed rare and endangered plants, including any part or product thereof, unless authorized by CDFW or in certain limited circumstances. Take of State-listed rare and/or endangered plants due to Project activities may only be permitted through an ITP or other authorization issued by CDFW pursuant to California Code of Regulations, Title 14, section 786.9 subdivision (b).

Lake and Streambed Alteration Program

The EIR should identify all perennial, intermittent, and ephemeral rivers, streams, lakes, other hydrologically connected aquatic features, and any associated biological resources/habitats present within the entire Project footprint (including utilities, access and staging areas). The environmental document should analyze all potential temporary, permanent, direct, indirect and/or cumulative impacts to the above-mentioned features and associated biological resources/habitats that may occur because of the Project. If it is determined the Project will result in significant impacts to these resources the EIR shall propose appropriate avoidance, minimization and/or mitigation measures to reduce impacts to a less-than-significant level.

Section 1602 of the Fish and Game Code requires an entity to notify CDFW prior to commencing any activity that may do one or more of the following: substantially divert or obstruct the natural flow of any river, stream or lake; substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or deposit debris, waste or other materials that could pass into any river, stream or lake. Please note that "any river, stream or lake" includes those that are episodic (i.e., those that are dry for periods of time) as well as those that are perennial (i.e., those that flow year-round). This includes ephemeral streams and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

If upon review of an entity's notification, CDFW determines that the Project activities may substantially adversely affect an existing fish or wildlife resource, a Lake and Streambed Alteration (LSA) Agreement will be issued which will include reasonable measures necessary to protect the resource. CDFW's issuance of an LSA Agreement is a "project" subject to CEQA (see Pub. Resources Code 21065). To facilitate issuance of an LSA Agreement, if one is necessary, the EIR should fully identify the potential impacts to the lake, stream, or riparian resources, and provide adequate avoidance, mitigation, and monitoring and reporting commitments. Early consultation with CDFW is recommended, since modification of the Project may avoid or reduce impacts to fish and wildlife resources. Notifications for projects should be submitted online through

CDFW's Environmental Permit Information Management System (EPIMS). For more information about EPIMS, please visit https://wildlife.ca.gov/Conservation/Environmental-Review/EPIMS. More information about LSA Notifications, paper forms and fees may be found at https://www.wildlife.ca.gov/Conservation/Environmental-Review/LSA.

Please note that other agencies may use specific methods and definitions to determine impacts to areas subject to their authorities. These methods and definitions often do not include all needed information for CDFW to determine the extent of fish and wildlife resources affected by activities subject to Notification under Fish and Game Code section1602. Therefore, CDFW does not recommend relying solely on methods developed specifically for delineating areas subject to other agencies' jurisdiction (such as United States Army Corps of Engineers) when mapping lakes, streams, wetlands, floodplains, riparian areas, etc. in preparation for submitting a Notification of an LSA.

CDFW relies on the lead agency environmental document analysis when acting as a responsible agency issuing an LSA Agreement. CDFW recommends lead agencies coordinate with us as early as possible, since potential modification of the proposed Project may avoid or reduce impacts to fish and wildlife resources and expedite the Project approval process.

The following information will be required for the processing of an LSA Notification and CDFW recommends incorporating this information into any forthcoming CEQA document(s) to avoid subsequent documentation and Project delays:

1. Mapping and quantification of lakes, streams, and associated fish and wildlife habitat (e.g., riparian habitat, freshwater wetlands, etc.) that will be temporarily and/or permanently impacted by the Project, including impacts from access and staging areas. Please include an estimate of impact to each habitat type.

2. Discussion of specific avoidance, minimization, and mitigation measures to reduce Project impacts to fish and wildlife resources to a less-than-significant level. Please refer to section 15370 of the CEQA Guidelines.

Based on review of Project materials, aerial photography and observation of the site from public roadways, the Project site supports a number of unnamed drainages. CDFW recommends that the EIR fully identify the Project's potential impacts to the unnamed drainages and their associated vegetation and wetlands.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database, which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be

submitted online or mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov.

FILING FEES

The Project, as proposed, would have an effect on fish and wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the County and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code § 711.4; Pub. Resources Code, § 21089.)

CONCLUSION

Pursuant to Public Resources Code sections 21092 and 21092.2, CDFW requests written notification of proposed actions and pending decisions regarding the Project. Written notifications shall be directed to: California Department of Fish and Wildlife North Central Region, 1701 Nimbus Road, Rancho Cordova, CA 95670.

CDFW appreciates the opportunity to comment on the NOP of the EIR for the Tuscan Ridge Project and recommends the County address CDFW's comments and concerns in the forthcoming EIR. CDFW personnel are available for consultation regarding biological resources and strategies to minimize impacts.

If you have any questions regarding the comments provided in this letter or wish to schedule a meeting and/or site visit, please contact Melissa Murphy, Senior Environmental Scientist (Specialist) at (916) 597-6417 or melissa.murphy@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Kelley Barker
778EDA8AE45F4C9...

Kelley Barker
Environmental Program Manager

ec: Juan Torres, Senior Environmental Scientist (Supervisory)
Melissa Murphy, Senior Environmental Scientist (Specialist)
Department of Fish and Wildlife

Office of Planning and Research, State Clearinghouse, Sacramento

Literature Cited

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A Manual of California Vegetation, 2nd ed. California Native Plant Society Press, Sacramento, California. http://vegetation.cnps.org/

BUTTE LOCAL AGENCY FORMATION COMMISSION

1453 Downer Street, Suite C ● Oroville, California 95965-4950
(530)538-7784 ● Fax (530)538-2847 ● www.buttelafco.org

March 24, 2022

Kevin Valente, Contract Planner
1501 Sports Drive, suite A
Sacramento, CA 95834

Submitted via email to: kvalente@raneymanagement.com

RE: Notice of Preparation of the Draft Environmental Impact Report (DEIR) being prepared for the Tuscan Ridge Planned Development project

Dear Mr. Valente,

The Butte Local Agency Formation Commission (LAFCo) appreciates the opportunity to provide our observations on the Notice of Preparation of the Draft Environmental Impact Report (DEIR) being prepared for the Tuscan Ridge Planned Development project. The project, as described, would necessitate the annexation of the project site into the service area of the Paradise Irrigation District (PID) boundary in order for the PID to provide its professional services for operation of the on-site water and wastewater facilities.

General Comments

As LAFCo has not yet received any applications concerning this project site, our comments at this time are not to be considered as a measure of completeness for any future applications or requests to LAFCo. The following comments are provided in order to allow the County the opportunity to address LAFCo concerns related to the project description, environmental review and issues related to impacts to other agencies should this be necessary to effectively process any future applications. At such time an application is formally submitted, LAFCo will review all materials and make a completeness determination, which may require the submittal of additional information in order to effectively evaluate the proposed actions.

Government Code Section 56668 lists the sixteen factors that LAFCo's must consider in the review of a proposal. These factors are:

a) Population and population density; land area and land use; per capita assessed valuation; topography, natural boundaries, and drainage basins; proximity to other populated areas; the likelihood of significant growth in the area, and in adjacent incorporated and unincorporated areas, during the next 10 years.

b) Need for organized community services; the present cost and adequacy of governmental services and controls in the area; probable future needs for those services and controls;

c) Alternative courses of action on the cost and adequacy of services and controls in the area and adjacent areas. "Services," as used in this subdivision, refers to governmental services whether or not the services are services, which would be provided by local agencies subject to this division, and includes the public facilities necessary to provide those services.

d) The effect of the proposed action and of alternative actions, on adjacent areas, on mutual social and economic interests, and on the local governmental structure of the county.

e) The conformity of both the proposal and its anticipated effects with both the adopted commission policies on providing planned, orderly, efficient patterns of urban development, and the policies and priorities set forth in Section 56377.

f) The effect of the proposal on maintaining the physical and economic integrity of agricultural lands, as defined by Section 56016.

g) The definiteness and certainty of the boundaries of the territory, the nonconformance of proposed boundaries with lines of assessment or ownership, the creation of islands or corridors of unincorporated territory, and other similar matters affecting the proposed boundaries.

h) Consistency with city or county general and specific plans.

i) The sphere of influence of any local agency, which may be applicable to the proposal being reviewed.

j) The comments of any affected local agency or other public agency.

k) The ability of the newly formed or receiving entity to provide the services, which are the subject of the application to the area, including the sufficiency of revenues for those services following the proposed boundary change.

l) Timely availability of water supplies adequate for projected needs as specified in Section 5352.5.

m) The extent to which the proposal will affect a city or cities and the county in achieving their respective fair shares of the regional housing needs as determined by the appropriate council of governments consistent with Article 10.6 (commencing with Section 65580) of Chapter 3 of Division 1 of Title 7.

n) Any information or comments from the landowner or owners.

o) Any information relating to existing land use designations.

p) The extent to which the proposal will promote environmental justice. As used in this subdivision, "environmental justice" means the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the location of public facilities and the provision of public services, to ensure a healthy environment for all people such that the effects of pollution are not disproportionately borne by any particular populations or communities.

q) Information contained in a local hazard mitigation plan, information contained in a safety element of a general plan, and any maps that identify land as a very high fire hazard zone pursuant to Section 51178 or maps that identify land determined to be in a state responsibility area pursuant to Section 4102 of the Public Resources Code, if it is

determined that such information is relevant to the area that is the subject of the proposal.

LAFCo staff encourages the County to review the above factors and ensure that the proposed development is consistent with and addresses these factors in the DEIR. The failure to specifically address these factors may require the LAFCo to consider efforts to seek additional information and supplement the DEIR to support a LAFCo decision at a later date.

Aside from the factors listed above, the Tuscan Ridge proposal prompts a number of other observations to consider in evaluating the impacts of the project.

Growth Inducement on Scenic Corridor

It has long been acknowledged that the County of Butte, City of Chico and Town of Paradise have supported an open space separation between the two cities to reduce the likelihood of urban sprawl along the Skyway scenic corridor. The significant separation between the five incorporated cities in the county is a purposeful, deliberate and desirable planning outcome of associated city and county general plans. Such focused planning for dense residential developments has allowed for more concentrated and efficient urban service delivery patterns, emergency services response, and reduced vehicle miles travelled. The DEIR must evaluate the impacts and effects of this proposal with respect to encouraging further development along the Skyway to include proposals from the Town of Paradise for a regional sewer line and the Paradise Irrigation District for a domestic water line, that will both bypass this project site.

Need for Services

The project site would be served by the Butte County Sheriff and Butte County Fire/CAL FIRE The EIR should discuss the increased need for emergency services to this high fire hazard area and the need for a financing mechanism to support additional services and infrastructure that may be seen as desirable by these agencies. The project site is remote and response times provided by these departments may not satisfy the goals and policies of the General Plan. It is known that the County is continually reevaluating its contact with CAL FIRE because of budgetary constraints, and that stations may need to close. How will the County justify the reduction of services to some portions of the County, while committing to serve new areas?

Politically Divided Site

The Tuscan Ridge site is currently split between the Durham Park and Recreation District and the Paradise Recreation and Park District. This scenario may be problematic for the dedication of any park facilities or participation in park district programs. It would be useful to consider seeking the affected agencies including the Board of Supervisors, to initiate a boundary change through LAFCo.

Paradise Irrigation District (PID)

The PID has purposefully not undergone a Municipal Service Review (MSR) update since the 2018 Camp Fire because data on finances, infrastructure needs, population growth and options for rebuilding among others, were simply not known given the magnitude of destruction on the Ridge. The PID along with its State Water Board and CSU Sacramento partners has been developing a an Options Study for the past two years that is evaluating a menu of options for regaining its fiscal foundation and continuing to rebuild its infrastructure. This Study is not yet completed, but in Draft form and has not yet been viewed or vetted by the public. Once complete, the Options Study will provide a wealth of knowledge that will be necessary for LAFCo to update the PID MSR and Sphere of Influence (SOI) plan. The MSR/SOI updates will provide the necessary comprehensive analysis that would inform the LAFCo when considering

expanding the powers or territory of the PID. It would be desirable for the project proponents and the PID to consider initiating a MSR/SOI update in conjunction with this proposal to maximize resources, minimize time constraints and increase transparency to the general public and current PID customers and Town residents.

Agriculture Issues

The project site is adjacent to lands zone for agriculture use, and has been historically used for cattle grazing. As you know, LAFCO is charged with the responsibility to protect and maintain the state's ag lands, and must consider a project effect on these lands. Pursuant to LAFCo policy 2.13.4, in making the determination whether conversion will adversely impact adjoining prime agricultural or open space lands, LAFCO will consider the following factors:

- The agricultural/open space significance of the subject and adjacent areas relative to other agricultural/open space lands in the region;

- The use of the subject and the adjacent areas;

- Whether public facilities related to the proposal would be sized or situated so as to facilitate the conversion of adjacent or nearby agricultural/open space land, or will be extended through or adjacent to any other agricultural/open space lands which lie between the project site and existing facilities;

- Whether natural or man-made barriers serve to buffer adjacent or nearby agricultural/open space land from the effects of the proposed development; and,

- Applicable provisions of the County's General Plan Agricultural Element, Open Space and Land Use Elements, applicable growth-management policies, or other statutory provisions designed to protect agriculture or open space. (Refer to www.buttecounty.net/dds/planning,htm to locate Butte County's General Plan.)

The Draft EIR should t address the topic of agricultural or open space impacts that the proposal may cause, contribute to, or encourage by its existence. This may be especially concerning for the Paradise Rod and Gun Club who relies on the open space characteristics of the area to minimize its impacts on nearby residents. is area . Further discussion of this topic is needed to ensure that the project meets all LAFCo policies.

Thank you for the opportunity to provide these observations and contribute to the dialogue. Feel free to contact myself at 538-6819 or email at slucas@buttecounty.net or Shannon Costa at 538-7784 or email at scosta@buttecounty.net .

Sincerely,

Steve Lucas

Stephen Lucas
Executive Officer

CC: Commission
Scott Browne, LAFCo Counsel
Kevin Phillips, Town of Paradise

2022-Mar Public Hearing
Paradise Rod and Gun Club

Who the Paradise Rod and Gun Club is: Property is at 3420 Skyway (PO Box 1081)

- 300+ member families
- The range operates rifle, pistol, trap and archery ranges
- Use permit obtained Jan 11, 2002
- Since operations began in 2002, there have been zero reportable accidents

Previous, Current and Future Safety Mitigations

- Range Safety Officers present before any shooting begins
- Environmental Stewardship Plan in place for over 4 years
- Previous, current and future lead testing of rain water runoff
- Sound mitigations to reduce sound exposure (Sound reducing material between shooting stalls, conex boxes strategically placed, dirt and vegetative backstops)
- We have been and will be good stewards of the land and good neighbors

Concerns

- What is the project going to do to reduce the existing noise to their property and clients?
    - What will this look like?
    - What will the effectiveness of these proposed mitigations be?
    - Where will the proposed mitigations be placed in relation to our property?
    - Most of our rain water runoff goes directly into the canyon towards the creek. What mitigations are planned to deal with this runoff?
- We would request to have a written full disclosure notification referenced in escrow to perspective land owners of the proximity of the range and of the potential for noise and for future resales of properties
- Would like to ask for assurances that the new development does not force us to close, including a waiver or release of all claims against the PRGC (noise)
- Are there any planned fire protection mitigations to protect fire from spreading from the proposed project to our property?

From: Karen Laslo <karenlaslo@gmail.com>
Sent: Sunday, February 27, 2022 7:17 AM
To: Kevin Valente <kvalente@raneymanagement.com>
Cc: mmichelena@buttecounty.net
Subject: Really big new development up on Tuscan Ridge

I have 2 questions for both of you: *Where* will the water come from for this huge new development up on the Tuscan Ridge?

From the proposed Paradise Irrigation District water pipeline?

Thanks,
Karen Laslo

From: Karen Laslo <karenlaslo@gmail.com>
Sent: Friday, March 4, 2022 8:07 AM
To: Kevin Valente <kvalente@raneymanagement.com>
Cc: mmichelena@buttecounty.net; DSTuscanRidge@buttecounty.net; Nick Pappani <npappani@raneymanagement.com>; Angela DaRosa <adarosa@raneymanagement.com>
Subject: Re: Really big new development up on Tuscan Ridge

Ok. But how deep is this well? How many gallons per minute is it?

I'm skeptical any well will have enough water for such a large development.

Have you not noticed we're in a severe drought?

Karen Laslo

"Preserve well, for you now have, this is all." Tozan Ryokai, Zen teacher.

Mar. 3, 2022

Kevin Valente - Butte County Contract Planner
Mark Michelena - Senior Planner

I am writing this letter in opposition to the proposed Tuscan Ridge Planned Development on the lower Skyway.

lighting ★ During the aftermath of the Campfire, this area was a staging area with excessive night lighting that "polluted" the surrounding (remaining) neighborhoods for miles. I live on a bluff to the NW of Butte College and was in the "glow" of this area's obtrusive ambient light. I feel 165 single family homes, and commercial storage buildings would ruin the nightscape for many people.

noise ★ The Paradise Rod and Gun Club's shooting activities would impact the 165 residents with noise.

safety ★ The Skyway is a main artery to Paradise and the traffic impact with the access to this development (both egress + ingress) would need an overpass or signal for traffic concerns.

water ★ Can PID afford to add 165 homes and commercial landscapes to its present water reserve?

sewage ★ How does a sanitary waste disposal station perk on a tuscan lava cap?

Thank you.

Sincerely,
Retta Wilmarth

Ms. Retta Wilmarth
3395 Old Stage Rd.
Butte Valley, CA 95965
530 892-2525

TO: Kevin Valente, Contract Planner, dvalente@raneymanagement.com
FROM: Suellen Rowlison March 18, 2022

NOTICE OF PREPARATION for EIR of TUSCAN RIDGE PROJECT, Butte County

Comments on selected chapters for the EIR,

Aesthetics: Should include all the residential and commercial traffic coming and going to the site. Consider views of the site from Hwy 99 approaching Chico from the south which could be seen lit up at night by PG&E use.

Biological Resources: CNPS Endangered and Threatened Species plant list should be consulted as well as CNPS research on wildfire deterrence using landscape solutions.

Geology and Soils: Effects on downslope properties should be evaluated and mitigated. This should include effect of new wells, sewer drainage and treatment ponds. (Addressed in Hydrology and Water Quality?)

Transportation: Pay particular attention to "vehicle safety hazards" arising from outside the development on the Skyway Road which is the main access to the site, especially for left turns into and out of the property. What are the accident counts and deaths? What is the plan for the next mass exodus from Paradise?

Utilities and Service Systems: Consult with the City of Chico and Town of Paradise and their water Options Study and potential sewer tie-in in addition to planned onsite wells and sewers.

Wildfire: The Town of Paradise should be consulted when considering "impact evacuation patterns of nearby residents".

Alternatives Analysis: Could an alternative include a downsized project in number of homes and commercial buildings and thus downsizing traffic (VMT), and other impacts on the land?

Suellen Rowlison, R.N., suellen@garlic.com

1363 Woodland Ave.

Chico CA 95928

Dear Mark Michelena,

I am writing to respond to the proposed Tuscan Ridge Project.

I am concerned about two issues regarding this project:

1) This is another urban sprawl project. Because of the increasingly harsh impacts of climate change, governments, builders and developers need to give serious attention to greenhouse gas and CO2 emissions. The suburban driver drives twice as many miles as the urban driver. This sort of growth is taking us in exactly the wrong direction for reducing our greenhouse gas emissions. In addition, the machinery required to build a large development like this one creates more problems with emissions.
2) We need housing for lower income people. Housing projects like this one attract people from urban areas in California whose housing is exorbitantly expensive. While I don't care to exclude those who choose to live in Butte County, I think our priority should be on those who already live here who are unable to find affordable housing.
3) Because of our concerns for the environment, VMTs, air quality, traffic, additional asphalt, we need to focus on creating housing density and infill development. Paradise needs housing and has places to build. The project developers should be encouraged to build appropriate housing in appropriate spaces.

Susan Tchudi
Yankee Hill, CA
susantchudi@gmail.com

Kevin Valente

From: Addison Winslow <addisonparkerwinslow@gmail.com>
Sent: Wednesday, March 23, 2022 10:17 PM
To: Kevin Valente
Subject: Tuscan Ridge Scoping Comments

Hi Mr Valente,

As a Chico local, once half-time Paradise resident, and an analyst and advocate for environmentally and financially sound development in the area I have recommendations regarding some of the impacts that should be looked at in the proposed Tuscan Ridge project.

First, the GHG emissions and VMT promise to be significantly higher than alternative developments. Paradise is rebuilding rapidly and the largest outward expansions provided for in the Chico General Plan are located in the Southeast end of the city, namely the Oak Valley, Meriam Park, and Stonegate projects as well as the Doe Mill/Honey Run and South Entler Special Planning Areas. The proposed project would draw from the growth potential of the Chico and Paradise urban areas as the employment, educational, and recreational opportunities that accord the desirability of the land are situated within these urban areas.

While outside the sphere of influence of either urban setting, the residents of the proposed project promise to be dependent upon the commercial services in Chico and Paradise. For these reasons the transportation impacts of the proposed project ought to be measured in comparison to where alternative projects would occur (i.e in the Chico and Paradise spheres of influence) and not conflated with unincorporated communities in Butte County which have economic life independent of urban centers (i.e Magalia, Durham, or Concow, which have services covering basic needs within their communities).

Extending coverage of a bus route to the Tuscan Ridge project site would degrade the efficiency of public transit between the urban centers of Chico and Paradise. Vehicle trips contributing to traffic delays in Paradise and Chico would also reduce the efficiency of bus service as well as all over trips entering and exiting Chico and Paradise.

The addition of frequent traffic into and out of the project area on a 6-lane stretch of high speed roadway both slows travel and adds complexity which presents a safety hazard. The mitigation of the safety factor with a traffic light is undesirable on account of the air quality and GHG impacts incurred by frequent stops.

In tandem with the obstruction of the safety and efficiency of the Skyway is the aesthetic disruption of an otherwise open landscape. The setback requirements will do little to mitigate this, especially in regard to the proposal of a gas station, a use which typically comes with a brand name

and pricing in garish colors displayed at an obnoxious height designed for maximum visibility for fast-moving motorists.

On top of aesthetic concerns are the growth inducing impacts of approving a far flung commercial and residential project. The setting between Chico and Paradise currently conforms with the city and county General Plan policies in favor of clustered development. The edge of the urban area is fairly well defined, and the residential projects outside the urban area are, unlike the proposed project, not situated on a prominent ridge. The proposed project would redefine the standards for how unreasonably distant a development could be from existing services and infrastructure. It has all the characteristics of a leapfrog development.

Tuscan Ridge as a leapfrog development is most obvious in respect to the adjacent agricultural property. The 6,500 acre property, earlier known as Parrott Ranch and now marketed under Nance Canyon Ranch, was once proposed for a low-density residential development and a "Hi-tech industry research park" which would have extended to Neal Road. Berkshire-Hathaway has hired the project manager of the Valley's Edge project in Chico as a realtor for the property which, they say, "may offer a practical alternative to accommodating Chico/Paradise's future growth demand."

The accommodation of traffic flow from Skyway into the Tuscan Ridge site and the public adoption of streets within the development including an "access easement" onto the Nance Canyon property should be considered growth inducing to the detriment of county and municipal policies promoting compact and orderly growth.

Should some version of the project be found consistent with local plans, one possible mitigation measure would be the reduction in the width of the vehicle lanes and public right-of-ways to be more appropriate for the scale of development proposed and would not lend itself to eventual expansion to serve the portion of Nance Canyon which the realty team have dubbed "the Tuscan parcels." A corollary effect would be a reduction in the maintenance burden and GHGs involved in the paving process. An explicit prohibition on future connectivity with the Nance Canyon property would also be a benefit as a condition of approval.

While I believe the only alternative which would truly support the state and local targets for reducing GHGs would be redirecting the investment for this project towards development within one of our existing urbanized areas, a preferable alternative would be a recreation related project more compatible with the scenic quality of the highway and the Paradise Rod and Gun Club, which would not induce regular automobile commuting.

Thank you for receiving and considering my comments,

Addison Winslow
530 433 3450

Law Offices of
Richard L. Harriman
1078 Via Verona Drive
Chico, California 95973-1031
Telephone: (530) 343-1386
Email: richardharrimanattorney@gmail.com

March 24, 2022

VIA EMAIL TRANSMISSION]
[kvalente@raneymanagement.com]

Mr. Kevin Valente, Contract Planner
Raney Management
1501 Sports Drive, Suite A
Sacramento, CA 95834

Re: Tuscan Ridge Project, Skyway Road
Butte County, California
Notice of Preparation of Environmental Impact Report (EIR)
Comments re Proposed Project EIR

Dear Mr. Valente:

Introduction

As a Butte County resident, a member of the Butte Environmental Council (BEC), and as general counsel for the Northern California Environmental Defense Center, I am submitting the following comments on behalf of the public interest, in order to raise several important issues that should be addressed in the Draft Environmental Impact Report for the above-referenced project. These comments are not intended to be exhaustive; and I am not waiving any other objections or comments not raised herein.

Comments

1. The proposed project description needs to be specifically identified and described in a stable, finite, and accurate manner.

2. The past and current environmental setting and background needs to be described in sufficient detail so that the public is adequately informed as to the current status of the Tuscan Ridge Golf Course, the previous uses of the property, and the proximity of the proposed project to the Butte Creek Ecological Preserve ("BCEP"). The owners of record of the BCEP should be identified and notified of the proposed project and the environmental review process and should be provided with notice of the public availability of the Draft EIR, when it is available. It is my

understanding that CSU Chico and/or the CSUC Foundation may have ownership or other public trustee interests in the BCEP, and the beneficiaries of the Trust should also be notified as soon as possible, due to the potentially significant environmental effects on the trust property, as set forth hereinbelow.

3. The location of the proposed project raises some unique potentially significant environmental effects, including, without limitation, the following:

A. Substantial adverse aesthetic impacts from noise, light and glare that cannot be avoided or mitigated.

B. Substantial adverse impacts to wildlife, specifically, to raptors and other listed bird species that are subject to the Migratory Bird Treaty Act.

C. Substantial adverse impacts to wildlife and other Threatened and Endangered species, and/or of Special Concern, pursuant to California Endangered Species Act (CESA) and/or the Federal Endangered Species Act (ESA), such as Bald Eagles and other species that should be identified, disclosed, analyzed, and discussed in a Biological Report prepared by a competent expert included in the EIR.

D. The location of the proposed project on Skyway Road aka "The Skyway" poses potentially significant environmental effects, regarding Traffic Safety and Traffic Congestion on a major arterial that serves cities of Chico and Paradise, especially, in light of the potential mitigation measures which may include signalized intersections at both access and egress points identified in the NOP that must be thoroughly addressed in a Traffic Study, including substantial adverse impacts on safety, congestion, air quality, and GHGs, as regulated by the County General Plan Circulation Element, CEQA, SB 473, and the Butte County Climate Action Plan (CAP).

E. The potential Growth-Inducing Impacts and Cumulative Impacts will require studies and analyses prepared by competent experts that will need to be sufficiently detailed and comprehensive to provide an adequate disclosure, analysis, and discussion to completely address these impacts and to provide specific and effective measures to avoid such impacts or adequately mitigate them. They should include a thorough and accurate description of all adjacent and surrounding properties which might seek access to the Skyway through the proposed project and/or could potentially be served by the infrastructure and other commercial services to be provided by the proposed project or future expansions of it.

F. With respect to the foregoing Item E, the DEIR will need to identify, disclose, analyze, discuss, and address how the potentially significant environmental effects to Air Quality and Climate Change (GHGs) are consistent with the County General Plan and the County CAP.

G. Given the fact that the County General Plan is in the process of being comprehensively updated and has not yet been adopted by the Board of Supervisors, the DEIR will need to identify, disclose, analyze, and address the potential inconsistencies between and among the outdated General Plan, the proposed updated General Plan, and the CAP adopted in December

2021 and how any inconsistencies will be resolved in the DEIR and the land use approvals for the proposed project.

H. The previous Wildfire history of the proposed project site will require an updated, complete, and adequate Fire Safety Study prepared by competent experts that thoroughly analyzes all of the potential risks to the health and safety of the project residents and how they can be avoided, adequately mitigated, and/or how the residents will be legally protected from potentially catastrophic impacts to their health, safety, and welfare, and/or indemnified and held harmless by the project owners and developers in the event of another major wildfire on the Ridge which causes damages to the health, lives, and property of the residents of the proposed project, especially, in the event that they cannot safely egress the project site due to traffic congestion caused by other residents trying to escape from Paradise and/or elsewhere on the Ridge. These critical issues need to be thoroughly and adequately addressed in the DEIR.

I. The NOP raises issues regarding the Water and Wastewater infrastructure and financing that will require specific identification, disclosure, analysis, discussion, and avoidance or mitigation in the DEIR and the provision of other public services, including public transportation to the public school systems of either Chico or Paradise.

J. With regard to the foregoing issue raised in subparagraph "I" hereinabove, the DEIR will need to include and address specific issues regarding the necessary approval by the Butte County Local Agency Formation Commission (LAFCo) for the connection with public services of either the Paradise Irrigation District (PID) and/or the Town of Paradise (TOP). Since the NOP does not specify the provisions relevant to the bases upon which LAFCo would be lawfully required or authorized to approve the provision of such services from either entity, this issue needs to be identified, disclosed, analyzed, and discussed adequately in the DEIR and when such approvals will be obtained during the public review and permitting process for the proposed project.

K. The NOP raises issues regarding the need and availability of public transportation for the residents that reduces emissions and GHGs, location of public education/schools, health and medical services, governance of the new community that will need to be identified, disclosed, analyzed, discussed, and addressed in the DEIR.

Since these and other issues that need to be addressed in the DEIR will, presumably, be addressed in the DEIR, these Comments will be supplemented in the public review process conducted by the County following the release of the DEIR and are hereby reserved until that time.

Request for Special Notice

Please include this letter in the record of proceedings and the DEIR and provide special written notice of the public availability of the Draft Environmental Impact Report for this project and all further documents and/or notices of public workshops, meetings, and/or hearings before the Planning Commission and Board of Supervisors.

Thank you for the opportunity to comment on this proposed project.

Very truly yours,

/s/ Richard L. Harriman
RICHARD L. HARRIMAN

cc: Dan Breedon **dbreedon@buttecounty.net**
County Counsel
Butte County LAFCo
Clients & other interested parties

RLH/hr

APPENDIX C

Tuscan Ridge Project - Butte County AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Tuscan Ridge Project

Butte County AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	53.00	1000sqft	1.22	53,000.00	0
Other Asphalt Surfaces	20.50	Acre	20.50	892,980.00	0
Parking Lot	172.00	Space	2.00	68,800.00	0
Single Family Housing	165.00	Dwelling Unit	68.70	297,000.00	472
Convenience Market with Gas Pumps	16.00	Pump	0.05	3,600.00	0
Strip Mall	76.00	1000sqft	18.03	76,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	71
Climate Zone	3			**Operational Year**	2027
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Lot acreage and square-feet of land uses updated as necessary to represent project-specific information.

Construction Phase - Phase timing based on AQ Questionnaire. Architectural coating assumed to start 2 weeks after building construction and last for the same duration.

Grading -

Vehicle Trips - Trip generation & VMT adjusted based on rates provided by Fehr & Peers.

Mobile Land Use Mitigation -

Tuscan Ridge Project - Butte County AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Area Mitigation - No hearths based on AQ Questionnaire. Use of low VOC paint consistent with BCAQMD Rule 230.

Water Mitigation - Compliant with MWELO.

Stationary Sources - Emergency Generators and Fire Pumps - One emergency generator assumed for wastewater treatment system, existing water well, and proposed water well.

Demolition - Represents existing clubhouse that would be demolished as part of the proposed project.

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	150	50
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	150	50
tblConstructionPhase	NumDays	120.00	20.00
tblConstructionPhase	NumDays	310.00	30.00
tblConstructionPhase	NumDays	220.00	20.00
tblConstructionPhase	NumDays	3,100.00	720.00
tblConstructionPhase	NumDays	220.00	720.00
tblConstructionPhase	NumDays	200.00	5.00
tblConstructionPhase	PhaseEndDate	6/20/2025	5/3/2024
tblConstructionPhase	PhaseEndDate	8/28/2026	6/14/2024
tblConstructionPhase	PhaseEndDate	5/20/2039	7/12/2024
tblConstructionPhase	PhaseEndDate	7/16/2038	4/16/2027
tblConstructionPhase	PhaseEndDate	3/23/2040	4/30/2027
tblConstructionPhase	PhaseEndDate	1/3/2025	4/5/2024
tblConstructionPhase	PhaseStartDate	1/4/2025	4/6/2024
tblConstructionPhase	PhaseStartDate	6/21/2025	5/4/2024
tblConstructionPhase	PhaseStartDate	7/17/2038	6/15/2024
tblConstructionPhase	PhaseStartDate	8/29/2026	7/13/2024

Tuscan Ridge Project - Butte County AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstructionPhase	PhaseStartDate	5/21/2039	7/27/2024
tblLandUse	LandUseSquareFeet	2,258.80	3,600.00
tblLandUse	LotAcreage	1.55	2.00
tblLandUse	LotAcreage	53.57	68.70
tblLandUse	LotAcreage	1.74	18.03
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	3.00
tblVehicleTrips	CC_TL	10.50	10.40
tblVehicleTrips	CC_TL	10.50	10.40
tblVehicleTrips	CC_TL	10.50	10.40
tblVehicleTrips	CNW_TL	10.50	10.40
tblVehicleTrips	CNW_TL	10.50	10.40
tblVehicleTrips	CNW_TL	10.50	10.40
tblVehicleTrips	CW_TL	10.50	10.40
tblVehicleTrips	CW_TL	10.50	10.40
tblVehicleTrips	CW_TL	10.50	10.40
tblVehicleTrips	HO_TL	8.00	7.93
tblVehicleTrips	HS_TL	4.90	4.85
tblVehicleTrips	HW_TL	11.10	11.00
tblVehicleTrips	ST_TR	322.50	255.91
tblVehicleTrips	ST_TR	9.54	9.36
tblVehicleTrips	ST_TR	42.04	65.18
tblVehicleTrips	ST_TR	1.74	1.40
tblVehicleTrips	SU_TR	322.50	255.91
tblVehicleTrips	SU_TR	8.55	9.36
tblVehicleTrips	SU_TR	20.43	65.18

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblVehicleTrips	SU_TR	1.74	1.40
tblVehicleTrips	WD_TR	322.50	255.91
tblVehicleTrips	WD_TR	9.44	9.36
tblVehicleTrips	WD_TR	44.32	65.18
tblVehicleTrips	WD_TR	1.74	1.40

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	15.5538	32.4235	42.4427	0.1341	19.8090	1.3363	21.0392	10.1428	1.2294	11.2745	0.0000	13,714.5099	13,714.5099	1.9485	1.0143	14,036.3763
2025	15.2413	27.3920	40.6213	0.1314	7.0941	0.6984	7.7925	1.9250	0.6609	2.5860	0.0000	13,486.5292	13,486.5292	0.7650	0.9868	13,799.7293
2026	15.0638	27.0421	39.1443	0.1289	7.0941	0.6949	7.7890	1.9250	0.6576	2.5827	0.0000	13,263.0741	13,263.0741	0.7515	0.9615	13,568.3815
2027	14.9007	26.7185	37.8568	0.1265	7.0941	0.6914	7.7855	1.9250	0.6543	2.5793	0.0000	13,038.9892	13,038.9892	0.7397	0.9364	13,336.5304
Maximum	**15.5538**	**32.4235**	**42.4427**	**0.1341**	**19.8090**	**1.3363**	**21.0392**	**10.1428**	**1.2294**	**11.2745**	**0.0000**	**13,714.5099**	**13,714.5099**	**1.9485**	**1.0143**	**14,036.3763**

Tuscan Ridge Project - Butte County AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	15.5538	32.4235	42.4427	0.1341	19.8090	1.3363	21.0392	10.1428	1.2294	11.2745	0.0000	13,714.5099	13,714.5099	1.9485	1.0143	14,036.3763
2025	15.2413	27.3920	40.6213	0.1314	7.0941	0.6984	7.7925	1.9250	0.6609	2.5860	0.0000	13,486.5292	13,486.5292	0.7650	0.9868	13,799.7293
2026	15.0638	27.0421	39.1443	0.1289	7.0941	0.6949	7.7890	1.9250	0.6576	2.5827	0.0000	13,263.0741	13,263.0741	0.7515	0.9615	13,568.3815
2027	14.9007	26.7185	37.8568	0.1265	7.0941	0.6914	7.7855	1.9250	0.6543	2.5793	0.0000	13,038.9892	13,038.9892	0.7397	0.9364	13,336.5304
Maximum	**15.5538**	**32.4235**	**42.4427**	**0.1341**	**19.8090**	**1.3363**	**21.0392**	**10.1428**	**1.2294**	**11.2745**	**0.0000**	**13,714.5099**	**13,714.5099**	**1.9485**	**1.0143**	**14,036.3763**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	269.6750	5.0714	330.3881	0.5721		44.4541	44.4541		44.4541	44.4541	4,644.3763	1,862.6074	6,506.9836	4.1837	0.3656	6,720.5375
Energy	0.1702	1.4832	0.8309	9.2800e-003		0.1176	0.1176		0.1176	0.1176		1,856.5614	1,856.5614	0.0356	0.0340	1,867.5940
Mobile	37.8263	33.7500	217.4545	0.3806	37.8655	0.3856	38.2511	10.1047	0.3625	10.4672		40,147.1099	40,147.1099	2.7316	2.2308	40,880.1907
Stationary	9.9000e-003	0.0277	0.0252	5.0000e-005		1.4600e-003	1.4600e-003		1.4600e-003	1.4600e-003		5.0623	5.0623	7.1000e-004		5.0800
Total	**307.6813**	**40.3322**	**548.6987**	**0.9620**	**37.8655**	**44.9587**	**82.8242**	**10.1047**	**44.9356**	**55.0403**	**4,644.3763**	**43,871.3409**	**48,515.7172**	**6.9517**	**2.6305**	**49,473.4023**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	10.6598	0.1570	13.6342	7.2000e-004		0.0756	0.0756		0.0756	0.0756	0.0000	24.5850	24.5850	0.0237	0.0000	25.1766
Energy	0.1702	1.4832	0.8309	9.2800e-003		0.1176	0.1176		0.1176	0.1176		1,856.5614	1,856.5614	0.0356	0.0340	1,867.5940
Mobile	37.8263	33.7500	217.4545	0.3806	37.8655	0.3856	38.2511	10.1047	0.3625	10.4672		40,147.1099	40,147.1099	2.7316	2.2308	40,880.1907
Stationary	9.9000e-003	0.0277	0.0252	5.0000e-005		1.4600e-003	1.4600e-003		1.4600e-003	1.4600e-003		5.0623	5.0623	7.1000e-004		5.0800
Total	**48.6661**	**35.4178**	**231.9447**	**0.3907**	**37.8655**	**0.5802**	**38.4457**	**10.1047**	**0.5571**	**10.6618**	**0.0000**	**42,033.3185**	**42,033.3185**	**2.7916**	**2.2649**	**42,778.0414**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**84.18**	**12.18**	**57.73**	**59.39**	**0.00**	**98.71**	**53.58**	**0.00**	**98.76**	**80.63**	**100.00**	**4.19**	**13.36**	**59.84**	**13.90**	**13.53**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/1/2024	4/5/2024	5	5	
2	Site Preparation	Site Preparation	4/6/2024	5/3/2024	5	20	
3	Grading	Grading	5/4/2024	6/14/2024	5	30	
4	Building Construction	Building Construction	7/13/2024	4/16/2027	5	720	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5	Paving	Paving	6/15/2024	7/12/2024	5	20	
6	Architectural Coating	Architectural Coating	7/27/2024	4/30/2027	5	720	

Acres of Grading (Site Preparation Phase): 30

Acres of Grading (Grading Phase): 90

Acres of Paving: 22.5

Residential Indoor: 601,425; Residential Outdoor: 200,475; Non-Residential Indoor: 198,900; Non-Residential Outdoor: 66,300; Striped Parking Area: 57,707 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	511.00	197.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	102.00	0.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	8.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3603	0.0000	0.3603	0.0546	0.0000	0.0546			0.0000			0.0000
Off-Road	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922		3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**	**0.3603**	**0.9602**	**1.3204**	**0.0546**	**0.8922**	**0.9467**		**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.0400e-003	0.2105	0.0457	9.4000e-004	0.0280	2.0400e-003	0.0301	7.6900e-003	1.9500e-003	9.6500e-003		99.7696	99.7696	1.9000e-004	0.0157	104.4473
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0662	0.0349	0.5169	1.1700e-003	0.1266	6.9000e-004	0.1273	0.0336	6.4000e-004	0.0342		120.8205	120.8205	3.6000e-003	3.2700e-003	121.8857
Total	**0.0702**	**0.2453**	**0.5626**	**2.1100e-003**	**0.1547**	**2.7300e-003**	**0.1574**	**0.0413**	**2.5900e-003**	**0.0439**		**220.5901**	**220.5901**	**3.7900e-003**	**0.0190**	**226.3329**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3603	0.0000	0.3603	0.0546	0.0000	0.0546			0.0000			0.0000
Off-Road	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922	0.0000	3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**	**0.3603**	**0.9602**	**1.3204**	**0.0546**	**0.8922**	**0.9467**	**0.0000**	**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.0400e-003	0.2105	0.0457	9.4000e-004	0.0280	2.0400e-003	0.0301	7.6900e-003	1.9500e-003	9.6500e-003		99.7696	99.7696	1.9000e-004	0.0157	104.4473
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0662	0.0349	0.5169	1.1700e-003	0.1266	6.9000e-004	0.1273	0.0336	6.4000e-004	0.0342		120.8205	120.8205	3.6000e-003	3.2700e-003	121.8857
Total	**0.0702**	**0.2453**	**0.5626**	**2.1100e-003**	**0.1547**	**2.7300e-003**	**0.1574**	**0.0413**	**2.5900e-003**	**0.0439**		**220.5901**	**220.5901**	**3.7900e-003**	**0.0190**	**226.3329**

3.3 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310		3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**19.6570**	**1.2294**	**20.8864**	**10.1025**	**1.1310**	**11.2335**		**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

Tuscan Ridge Project - Butte County AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0794	0.0419	0.6203	1.4100e-003	0.1520	8.3000e-004	0.1528	0.0403	7.7000e-004	0.0411		144.9846	144.9846	4.3200e-003	3.9300e-003	146.2628
Total	**0.0794**	**0.0419**	**0.6203**	**1.4100e-003**	**0.1520**	**8.3000e-004**	**0.1528**	**0.0403**	**7.7000e-004**	**0.0411**		**144.9846**	**144.9846**	**4.3200e-003**	**3.9300e-003**	**146.2628**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310	0.0000	3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**19.6570**	**1.2294**	**20.8864**	**10.1025**	**1.1310**	**11.2335**	**0.0000**	**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0794	0.0419	0.6203	1.4100e-003	0.1520	8.3000e-004	0.1528	0.0403	7.7000e-004	0.0411		144.9846	144.9846	4.3200e-003	3.9300e-003	146.2628
Total	**0.0794**	**0.0419**	**0.6203**	**1.4100e-003**	**0.1520**	**8.3000e-004**	**0.1528**	**0.0403**	**7.7000e-004**	**0.0411**		**144.9846**	**144.9846**	**4.3200e-003**	**3.9300e-003**	**146.2628**

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**9.2036**	**1.3354**	**10.5390**	**3.6538**	**1.2286**	**4.8823**		**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

Tuscan Ridge Project - Butte County AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0882	0.0465	0.6893	1.5600e-003	0.1689	9.3000e-004	0.1698	0.0448	8.5000e-004	0.0456		161.0940	161.0940	4.8000e-003	4.3600e-003	162.5142
Total	**0.0882**	**0.0465**	**0.6893**	**1.5600e-003**	**0.1689**	**9.3000e-004**	**0.1698**	**0.0448**	**8.5000e-004**	**0.0456**		**161.0940**	**161.0940**	**4.8000e-003**	**4.3600e-003**	**162.5142**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**9.2036**	**1.3354**	**10.5390**	**3.6538**	**1.2286**	**4.8823**	**0.0000**	**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0882	0.0465	0.6893	1.5600e-003	0.1689	9.3000e-004	0.1698	0.0448	8.5000e-004	0.0456		161.0940	161.0940	4.8000e-003	4.3600e-003	162.5142
Total	**0.0882**	**0.0465**	**0.6893**	**1.5600e-003**	**0.1689**	**9.3000e-004**	**0.1698**	**0.0448**	**8.5000e-004**	**0.0456**		**161.0940**	**161.0940**	**4.8000e-003**	**4.3600e-003**	**162.5142**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3358	12.7252	3.3401	0.0563	1.9188	0.0940	2.0127	0.5523	0.0899	0.6422		5,939.8332	5,939.8332	0.0171	0.8805	6,202.6640
Worker	2.2542	1.1883	17.6104	0.0399	4.3142	0.0237	4.3379	1.1443	0.0218	1.1661		4,115.9506	4,115.9506	0.1227	0.1115	4,152.2379
Total	**2.5901**	**13.9134**	**20.9505**	**0.0962**	**6.2330**	**0.1177**	**6.3506**	**1.6966**	**0.1117**	**1.8083**		**10,055.7838**	**10,055.7838**	**0.1399**	**0.9920**	**10,354.9019**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3358	12.7252	3.3401	0.0563	1.9188	0.0940	2.0127	0.5523	0.0899	0.6422		5,939.8332	5,939.8332	0.0171	0.8805	6,202.6640
Worker	2.2542	1.1883	17.6104	0.0399	4.3142	0.0237	4.3379	1.1443	0.0218	1.1661		4,115.9506	4,115.9506	0.1227	0.1115	4,152.2379
Total	**2.5901**	**13.9134**	**20.9505**	**0.0962**	**6.2330**	**0.1177**	**6.3506**	**1.6966**	**0.1117**	**1.8083**		**10,055.7838**	**10,055.7838**	**0.1399**	**0.9920**	**10,354.9019**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3230	12.5049	3.2432	0.0553	1.9188	0.0924	2.0111	0.5523	0.0884	0.6407		5,830.5597	5,830.5597	0.0163	0.8629	6,088.1002
Worker	2.0996	1.0603	16.2422	0.0386	4.3142	0.0225	4.3367	1.1443	0.0207	1.1650		4,016.3492	4,016.3492	0.1104	0.1033	4,049.9035
Total	**2.4226**	**13.5651**	**19.4855**	**0.0938**	**6.2330**	**0.1148**	**6.3478**	**1.6966**	**0.1091**	**1.8056**		**9,846.9089**	**9,846.9089**	**0.1267**	**0.9662**	**10,138.0037**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3230	12.5049	3.2432	0.0553	1.9188	0.0924	2.0111	0.5523	0.0884	0.6407		5,830.5597	5,830.5597	0.0163	0.8629	6,088.1002
Worker	2.0996	1.0603	16.2422	0.0386	4.3142	0.0225	4.3367	1.1443	0.0207	1.1650		4,016.3492	4,016.3492	0.1104	0.1033	4,049.9035
Total	**2.4226**	**13.5651**	**19.4855**	**0.0938**	**6.2330**	**0.1148**	**6.3478**	**1.6966**	**0.1091**	**1.8056**		**9,846.9089**	**9,846.9089**	**0.1267**	**0.9662**	**10,138.0037**

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Tuscan Ridge Project - Butte County AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3114	12.2845	3.1660	0.0542	1.9188	0.0904	2.0091	0.5523	0.0865	0.6387		5,723.0049	5,723.0049	0.0155	0.8458	5,975.4380
Worker	1.9612	0.9523	15.0753	0.0373	4.3142	0.0212	4.3354	1.1443	0.0195	1.1638		3,919.7341	3,919.7341	0.0998	0.0964	3,950.9667
Total	**2.2726**	**13.2368**	**18.2414**	**0.0916**	**6.2330**	**0.1116**	**6.3445**	**1.6966**	**0.1060**	**1.8026**		**9,642.7390**	**9,642.7390**	**0.1153**	**0.9422**	**9,926.4046**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Tuscan Ridge Project - Butte County AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3114	12.2845	3.1660	0.0542	1.9188	0.0904	2.0091	0.5523	0.0865	0.6387		5,723.0049	5,723.0049	0.0155	0.8458	5,975.4380
Worker	1.9612	0.9523	15.0753	0.0373	4.3142	0.0212	4.3354	1.1443	0.0195	1.1638		3,919.7341	3,919.7341	0.0998	0.0964	3,950.9667
Total	**2.2726**	**13.2368**	**18.2414**	**0.0916**	**6.2330**	**0.1116**	**6.3445**	**1.6966**	**0.1060**	**1.8026**		**9,642.7390**	**9,642.7390**	**0.1153**	**0.9422**	**9,926.4046**

3.5 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3008	12.0725	3.0984	0.0531	1.9188	0.0884	2.0072	0.5523	0.0846	0.6369		5,607.3470	5,607.3470	0.0149	0.8279	5,854.4205
Worker	1.8341	0.8592	14.0584	0.0362	4.3142	0.0199	4.3341	1.1443	0.0183	1.1626		3,829.3488	3,829.3488	0.0904	0.0905	3,858.5752
Total	**2.1350**	**12.9318**	**17.1569**	**0.0893**	**6.2330**	**0.1083**	**6.3413**	**1.6966**	**0.1029**	**1.7995**		**9,436.6958**	**9,436.6958**	**0.1053**	**0.9184**	**9,712.9957**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3008	12.0725	3.0984	0.0531	1.9188	0.0884	2.0072	0.5523	0.0846	0.6369		5,607.3470	5,607.3470	0.0149	0.8279	5,854.4205
Worker	1.8341	0.8592	14.0584	0.0362	4.3142	0.0199	4.3341	1.1443	0.0183	1.1626		3,829.3488	3,829.3488	0.0904	0.0905	3,858.5752
Total	**2.1350**	**12.9318**	**17.1569**	**0.0893**	**6.2330**	**0.1083**	**6.3413**	**1.6966**	**0.1029**	**1.7995**		**9,436.6958**	**9,436.6958**	**0.1053**	**0.9184**	**9,712.9957**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	2.9475					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.9357**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0662	0.0349	0.5169	1.1700e-003	0.1266	6.9000e-004	0.1273	0.0336	6.4000e-004	0.0342		120.8205	120.8205	3.6000e-003	3.2700e-003	121.8857
Total	**0.0662**	**0.0349**	**0.5169**	**1.1700e-003**	**0.1266**	**6.9000e-004**	**0.1273**	**0.0336**	**6.4000e-004**	**0.0342**		**120.8205**	**120.8205**	**3.6000e-003**	**3.2700e-003**	**121.8857**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	2.9475					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.9357**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0662	0.0349	0.5169	1.1700e-003	0.1266	6.9000e-004	0.1273	0.0336	6.4000e-004	0.0342		120.8205	120.8205	3.6000e-003	3.2700e-003	121.8857
Total	**0.0662**	**0.0349**	**0.5169**	**1.1700e-003**	**0.1266**	**6.9000e-004**	**0.1273**	**0.0336**	**6.4000e-004**	**0.0342**		**120.8205**	**120.8205**	**3.6000e-003**	**3.2700e-003**	**121.8857**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**11.0422**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.4500	0.2372	3.5152	7.9600e-003	0.8612	4.7200e-003	0.8659	0.2284	4.3500e-003	0.2328		821.5792	821.5792	0.0245	0.0223	828.8224
Total	**0.4500**	**0.2372**	**3.5152**	**7.9600e-003**	**0.8612**	**4.7200e-003**	**0.8659**	**0.2284**	**4.3500e-003**	**0.2328**		**821.5792**	**821.5792**	**0.0245**	**0.0223**	**828.8224**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**11.0422**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.4500	0.2372	3.5152	7.9600e-003	0.8612	4.7200e-003	0.8659	0.2284	4.3500e-003	0.2328		821.5792	821.5792	0.0245	0.0223	828.8224
Total	**0.4500**	**0.2372**	**3.5152**	**7.9600e-003**	**0.8612**	**4.7200e-003**	**0.8659**	**0.2284**	**4.3500e-003**	**0.2328**		**821.5792**	**821.5792**	**0.0245**	**0.0223**	**828.8224**

3.7 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**11.0323**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.4191	0.2116	3.2421	7.7000e-003	0.8612	4.4800e-003	0.8656	0.2284	4.1300e-003	0.2325		801.6979	801.6979	0.0220	0.0206	808.3956
Total	**0.4191**	**0.2116**	**3.2421**	**7.7000e-003**	**0.8612**	**4.4800e-003**	**0.8656**	**0.2284**	**4.1300e-003**	**0.2325**		**801.6979**	**801.6979**	**0.0220**	**0.0206**	**808.3956**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**11.0323**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.4191	0.2116	3.2421	7.7000e-003	0.8612	4.4800e-003	0.8656	0.2284	4.1300e-003	0.2325		801.6979	801.6979	0.0220	0.0206	808.3956
Total	**0.4191**	**0.2116**	**3.2421**	**7.7000e-003**	**0.8612**	**4.4800e-003**	**0.8656**	**0.2284**	**4.1300e-003**	**0.2325**		**801.6979**	**801.6979**	**0.0220**	**0.0206**	**808.3956**

3.7 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**11.0323**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3915	0.1901	3.0092	7.4500e-003	0.8612	4.2300e-003	0.8654	0.2284	3.9000e-003	0.2323		782.4127	782.4127	0.0199	0.0193	788.6470
Total	**0.3915**	**0.1901**	**3.0092**	**7.4500e-003**	**0.8612**	**4.2300e-003**	**0.8654**	**0.2284**	**3.9000e-003**	**0.2323**		**782.4127**	**782.4127**	**0.0199**	**0.0193**	**788.6470**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**11.0323**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3915	0.1901	3.0092	7.4500e-003	0.8612	4.2300e-003	0.8654	0.2284	3.9000e-003	0.2323		782.4127	782.4127	0.0199	0.0193	788.6470
Total	**0.3915**	**0.1901**	**3.0092**	**7.4500e-003**	**0.8612**	**4.2300e-003**	**0.8654**	**0.2284**	**3.9000e-003**	**0.2323**		**782.4127**	**782.4127**	**0.0199**	**0.0193**	**788.6470**

3.7 Architectural Coating - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**11.0323**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3661	0.1715	2.8062	7.2200e-003	0.8612	3.9700e-003	0.8651	0.2284	3.6600e-003	0.2321		764.3710	764.3710	0.0181	0.0181	770.2048
Total	**0.3661**	**0.1715**	**2.8062**	**7.2200e-003**	**0.8612**	**3.9700e-003**	**0.8651**	**0.2284**	**3.6600e-003**	**0.2321**		**764.3710**	**764.3710**	**0.0181**	**0.0181**	**770.2048**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**11.0323**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3661	0.1715	2.8062	7.2200e-003	0.8612	3.9700e-003	0.8651	0.2284	3.6600e-003	0.2321		764.3710	764.3710	0.0181	0.0181	770.2048
Total	**0.3661**	**0.1715**	**2.8062**	**7.2200e-003**	**0.8612**	**3.9700e-003**	**0.8651**	**0.2284**	**3.6600e-003**	**0.2321**		**764.3710**	**764.3710**	**0.0181**	**0.0181**	**770.2048**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	37.8263	33.7500	217.4545	0.3806	37.8655	0.3856	38.2511	10.1047	0.3625	10.4672		40,147.1099	40,147.1099	2.7316	2.2308	40,880.1907
Unmitigated	37.8263	33.7500	217.4545	0.3806	37.8655	0.3856	38.2511	10.1047	0.3625	10.4672		40,147.1099	40,147.1099	2.7316	2.2308	40,880.1907

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Convenience Market with Gas Pumps	4,094.56	4,094.56	4094.56	3,080,698	3,080,698
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Single Family Housing	1,544.40	1,544.40	1544.40	4,232,964	4,232,964
Strip Mall	4,953.68	4,953.68	4953.68	10,341,005	10,341,005
Unrefrigerated Warehouse-No Rail	74.20	74.20	74.20	262,012	262,012
Total	10,666.84	10,666.84	10,666.84	17,916,679	17,916,679

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Convenience Market with Gas	10.40	10.40	10.40	0.80	80.20	19.00	14	21	65
Other Asphalt Surfaces	10.50	10.50	10.50	0.00	0.00	0.00	0	0	0
Parking Lot	10.50	10.50	10.50	0.00	0.00	0.00	0	0	0
Single Family Housing	11.00	4.85	7.93	35.00	17.00	48.00	86	11	3
Strip Mall	10.40	10.40	10.40	16.60	64.40	19.00	45	40	15
Unrefrigerated Warehouse-No	10.40	10.40	10.40	59.00	0.00	41.00	92	5	3

Tuscan Ridge Project - Butte County AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Convenience Market with Gas Pumps	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Other Asphalt Surfaces	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Parking Lot	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Single Family Housing	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Strip Mall	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Unrefrigerated Warehouse-No Rail	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1702	1.4832	0.8309	9.2800e-003		0.1176	0.1176		0.1176	0.1176		1,856.5614	1,856.5614	0.0356	0.0340	1,867.5940
NaturalGas Unmitigated	0.1702	1.4832	0.8309	9.2800e-003		0.1176	0.1176		0.1176	0.1176		1,856.5614	1,856.5614	0.0356	0.0340	1,867.5940

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Convenience Market with Gas Pumps	104.647	1.1300e-003	0.0103	8.6200e-003	6.0000e-005		7.8000e-004	7.8000e-004		7.8000e-004	7.8000e-004		12.3114	12.3114	2.4000e-004	2.3000e-004	12.3845
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	10866.3	0.1172	1.0014	0.4261	6.3900e-003		0.0810	0.0810		0.0810	0.0810		1,278.3870	1,278.3870	0.0245	0.0234	1,285.9838
Strip Mall	2209.21	0.0238	0.2166	0.1819	1.3000e-003		0.0165	0.0165		0.0165	0.0165		259.9065	259.9065	4.9800e-003	4.7600e-003	261.4510
Unrefrigerated Warehouse-No Rail	2600.63	0.0281	0.2550	0.2142	1.5300e-003		0.0194	0.0194		0.0194	0.0194		305.9565	305.9565	5.8600e-003	5.6100e-003	307.7746
Total		**0.1702**	**1.4832**	**0.8309**	**9.2800e-003**		**0.1176**	**0.1176**		**0.1176**	**0.1176**		**1,856.5614**	**1,856.5614**	**0.0356**	**0.0340**	**1,867.5940**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Convenience Market with Gas Pumps	0.104647	1.1300e-003	0.0103	8.6200e-003	6.0000e-005		7.8000e-004	7.8000e-004		7.8000e-004	7.8000e-004		12.3114	12.3114	2.4000e-004	2.3000e-004	12.3845
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	10.8663	0.1172	1.0014	0.4261	6.3900e-003		0.0810	0.0810		0.0810	0.0810		1,278.3870	1,278.3870	0.0245	0.0234	1,285.9838
Strip Mall	2.20921	0.0238	0.2166	0.1819	1.3000e-003		0.0165	0.0165		0.0165	0.0165		259.9065	259.9065	4.9800e-003	4.7600e-003	261.4510
Unrefrigerated Warehouse-No Rail	2.60063	0.0281	0.2550	0.2142	1.5300e-003		0.0194	0.0194		0.0194	0.0194		305.9565	305.9565	5.8600e-003	5.6100e-003	307.7746
Total		**0.1702**	**1.4832**	**0.8309**	**9.2800e-003**		**0.1176**	**0.1176**		**0.1176**	**0.1176**		**1,856.5614**	**1,856.5614**	**0.0356**	**0.0340**	**1,867.5940**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Tuscan Ridge Project - Butte County AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	10.6598	0.1570	13.6342	7.2000e-004		0.0756	0.0756		0.0756	0.0756	0.0000	24.5850	24.5850	0.0237	0.0000	25.1766
Unmitigated	269.6750	5.0714	330.3881	0.5721		44.4541	44.4541		44.4541	44.4541	4,644.3763	1,862.6074	6,506.9836	4.1837	0.3656	6,720.5375

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.1425					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.5341					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	257.5868	4.9144	316.7540	0.5713		44.3785	44.3785		44.3785	44.3785	4,644.3763	1,838.0224	6,482.3986	4.1601	0.3656	6,695.3609
Landscaping	0.4115	0.1570	13.6342	7.2000e-004		0.0756	0.0756		0.0756	0.0756		24.5850	24.5850	0.0237		25.1766
Total	**269.6750**	**5.0714**	**330.3881**	**0.5721**		**44.4541**	**44.4541**		**44.4541**	**44.4541**	**4,644.3763**	**1,862.6073**	**6,506.9836**	**4.1837**	**0.3656**	**6,720.5375**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7142					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.5341					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4115	0.1570	13.6342	7.2000e-004		0.0756	0.0756		0.0756	0.0756		24.5850	24.5850	0.0237		25.1766
Total	**10.6598**	**0.1570**	**13.6342**	**7.2000e-004**		**0.0756**	**0.0756**		**0.0756**	**0.0756**	**0.0000**	**24.5850**	**24.5850**	**0.0237**	**0.0000**	**25.1766**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	3	0.01	3	201	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (175 - 300 HP)	9.9000e-003	0.0277	0.0252	5.0000e-005		1.4600e-003	1.4600e-003		1.4600e-003	1.4600e-003		5.0623	5.0623	7.1000e-004		5.0800
Total	**9.9000e-003**	**0.0277**	**0.0252**	**5.0000e-005**		**1.4600e-003**	**1.4600e-003**		**1.4600e-003**	**1.4600e-003**		**5.0623**	**5.0623**	**7.1000e-004**		**5.0800**

11.0 Vegetation

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Tuscan Ridge Project

Butte County AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	53.00	1000sqft	1.22	53,000.00	0
Other Asphalt Surfaces	20.50	Acre	20.50	892,980.00	0
Parking Lot	172.00	Space	2.00	68,800.00	0
Single Family Housing	165.00	Dwelling Unit	68.70	297,000.00	472
Convenience Market with Gas Pumps	16.00	Pump	0.05	3,600.00	0
Strip Mall	76.00	1000sqft	18.03	76,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	71
Climate Zone	3			**Operational Year**	2027
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Lot acreage and square-feet of land uses updated as necessary to represent project-specific information.

Construction Phase - Phase timing based on AQ Questionnaire. Architectural coating assumed to start 2 weeks after building construction and last for the same duration.

Grading -

Vehicle Trips - Trip generation & VMT adjusted based on rates provided by Fehr & Peers.

Mobile Land Use Mitigation -

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Area Mitigation - No hearths based on AQ Questionnaire. Use of low VOC paint consistent with BCAQMD Rule 230.

Water Mitigation - Compliant with MWELO.

Stationary Sources - Emergency Generators and Fire Pumps - One emergency generator assumed for wastewater treatment system, existing water well, and proposed water well.

Demolition - Represents existing clubhouse that would be demolished as part of the proposed project.

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	150	50
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	150	50
tblConstructionPhase	NumDays	120.00	20.00
tblConstructionPhase	NumDays	310.00	30.00
tblConstructionPhase	NumDays	220.00	20.00
tblConstructionPhase	NumDays	3,100.00	720.00
tblConstructionPhase	NumDays	220.00	720.00
tblConstructionPhase	NumDays	200.00	5.00
tblConstructionPhase	PhaseEndDate	6/20/2025	5/3/2024
tblConstructionPhase	PhaseEndDate	8/28/2026	6/14/2024
tblConstructionPhase	PhaseEndDate	5/20/2039	7/12/2024
tblConstructionPhase	PhaseEndDate	7/16/2038	4/16/2027
tblConstructionPhase	PhaseEndDate	3/23/2040	4/30/2027
tblConstructionPhase	PhaseEndDate	1/3/2025	4/5/2024
tblConstructionPhase	PhaseStartDate	1/4/2025	4/6/2024
tblConstructionPhase	PhaseStartDate	6/21/2025	5/4/2024
tblConstructionPhase	PhaseStartDate	7/17/2038	6/15/2024
tblConstructionPhase	PhaseStartDate	8/29/2026	7/13/2024

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstructionPhase	PhaseStartDate	5/21/2039	7/27/2024
tblLandUse	LandUseSquareFeet	2,258.80	3,600.00
tblLandUse	LotAcreage	1.55	2.00
tblLandUse	LotAcreage	53.57	68.70
tblLandUse	LotAcreage	1.74	18.03
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	3.00
tblVehicleTrips	CC_TL	10.50	10.40
tblVehicleTrips	CC_TL	10.50	10.40
tblVehicleTrips	CC_TL	10.50	10.40
tblVehicleTrips	CNW_TL	10.50	10.40
tblVehicleTrips	CNW_TL	10.50	10.40
tblVehicleTrips	CNW_TL	10.50	10.40
tblVehicleTrips	CW_TL	10.50	10.40
tblVehicleTrips	CW_TL	10.50	10.40
tblVehicleTrips	CW_TL	10.50	10.40
tblVehicleTrips	HO_TL	8.00	7.93
tblVehicleTrips	HS_TL	4.90	4.85
tblVehicleTrips	HW_TL	11.10	11.00
tblVehicleTrips	ST_TR	322.50	255.91
tblVehicleTrips	ST_TR	9.54	9.36
tblVehicleTrips	ST_TR	42.04	65.18
tblVehicleTrips	ST_TR	1.74	1.40
tblVehicleTrips	SU_TR	322.50	255.91
tblVehicleTrips	SU_TR	8.55	9.36
tblVehicleTrips	SU_TR	20.43	65.18

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblVehicleTrips	SU_TR	1.74	1.40
tblVehicleTrips	WD_TR	322.50	255.91
tblVehicleTrips	WD_TR	9.44	9.36
tblVehicleTrips	WD_TR	44.32	65.18
tblVehicleTrips	WD_TR	1.74	1.40

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	15.1564	32.4339	39.1023	0.1285	19.8090	1.3363	21.0392	10.1428	1.2294	11.2745	0.0000	13,143.7698	13,143.7698	1.9490	1.0360	13,472.4929
2025	14.8736	28.7285	37.6155	0.1261	7.0941	0.6986	7.7927	1.9250	0.6612	2.5862	0.0000	12,931.1552	12,931.1552	0.7798	1.0069	13,250.7156
2026	14.7236	28.3291	36.4119	0.1238	7.0941	0.6951	7.7892	1.9250	0.6579	2.5829	0.0000	12,722.2400	12,722.2400	0.7654	0.9802	13,033.4847
2027	14.5859	27.9609	35.3551	0.1215	7.0941	0.6916	7.7857	1.9250	0.6545	2.5795	0.0000	12,511.4729	12,511.4729	0.7528	0.9540	12,814.5844
Maximum	**15.1564**	**32.4339**	**39.1023**	**0.1285**	**19.8090**	**1.3363**	**21.0392**	**10.1428**	**1.2294**	**11.2745**	**0.0000**	**13,143.7698**	**13,143.7698**	**1.9490**	**1.0360**	**13,472.4929**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	15.1564	32.4339	39.1023	0.1285	19.8090	1.3363	21.0392	10.1428	1.2294	11.2745	0.0000	13,143.7698	13,143.7698	1.9490	1.0360	13,472.4929
2025	14.8736	28.7285	37.6155	0.1261	7.0941	0.6986	7.7927	1.9250	0.6612	2.5862	0.0000	12,931.1552	12,931.1552	0.7798	1.0069	13,250.7156
2026	14.7236	28.3291	36.4119	0.1238	7.0941	0.6951	7.7892	1.9250	0.6579	2.5829	0.0000	12,722.2400	12,722.2400	0.7654	0.9802	13,033.4847
2027	14.5859	27.9609	35.3551	0.1215	7.0941	0.6916	7.7857	1.9250	0.6545	2.5795	0.0000	12,511.4729	12,511.4729	0.7528	0.9540	12,814.5844
Maximum	**15.1564**	**32.4339**	**39.1023**	**0.1285**	**19.8090**	**1.3363**	**21.0392**	**10.1428**	**1.2294**	**11.2745**	**0.0000**	**13,143.7698**	**13,143.7698**	**1.9490**	**1.0360**	**13,472.4929**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	269.6750	5.0714	330.3881	0.5721		44.4541	44.4541		44.4541	44.4541	4,644.3763	1,862.6074	6,506.9836	4.1837	0.3656	6,720.5375
Energy	0.1702	1.4832	0.8309	9.2800e-003		0.1176	0.1176		0.1176	0.1176		1,856.5614	1,856.5614	0.0356	0.0340	1,867.5940
Mobile	26.6076	38.6695	221.7862	0.3491	37.8655	0.3860	38.2514	10.1047	0.3628	10.4675		36,813.6407	36,813.6407	3.2040	2.4258	37,616.6144
Stationary	9.9000e-003	0.0277	0.0252	5.0000e-005		1.4600e-003	1.4600e-003		1.4600e-003	1.4600e-003		5.0623	5.0623	7.1000e-004		5.0800
Total	**296.4626**	**45.2518**	**553.0304**	**0.9305**	**37.8655**	**44.9591**	**82.8246**	**10.1047**	**44.9360**	**55.0407**	**4,644.3763**	**40,537.8717**	**45,182.2480**	**7.4240**	**2.8254**	**46,209.8259**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	10.6598	0.1570	13.6342	7.2000e-004		0.0756	0.0756		0.0756	0.0756	0.0000	24.5850	24.5850	0.0237	0.0000	25.1766
Energy	0.1702	1.4832	0.8309	9.2800e-003		0.1176	0.1176		0.1176	0.1176		1,856.5614	1,856.5614	0.0356	0.0340	1,867.5940
Mobile	26.6076	38.6695	221.7862	0.3491	37.8655	0.3860	38.2514	10.1047	0.3628	10.4675		36,813.6407	36,813.6407	3.2040	2.4258	37,616.6144
Stationary	9.9000e-003	0.0277	0.0252	5.0000e-005		1.4600e-003	1.4600e-003		1.4600e-003	1.4600e-003		5.0623	5.0623	7.1000e-004		5.0800
Total	**37.4475**	**40.3373**	**236.2764**	**0.3592**	**37.8655**	**0.5806**	**38.4461**	**10.1047**	**0.5575**	**10.6622**	**0.0000**	**38,699.8494**	**38,699.8494**	**3.2639**	**2.4598**	**39,514.4650**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**87.37**	**10.86**	**57.28**	**61.40**	**0.00**	**98.71**	**53.58**	**0.00**	**98.76**	**80.63**	**100.00**	**4.53**	**14.35**	**56.04**	**12.94**	**14.49**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/1/2024	4/5/2024	5	5	
2	Site Preparation	Site Preparation	4/6/2024	5/3/2024	5	20	
3	Grading	Grading	5/4/2024	6/14/2024	5	30	
4	Building Construction	Building Construction	7/13/2024	4/16/2027	5	720	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5	Paving	Paving	6/15/2024	7/12/2024	5	20	
6	Architectural Coating	Architectural Coating	7/27/2024	4/30/2027	5	720	

Acres of Grading (Site Preparation Phase): 30

Acres of Grading (Grading Phase): 90

Acres of Paving: 22.5

Residential Indoor: 601,425; Residential Outdoor: 200,475; Non-Residential Indoor: 198,900; Non-Residential Outdoor: 66,300; Striped Parking Area: 57,707 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	511.00	197.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	102.00	0.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	8.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3603	0.0000	0.3603	0.0546	0.0000	0.0546			0.0000			0.0000
Off-Road	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922		3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**	**0.3603**	**0.9602**	**1.3204**	**0.0546**	**0.8922**	**0.9467**		**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.7600e-003	0.2284	0.0467	9.4000e-004	0.0280	2.0500e-003	0.0301	7.6900e-003	1.9600e-003	9.6500e-003		99.9095	99.9095	1.8000e-004	0.0157	104.5935
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0568	0.0427	0.4329	1.0300e-003	0.1266	6.9000e-004	0.1273	0.0336	6.4000e-004	0.0342		106.6442	106.6442	4.0000e-003	3.7400e-003	107.8600
Total	**0.0605**	**0.2711**	**0.4795**	**1.9700e-003**	**0.1547**	**2.7400e-003**	**0.1574**	**0.0413**	**2.6000e-003**	**0.0439**		**206.5538**	**206.5538**	**4.1800e-003**	**0.0194**	**212.4535**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3603	0.0000	0.3603	0.0546	0.0000	0.0546			0.0000			0.0000
Off-Road	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922	0.0000	3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**	**0.3603**	**0.9602**	**1.3204**	**0.0546**	**0.8922**	**0.9467**	**0.0000**	**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.7600e-003	0.2284	0.0467	9.4000e-004	0.0280	2.0500e-003	0.0301	7.6900e-003	1.9600e-003	9.6500e-003		99.9095	99.9095	1.8000e-004	0.0157	104.5935
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0568	0.0427	0.4329	1.0300e-003	0.1266	6.9000e-004	0.1273	0.0336	6.4000e-004	0.0342		106.6442	106.6442	4.0000e-003	3.7400e-003	107.8600
Total	**0.0605**	**0.2711**	**0.4795**	**1.9700e-003**	**0.1547**	**2.7400e-003**	**0.1574**	**0.0413**	**2.6000e-003**	**0.0439**		**206.5538**	**206.5538**	**4.1800e-003**	**0.0194**	**212.4535**

3.3 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310		3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**19.6570**	**1.2294**	**20.8864**	**10.1025**	**1.1310**	**11.2335**		**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0681	0.0513	0.5195	1.2400e-003	0.1520	8.3000e-004	0.1528	0.0403	7.7000e-004	0.0411		127.9731	127.9731	4.8000e-003	4.4900e-003	129.4320
Total	**0.0681**	**0.0513**	**0.5195**	**1.2400e-003**	**0.1520**	**8.3000e-004**	**0.1528**	**0.0403**	**7.7000e-004**	**0.0411**		**127.9731**	**127.9731**	**4.8000e-003**	**4.4900e-003**	**129.4320**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310	0.0000	3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**19.6570**	**1.2294**	**20.8864**	**10.1025**	**1.1310**	**11.2335**	**0.0000**	**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0681	0.0513	0.5195	1.2400e-003	0.1520	8.3000e-004	0.1528	0.0403	7.7000e-004	0.0411		127.9731	127.9731	4.8000e-003	4.4900e-003	129.4320
Total	**0.0681**	**0.0513**	**0.5195**	**1.2400e-003**	**0.1520**	**8.3000e-004**	**0.1528**	**0.0403**	**7.7000e-004**	**0.0411**		**127.9731**	**127.9731**	**4.8000e-003**	**4.4900e-003**	**129.4320**

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**9.2036**	**1.3354**	**10.5390**	**3.6538**	**1.2286**	**4.8823**		**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0757	0.0570	0.5772	1.3800e-003	0.1689	9.3000e-004	0.1698	0.0448	8.5000e-004	0.0456		142.1923	142.1923	5.3400e-003	4.9900e-003	143.8134
Total	**0.0757**	**0.0570**	**0.5772**	**1.3800e-003**	**0.1689**	**9.3000e-004**	**0.1698**	**0.0448**	**8.5000e-004**	**0.0456**		**142.1923**	**142.1923**	**5.3400e-003**	**4.9900e-003**	**143.8134**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**9.2036**	**1.3354**	**10.5390**	**3.6538**	**1.2286**	**4.8823**	**0.0000**	**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0757	0.0570	0.5772	1.3800e-003	0.1689	9.3000e-004	0.1698	0.0448	8.5000e-004	0.0456		142.1923	142.1923	5.3400e-003	4.9900e-003	143.8134
Total	**0.0757**	**0.0570**	**0.5772**	**1.3800e-003**	**0.1689**	**9.3000e-004**	**0.1698**	**0.0448**	**8.5000e-004**	**0.0456**		**142.1923**	**142.1923**	**5.3400e-003**	**4.9900e-003**	**143.8134**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3222	13.7963	3.4345	0.0564	1.9188	0.0942	2.0130	0.5523	0.0902	0.6424		5,948.4292	5,948.4292	0.0163	0.8830	6,211.9612
Worker	1.9344	1.4557	14.7472	0.0352	4.3142	0.0237	4.3379	1.1443	0.0218	1.1661		3,633.0129	3,633.0129	0.1364	0.1276	3,674.4317
Total	**2.2566**	**15.2519**	**18.1817**	**0.0916**	**6.2330**	**0.1179**	**6.3509**	**1.6966**	**0.1120**	**1.8086**		**9,581.4422**	**9,581.4422**	**0.1527**	**1.0105**	**9,886.3928**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3222	13.7963	3.4345	0.0564	1.9188	0.0942	2.0130	0.5523	0.0902	0.6424		5,948.4292	5,948.4292	0.0163	0.8830	6,211.9612
Worker	1.9344	1.4557	14.7472	0.0352	4.3142	0.0237	4.3379	1.1443	0.0218	1.1661		3,633.0129	3,633.0129	0.1364	0.1276	3,674.4317
Total	**2.2566**	**15.2519**	**18.1817**	**0.0916**	**6.2330**	**0.1179**	**6.3509**	**1.6966**	**0.1120**	**1.8086**		**9,581.4422**	**9,581.4422**	**0.1527**	**1.0105**	**9,886.3928**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3094	13.5559	3.3397	0.0553	1.9188	0.0926	2.0114	0.5523	0.0886	0.6409		5,839.1505	5,839.1505	0.0155	0.8652	6,097.3604
Worker	1.8044	1.2982	13.6561	0.0340	4.3142	0.0225	4.3367	1.1443	0.0207	1.1650		3,546.2252	3,546.2252	0.1234	0.1182	3,584.5235
Total	**2.1138**	**14.8541**	**16.9958**	**0.0894**	**6.2330**	**0.1151**	**6.3480**	**1.6966**	**0.1093**	**1.8059**		**9,385.3757**	**9,385.3757**	**0.1389**	**0.9834**	**9,681.8839**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3094	13.5559	3.3397	0.0553	1.9188	0.0926	2.0114	0.5523	0.0886	0.6409		5,839.1505	5,839.1505	0.0155	0.8652	6,097.3604
Worker	1.8044	1.2982	13.6561	0.0340	4.3142	0.0225	4.3367	1.1443	0.0207	1.1650		3,546.2252	3,546.2252	0.1234	0.1182	3,584.5235
Total	**2.1138**	**14.8541**	**16.9958**	**0.0894**	**6.2330**	**0.1151**	**6.3480**	**1.6966**	**0.1093**	**1.8059**		**9,385.3757**	**9,385.3757**	**0.1389**	**0.9834**	**9,681.8839**

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2978	13.3157	3.2634	0.0543	1.9188	0.0906	2.0093	0.5523	0.0867	0.6389		5,731.5612	5,731.5612	0.0148	0.8480	5,984.6359
Worker	1.6890	1.1656	12.7163	0.0330	4.3142	0.0212	4.3354	1.1443	0.0195	1.1638		3,461.7594	3,461.7594	0.1120	0.1102	3,497.4064
Total	**1.9868**	**14.4812**	**15.9798**	**0.0873**	**6.2330**	**0.1118**	**6.3448**	**1.6966**	**0.1062**	**1.8028**		**9,193.3206**	**9,193.3206**	**0.1268**	**0.9582**	**9,482.0423**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2978	13.3157	3.2634	0.0543	1.9188	0.0906	2.0093	0.5523	0.0867	0.6389		5,731.5612	5,731.5612	0.0148	0.8480	5,984.6359
Worker	1.6890	1.1656	12.7163	0.0330	4.3142	0.0212	4.3354	1.1443	0.0195	1.1638		3,461.7594	3,461.7594	0.1120	0.1102	3,497.4064
Total	**1.9868**	**14.4812**	**15.9798**	**0.0873**	**6.2330**	**0.1118**	**6.3448**	**1.6966**	**0.1062**	**1.8028**		**9,193.3206**	**9,193.3206**	**0.1268**	**0.9582**	**9,482.0423**

3.5 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2871	13.0849	3.1967	0.0532	1.9188	0.0886	2.0074	0.5523	0.0848	0.6371		5,615.8525	5,615.8525	0.0142	0.8300	5,863.5432
Worker	1.5831	1.0510	11.8911	0.0320	4.3142	0.0199	4.3341	1.1443	0.0183	1.1626		3,382.5182	3,382.5182	0.1020	0.1034	3,415.8735
Total	**1.8702**	**14.1359**	**15.0878**	**0.0852**	**6.2330**	**0.1085**	**6.3415**	**1.6966**	**0.1031**	**1.7997**		**8,998.3707**	**8,998.3707**	**0.1161**	**0.9334**	**9,279.4167**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2871	13.0849	3.1967	0.0532	1.9188	0.0886	2.0074	0.5523	0.0848	0.6371		5,615.8525	5,615.8525	0.0142	0.8300	5,863.5432
Worker	1.5831	1.0510	11.8911	0.0320	4.3142	0.0199	4.3341	1.1443	0.0183	1.1626		3,382.5182	3,382.5182	0.1020	0.1034	3,415.8735
Total	**1.8702**	**14.1359**	**15.0878**	**0.0852**	**6.2330**	**0.1085**	**6.3415**	**1.6966**	**0.1031**	**1.7997**		**8,998.3707**	**8,998.3707**	**0.1161**	**0.9334**	**9,279.4167**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	2.9475					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.9357**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0568	0.0427	0.4329	1.0300e-003	0.1266	6.9000e-004	0.1273	0.0336	6.4000e-004	0.0342		106.6442	106.6442	4.0000e-003	3.7400e-003	107.8600
Total	**0.0568**	**0.0427**	**0.4329**	**1.0300e-003**	**0.1266**	**6.9000e-004**	**0.1273**	**0.0336**	**6.4000e-004**	**0.0342**		**106.6442**	**106.6442**	**4.0000e-003**	**3.7400e-003**	**107.8600**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	2.9475					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.9357**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0568	0.0427	0.4329	1.0300e-003	0.1266	6.9000e-004	0.1273	0.0336	6.4000e-004	0.0342		106.6442	106.6442	4.0000e-003	3.7400e-003	107.8600
Total	**0.0568**	**0.0427**	**0.4329**	**1.0300e-003**	**0.1266**	**6.9000e-004**	**0.1273**	**0.0336**	**6.4000e-004**	**0.0342**		**106.6442**	**106.6442**	**4.0000e-003**	**3.7400e-003**	**107.8600**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**11.0422**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3861	0.2906	2.9437	7.0300e-003	0.8612	4.7200e-003	0.8659	0.2284	4.3500e-003	0.2328		725.1807	725.1807	0.0272	0.0255	733.4482
Total	**0.3861**	**0.2906**	**2.9437**	**7.0300e-003**	**0.8612**	**4.7200e-003**	**0.8659**	**0.2284**	**4.3500e-003**	**0.2328**		**725.1807**	**725.1807**	**0.0272**	**0.0255**	**733.4482**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**11.0422**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3861	0.2906	2.9437	7.0300e-003	0.8612	4.7200e-003	0.8659	0.2284	4.3500e-003	0.2328		725.1807	725.1807	0.0272	0.0255	733.4482
Total	**0.3861**	**0.2906**	**2.9437**	**7.0300e-003**	**0.8612**	**4.7200e-003**	**0.8659**	**0.2284**	**4.3500e-003**	**0.2328**		**725.1807**	**725.1807**	**0.0272**	**0.0255**	**733.4482**

3.7 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**11.0323**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3602	0.2591	2.7259	6.7900e-003	0.8612	4.4800e-003	0.8656	0.2284	4.1300e-003	0.2325		707.8571	707.8571	0.0246	0.0236	715.5018
Total	**0.3602**	**0.2591**	**2.7259**	**6.7900e-003**	**0.8612**	**4.4800e-003**	**0.8656**	**0.2284**	**4.1300e-003**	**0.2325**		**707.8571**	**707.8571**	**0.0246**	**0.0236**	**715.5018**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**11.0323**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3602	0.2591	2.7259	6.7900e-003	0.8612	4.4800e-003	0.8656	0.2284	4.1300e-003	0.2325		707.8571	707.8571	0.0246	0.0236	715.5018
Total	**0.3602**	**0.2591**	**2.7259**	**6.7900e-003**	**0.8612**	**4.4800e-003**	**0.8656**	**0.2284**	**4.1300e-003**	**0.2325**		**707.8571**	**707.8571**	**0.0246**	**0.0236**	**715.5018**

3.7 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**11.0323**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3371	0.2327	2.5383	6.5800e-003	0.8612	4.2300e-003	0.8654	0.2284	3.9000e-003	0.2323		690.9970	690.9970	0.0224	0.0220	698.1124
Total	**0.3371**	**0.2327**	**2.5383**	**6.5800e-003**	**0.8612**	**4.2300e-003**	**0.8654**	**0.2284**	**3.9000e-003**	**0.2323**		**690.9970**	**690.9970**	**0.0224**	**0.0220**	**698.1124**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**11.0323**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3371	0.2327	2.5383	6.5800e-003	0.8612	4.2300e-003	0.8654	0.2284	3.9000e-003	0.2323		690.9970	690.9970	0.0224	0.0220	698.1124
Total	**0.3371**	**0.2327**	**2.5383**	**6.5800e-003**	**0.8612**	**4.2300e-003**	**0.8654**	**0.2284**	**3.9000e-003**	**0.2323**		**690.9970**	**690.9970**	**0.0224**	**0.0220**	**698.1124**

3.7 Architectural Coating - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**11.0323**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3160	0.2098	2.3736	6.3800e-003	0.8612	3.9700e-003	0.8651	0.2284	3.6600e-003	0.2321		675.1798	675.1798	0.0204	0.0206	681.8378
Total	**0.3160**	**0.2098**	**2.3736**	**6.3800e-003**	**0.8612**	**3.9700e-003**	**0.8651**	**0.2284**	**3.6600e-003**	**0.2321**		**675.1798**	**675.1798**	**0.0204**	**0.0206**	**681.8378**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.8614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**11.0323**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.3160	0.2098	2.3736	6.3800e-003	0.8612	3.9700e-003	0.8651	0.2284	3.6600e-003	0.2321		675.1798	675.1798	0.0204	0.0206	681.8378
Total	**0.3160**	**0.2098**	**2.3736**	**6.3800e-003**	**0.8612**	**3.9700e-003**	**0.8651**	**0.2284**	**3.6600e-003**	**0.2321**		**675.1798**	**675.1798**	**0.0204**	**0.0206**	**681.8378**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	26.6076	38.6695	221.7862	0.3491	37.8655	0.3860	38.2514	10.1047	0.3628	10.4675		36,813.6407	36,813.6407	3.2040	2.4258	37,616.6144
Unmitigated	26.6076	38.6695	221.7862	0.3491	37.8655	0.3860	38.2514	10.1047	0.3628	10.4675		36,813.6407	36,813.6407	3.2040	2.4258	37,616.6144

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Convenience Market with Gas Pumps	4,094.56	4,094.56	4094.56	3,080,698	3,080,698
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Single Family Housing	1,544.40	1,544.40	1544.40	4,232,964	4,232,964
Strip Mall	4,953.68	4,953.68	4953.68	10,341,005	10,341,005
Unrefrigerated Warehouse-No Rail	74.20	74.20	74.20	262,012	262,012
Total	10,666.84	10,666.84	10,666.84	17,916,679	17,916,679

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Convenience Market with Gas	10.40	10.40	10.40	0.80	80.20	19.00	14	21	65
Other Asphalt Surfaces	10.50	10.50	10.50	0.00	0.00	0.00	0	0	0
Parking Lot	10.50	10.50	10.50	0.00	0.00	0.00	0	0	0
Single Family Housing	11.00	4.85	7.93	35.00	17.00	48.00	86	11	3
Strip Mall	10.40	10.40	10.40	16.60	64.40	19.00	45	40	15
Unrefrigerated Warehouse-No	10.40	10.40	10.40	59.00	0.00	41.00	92	5	3

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Convenience Market with Gas Pumps	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Other Asphalt Surfaces	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Parking Lot	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Single Family Housing	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Strip Mall	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Unrefrigerated Warehouse-No Rail	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1702	1.4832	0.8309	9.2800e-003		0.1176	0.1176		0.1176	0.1176		1,856.5614	1,856.5614	0.0356	0.0340	1,867.5940
NaturalGas Unmitigated	0.1702	1.4832	0.8309	9.2800e-003		0.1176	0.1176		0.1176	0.1176		1,856.5614	1,856.5614	0.0356	0.0340	1,867.5940

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Convenience Market with Gas Pumps	104.647	1.1300e-003	0.0103	8.6200e-003	6.0000e-005		7.8000e-004	7.8000e-004		7.8000e-004	7.8000e-004		12.3114	12.3114	2.4000e-004	2.3000e-004	12.3845
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	10866.3	0.1172	1.0014	0.4261	6.3900e-003		0.0810	0.0810		0.0810	0.0810		1,278.3870	1,278.3870	0.0245	0.0234	1,285.9838
Strip Mall	2209.21	0.0238	0.2166	0.1819	1.3000e-003		0.0165	0.0165		0.0165	0.0165		259.9065	259.9065	4.9800e-003	4.7600e-003	261.4510
Unrefrigerated Warehouse-No Rail	2600.63	0.0281	0.2550	0.2142	1.5300e-003		0.0194	0.0194		0.0194	0.0194		305.9565	305.9565	5.8600e-003	5.6100e-003	307.7746
Total		**0.1702**	**1.4832**	**0.8309**	**9.2800e-003**		**0.1176**	**0.1176**		**0.1176**	**0.1176**		**1,856.5614**	**1,856.5614**	**0.0356**	**0.0340**	**1,867.5940**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Convenience Market with Gas Pumps	0.104647	1.1300e-003	0.0103	8.6200e-003	6.0000e-005		7.8000e-004	7.8000e-004		7.8000e-004	7.8000e-004		12.3114	12.3114	2.4000e-004	2.3000e-004	12.3845
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	10.8663	0.1172	1.0014	0.4261	6.3900e-003		0.0810	0.0810		0.0810	0.0810		1,278.3870	1,278.3870	0.0245	0.0234	1,285.9838
Strip Mall	2.20921	0.0238	0.2166	0.1819	1.3000e-003		0.0165	0.0165		0.0165	0.0165		259.9065	259.9065	4.9800e-003	4.7600e-003	261.4510
Unrefrigerated Warehouse-No Rail	2.60063	0.0281	0.2550	0.2142	1.5300e-003		0.0194	0.0194		0.0194	0.0194		305.9565	305.9565	5.8600e-003	5.6100e-003	307.7746
Total		**0.1702**	**1.4832**	**0.8309**	**9.2800e-003**		**0.1176**	**0.1176**		**0.1176**	**0.1176**		**1,856.5614**	**1,856.5614**	**0.0356**	**0.0340**	**1,867.5940**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Tuscan Ridge Project - Butte County AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	10.6598	0.1570	13.6342	7.2000e-004		0.0756	0.0756		0.0756	0.0756	0.0000	24.5850	24.5850	0.0237	0.0000	25.1766
Unmitigated	269.6750	5.0714	330.3881	0.5721		44.4541	44.4541		44.4541	44.4541	4,644.3763	1,862.6074	6,506.9836	4.1837	0.3656	6,720.5375

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.1425					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.5341					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	257.5868	4.9144	316.7540	0.5713		44.3785	44.3785		44.3785	44.3785	4,644.3763	1,838.0224	6,482.3986	4.1601	0.3656	6,695.3609
Landscaping	0.4115	0.1570	13.6342	7.2000e-004		0.0756	0.0756		0.0756	0.0756		24.5850	24.5850	0.0237		25.1766
Total	**269.6750**	**5.0714**	**330.3881**	**0.5721**		**44.4541**	**44.4541**		**44.4541**	**44.4541**	**4,644.3763**	**1,862.6073**	**6,506.9836**	**4.1837**	**0.3656**	**6,720.5375**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7142					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.5341					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4115	0.1570	13.6342	7.2000e-004		0.0756	0.0756		0.0756	0.0756		24.5850	24.5850	0.0237		25.1766
Total	**10.6598**	**0.1570**	**13.6342**	**7.2000e-004**		**0.0756**	**0.0756**		**0.0756**	**0.0756**	**0.0000**	**24.5850**	**24.5850**	**0.0237**	**0.0000**	**25.1766**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	3	0.01	3	201	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (175 - 300 HP)	9.9000e-003	0.0277	0.0252	5.0000e-005		1.4600e-003	1.4600e-003		1.4600e-003	1.4600e-003		5.0623	5.0623	7.1000e-004		5.0800
Total	**9.9000e-003**	**0.0277**	**0.0252**	**5.0000e-005**		**1.4600e-003**	**1.4600e-003**		**1.4600e-003**	**1.4600e-003**		**5.0623**	**5.0623**	**7.1000e-004**		**5.0800**

11.0 Vegetation

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Tuscan Ridge Project

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	53.00	1000sqft	1.22	53,000.00	0
Other Asphalt Surfaces	20.50	Acre	20.50	892,980.00	0
Parking Lot	172.00	Space	2.00	68,800.00	0
Single Family Housing	165.00	Dwelling Unit	68.70	297,000.00	472
Convenience Market with Gas Pumps	16.00	Pump	0.05	3,600.00	0
Strip Mall	76.00	1000sqft	18.03	76,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	71
Climate Zone	3			**Operational Year**	2027
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Lot acreage and square-feet of land uses updated as necessary to represent project-specific information.

Construction Phase - Phase timing based on AQ Questionnaire. Architectural coating assumed to start 2 weeks after building construction and last for the same duration.

Grading -

Vehicle Trips - Trip generation & VMT adjusted based on rates provided by Fehr & Peers.

Mobile Land Use Mitigation -

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Area Mitigation - No hearths based on AQ Questionnaire. Use of low VOC paint consistent with BCAQMD Rule 230.

Water Mitigation - Compliant with MWELO.

Stationary Sources - Emergency Generators and Fire Pumps - One emergency generator assumed for wastewater treatment system, existing water well, and proposed water well.

Demolition - Represents existing clubhouse that would be demolished as part of the proposed project.

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	150	50
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	150	50
tblConstructionPhase	NumDays	120.00	20.00
tblConstructionPhase	NumDays	310.00	30.00
tblConstructionPhase	NumDays	220.00	20.00
tblConstructionPhase	NumDays	3,100.00	720.00
tblConstructionPhase	NumDays	220.00	720.00
tblConstructionPhase	NumDays	200.00	5.00
tblConstructionPhase	PhaseEndDate	6/20/2025	5/3/2024
tblConstructionPhase	PhaseEndDate	8/28/2026	6/14/2024
tblConstructionPhase	PhaseEndDate	5/20/2039	7/12/2024
tblConstructionPhase	PhaseEndDate	7/16/2038	4/16/2027
tblConstructionPhase	PhaseEndDate	3/23/2040	4/30/2027
tblConstructionPhase	PhaseEndDate	1/3/2025	4/5/2024
tblConstructionPhase	PhaseStartDate	1/4/2025	4/6/2024
tblConstructionPhase	PhaseStartDate	6/21/2025	5/4/2024
tblConstructionPhase	PhaseStartDate	7/17/2038	6/15/2024
tblConstructionPhase	PhaseStartDate	8/29/2026	7/13/2024

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstructionPhase	PhaseStartDate	5/21/2039	7/27/2024
tblLandUse	LandUseSquareFeet	2,258.80	3,600.00
tblLandUse	LotAcreage	1.55	2.00
tblLandUse	LotAcreage	53.57	68.70
tblLandUse	LotAcreage	1.74	18.03
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	3.00
tblVehicleTrips	CC_TL	10.50	10.40
tblVehicleTrips	CC_TL	10.50	10.40
tblVehicleTrips	CC_TL	10.50	10.40
tblVehicleTrips	CNW_TL	10.50	10.40
tblVehicleTrips	CNW_TL	10.50	10.40
tblVehicleTrips	CNW_TL	10.50	10.40
tblVehicleTrips	CW_TL	10.50	10.40
tblVehicleTrips	CW_TL	10.50	10.40
tblVehicleTrips	CW_TL	10.50	10.40
tblVehicleTrips	HO_TL	8.00	7.93
tblVehicleTrips	HS_TL	4.90	4.85
tblVehicleTrips	HW_TL	11.10	11.00
tblVehicleTrips	ST_TR	322.50	255.91
tblVehicleTrips	ST_TR	9.54	9.36
tblVehicleTrips	ST_TR	42.04	65.18
tblVehicleTrips	ST_TR	1.74	1.40
tblVehicleTrips	SU_TR	322.50	255.91
tblVehicleTrips	SU_TR	8.55	9.36
tblVehicleTrips	SU_TR	20.43	65.18

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblVehicleTrips	SU_TR	1.74	1.40
tblVehicleTrips	WD_TR	322.50	255.91
tblVehicleTrips	WD_TR	9.44	9.36
tblVehicleTrips	WD_TR	44.32	65.18
tblVehicleTrips	WD_TR	1.74	1.40

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.9861	2.7092	3.1738	9.5500e-003	0.7522	0.0877	0.8399	0.2695	0.0820	0.3515	0.0000	877.9976	877.9976	0.0897	0.0567	897.1341
2025	1.9334	3.6818	4.9006	0.0166	0.8886	0.0912	0.9797	0.2421	0.0863	0.3283	0.0000	1,545.2194	1,545.2194	0.0911	0.1178	1,582.6006
2026	1.9141	3.6327	4.7405	0.0163	0.8886	0.0907	0.9793	0.2421	0.0858	0.3279	0.0000	1,520.1075	1,520.1075	0.0895	0.1147	1,556.5340
2027	0.6089	1.0513	1.3604	4.7100e-003	0.2629	0.0266	0.2894	0.0716	0.0251	0.0967	0.0000	439.6997	439.6997	0.0258	0.0326	450.0634
Maximum	**1.9334**	**3.6818**	**4.9006**	**0.0166**	**0.8886**	**0.0912**	**0.9797**	**0.2695**	**0.0863**	**0.3515**	**0.0000**	**1,545.2194**	**1,545.2194**	**0.0911**	**0.1178**	**1,582.6006**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.9861	2.7092	3.1738	9.5500e-003	0.7522	0.0877	0.8399	0.2695	0.0820	0.3515	0.0000	877.9972	877.9972	0.0897	0.0567	897.1337
2025	1.9334	3.6818	4.9006	0.0166	0.8886	0.0912	0.9797	0.2421	0.0863	0.3283	0.0000	1,545.2190	1,545.2190	0.0911	0.1178	1,582.6002
2026	1.9141	3.6327	4.7405	0.0163	0.8886	0.0907	0.9793	0.2421	0.0858	0.3279	0.0000	1,520.1071	1,520.1071	0.0895	0.1147	1,556.5336
2027	0.6089	1.0513	1.3604	4.7100e-003	0.2629	0.0266	0.2894	0.0716	0.0251	0.0967	0.0000	439.6996	439.6996	0.0258	0.0326	450.0633
Maximum	**1.9334**	**3.6818**	**4.9006**	**0.0166**	**0.8886**	**0.0912**	**0.9797**	**0.2695**	**0.0863**	**0.3515**	**0.0000**	**1,545.2190**	**1,545.2190**	**0.0911**	**0.1178**	**1,582.6002**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**4-1-2024**	**6-30-2024**	0.9549	0.9549
2	**7-1-2024**	**9-30-2024**	1.2610	1.2610
3	**10-1-2024**	**12-31-2024**	1.4904	1.4904
4	**1-1-2025**	**3-31-2025**	1.4015	1.4015
5	**4-1-2025**	**6-30-2025**	1.3856	1.3856
6	**7-1-2025**	**9-30-2025**	1.4008	1.4008
7	**10-1-2025**	**12-31-2025**	1.4326	1.4326
8	**1-1-2026**	**3-31-2026**	1.3838	1.3838

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

9	**4-1-2026**	**6-30-2026**	1.3684	1.3684
10	**7-1-2026**	**9-30-2026**	1.3835	1.3835
11	**10-1-2026**	**12-31-2026**	1.4146	1.4146
12	**1-1-2027**	**3-31-2027**	1.3676	1.3676
13	**4-1-2027**	**6-30-2027**	0.3014	0.3014
		Highest	1.4904	1.4904

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	21.4870	0.3827	24.9836	0.0429		3.3352	3.3352		3.3352	3.3352	315.9981	127.0642	443.0623	0.2850	0.0249	457.6003
Energy	0.0311	0.2707	0.1516	1.6900e-003		0.0215	0.0215		0.0215	0.0215	0.0000	535.1732	535.1732	0.0427	0.0101	539.2523
Mobile	5.2294	6.6143	37.4157	0.0647	6.6035	0.0701	6.6737	1.7684	0.0659	1.8343	0.0000	6,189.6381	6,189.6381	0.4829	0.3821	6,315.5651
Stationary	1.4800e-003	4.1500e-003	3.7800e-003	1.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	0.6889	0.6889	1.0000e-004	0.0000	0.6913
Waste						0.0000	0.0000		0.0000	0.0000	60.8039	0.0000	60.8039	3.5934	0.0000	150.6391
Water						0.0000	0.0000		0.0000	0.0000	9.1380	17.7657	26.9037	0.9414	0.0225	57.1475
Total	**26.7489**	**7.2719**	**62.5548**	**0.1093**	**6.6035**	**3.4270**	**10.0305**	**1.7684**	**3.4228**	**5.1912**	**385.9400**	**6,870.3301**	**7,256.2701**	**5.3456**	**0.4396**	**7,520.8956**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.9074	0.0141	1.2271	6.0000e-005		6.8000e-003	6.8000e-003		6.8000e-003	6.8000e-003	0.0000	2.0073	2.0073	1.9300e-003	0.0000	2.0556
Energy	0.0311	0.2707	0.1516	1.6900e-003		0.0215	0.0215		0.0215	0.0215	0.0000	535.1732	535.1732	0.0427	0.0101	539.2523
Mobile	5.2294	6.6143	37.4157	0.0647	6.6035	0.0701	6.6737	1.7684	0.0659	1.8343	0.0000	6,189.6381	6,189.6381	0.4829	0.3821	6,315.5651
Stationary	1.4800e-003	4.1500e-003	3.7800e-003	1.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	0.6889	0.6889	1.0000e-004	0.0000	0.6913
Waste						0.0000	0.0000		0.0000	0.0000	60.8039	0.0000	60.8039	3.5934	0.0000	150.6391
Water						0.0000	0.0000		0.0000	0.0000	9.1380	17.0966	26.2346	0.9413	0.0225	56.4719
Total	**7.1693**	**6.9033**	**38.7982**	**0.0665**	**6.6035**	**0.0986**	**6.7021**	**1.7684**	**0.0944**	**1.8628**	**69.9419**	**6,744.6041**	**6,814.5460**	**5.0624**	**0.4147**	**7,064.6753**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**73.20**	**5.07**	**37.98**	**39.20**	**0.00**	**97.12**	**33.18**	**0.00**	**97.24**	**64.12**	**81.88**	**1.83**	**6.09**	**5.30**	**5.66**	**6.07**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/1/2024	4/5/2024	5	5	
2	Site Preparation	Site Preparation	4/6/2024	5/3/2024	5	20	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3	Grading	Grading	5/4/2024	6/14/2024	5	30	
4	Building Construction	Building Construction	7/13/2024	4/16/2027	5	720	
5	Paving	Paving	6/15/2024	7/12/2024	5	20	
6	Architectural Coating	Architectural Coating	7/27/2024	4/30/2027	5	720	

Acres of Grading (Site Preparation Phase): 30

Acres of Grading (Grading Phase): 90

Acres of Paving: 22.5

Residential Indoor: 601,425; Residential Outdoor: 200,475; Non-Residential Indoor: 198,900; Non-Residential Outdoor: 66,300; Striped Parking Area: 57,707 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	511.00	197.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	102.00	0.00	0.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	8.00	11.10	10.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.0000e-004	0.0000	9.0000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.6100e-003	0.0522	0.0493	1.0000e-004		2.4000e-003	2.4000e-003		2.2300e-003	2.2300e-003	0.0000	8.4990	8.4990	2.3800e-003	0.0000	8.5585
Total	**5.6100e-003**	**0.0522**	**0.0493**	**1.0000e-004**	**9.0000e-004**	**2.4000e-003**	**3.3000e-003**	**1.4000e-004**	**2.2300e-003**	**2.3700e-003**	**0.0000**	**8.4990**	**8.4990**	**2.3800e-003**	**0.0000**	**8.5585**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	5.6000e-004	1.2000e-004	0.0000	7.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.2264	0.2264	0.0000	4.0000e-005	0.2370
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.0000e-004	1.0800e-003	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2491	0.2491	1.0000e-005	1.0000e-005	0.2516
Total	**1.5000e-004**	**6.6000e-004**	**1.2000e-003**	**0.0000**	**3.7000e-004**	**1.0000e-005**	**3.7000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.4755**	**0.4755**	**1.0000e-005**	**5.0000e-005**	**0.4886**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.0000e-004	0.0000	9.0000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.6100e-003	0.0522	0.0493	1.0000e-004		2.4000e-003	2.4000e-003		2.2300e-003	2.2300e-003	0.0000	8.4990	8.4990	2.3800e-003	0.0000	8.5585
Total	**5.6100e-003**	**0.0522**	**0.0493**	**1.0000e-004**	**9.0000e-004**	**2.4000e-003**	**3.3000e-003**	**1.4000e-004**	**2.2300e-003**	**2.3700e-003**	**0.0000**	**8.4990**	**8.4990**	**2.3800e-003**	**0.0000**	**8.5585**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	5.6000e-004	1.2000e-004	0.0000	7.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.2264	0.2264	0.0000	4.0000e-005	0.2370
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.0000e-004	1.0800e-003	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2491	0.2491	1.0000e-005	1.0000e-005	0.2516
Total	**1.5000e-004**	**6.6000e-004**	**1.2000e-003**	**0.0000**	**3.7000e-004**	**1.0000e-005**	**3.7000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.4755**	**0.4755**	**1.0000e-005**	**5.0000e-005**	**0.4886**

3.3 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1966	0.0000	0.1966	0.1010	0.0000	0.1010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.2718	0.1834	3.8000e-004		0.0123	0.0123		0.0113	0.0113	0.0000	33.4571	33.4571	0.0108	0.0000	33.7276
Total	**0.0266**	**0.2718**	**0.1834**	**3.8000e-004**	**0.1966**	**0.0123**	**0.2089**	**0.1010**	**0.0113**	**0.1123**	**0.0000**	**33.4571**	**33.4571**	**0.0108**	**0.0000**	**33.7276**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	4.6000e-004	5.2000e-003	1.0000e-005	1.4600e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	3.9000e-004	0.0000	1.1954	1.1954	4.0000e-005	4.0000e-005	1.2077
Total	**6.6000e-004**	**4.6000e-004**	**5.2000e-003**	**1.0000e-005**	**1.4600e-003**	**1.0000e-005**	**1.4600e-003**	**3.9000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.1954**	**1.1954**	**4.0000e-005**	**4.0000e-005**	**1.2077**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1966	0.0000	0.1966	0.1010	0.0000	0.1010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.2718	0.1834	3.8000e-004		0.0123	0.0123		0.0113	0.0113	0.0000	33.4570	33.4570	0.0108	0.0000	33.7275
Total	**0.0266**	**0.2718**	**0.1834**	**3.8000e-004**	**0.1966**	**0.0123**	**0.2089**	**0.1010**	**0.0113**	**0.1123**	**0.0000**	**33.4570**	**33.4570**	**0.0108**	**0.0000**	**33.7275**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	4.6000e-004	5.2000e-003	1.0000e-005	1.4600e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	3.9000e-004	0.0000	1.1954	1.1954	4.0000e-005	4.0000e-005	1.2077
Total	**6.6000e-004**	**4.6000e-004**	**5.2000e-003**	**1.0000e-005**	**1.4600e-003**	**1.0000e-005**	**1.4600e-003**	**3.9000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.1954**	**1.1954**	**4.0000e-005**	**4.0000e-005**	**1.2077**

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1381	0.0000	0.1381	0.0548	0.0000	0.0548	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0483	0.4857	0.4158	9.3000e-004		0.0200	0.0200		0.0184	0.0184	0.0000	81.7793	81.7793	0.0265	0.0000	82.4405
Total	**0.0483**	**0.4857**	**0.4158**	**9.3000e-004**	**0.1381**	**0.0200**	**0.1581**	**0.0548**	**0.0184**	**0.0732**	**0.0000**	**81.7793**	**81.7793**	**0.0265**	**0.0000**	**82.4405**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	7.6000e-004	8.6700e-003	2.0000e-005	2.4300e-003	1.0000e-005	2.4400e-003	6.5000e-004	1.0000e-005	6.6000e-004	0.0000	1.9924	1.9924	7.0000e-005	6.0000e-005	2.0128
Total	**1.1000e-003**	**7.6000e-004**	**8.6700e-003**	**2.0000e-005**	**2.4300e-003**	**1.0000e-005**	**2.4400e-003**	**6.5000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**1.9924**	**1.9924**	**7.0000e-005**	**6.0000e-005**	**2.0128**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1381	0.0000	0.1381	0.0548	0.0000	0.0548	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0483	0.4857	0.4158	9.3000e-004		0.0200	0.0200		0.0184	0.0184	0.0000	81.7792	81.7792	0.0265	0.0000	82.4404
Total	**0.0483**	**0.4857**	**0.4158**	**9.3000e-004**	**0.1381**	**0.0200**	**0.1581**	**0.0548**	**0.0184**	**0.0732**	**0.0000**	**81.7792**	**81.7792**	**0.0265**	**0.0000**	**82.4404**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	7.6000e-004	8.6700e-003	2.0000e-005	2.4300e-003	1.0000e-005	2.4400e-003	6.5000e-004	1.0000e-005	6.6000e-004	0.0000	1.9924	1.9924	7.0000e-005	6.0000e-005	2.0128
Total	**1.1000e-003**	**7.6000e-004**	**8.6700e-003**	**2.0000e-005**	**2.4300e-003**	**1.0000e-005**	**2.4400e-003**	**6.5000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**1.9924**	**1.9924**	**7.0000e-005**	**6.0000e-005**	**2.0128**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0898	0.8201	0.9862	1.6400e-003		0.0374	0.0374		0.0352	0.0352	0.0000	141.4280	141.4280	0.0334	0.0000	142.2641
Total	**0.0898**	**0.8201**	**0.9862**	**1.6400e-003**		**0.0374**	**0.0374**		**0.0352**	**0.0352**	**0.0000**	**141.4280**	**141.4280**	**0.0334**	**0.0000**	**142.2641**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0199	0.8202	0.2062	3.4400e-003	0.1130	5.7400e-003	0.1187	0.0327	5.4900e-003	0.0382	0.0000	328.8992	328.8992	9.3000e-004	0.0488	343.4632
Worker	0.1147	0.0790	0.9008	2.2100e-003	0.2520	1.4400e-003	0.2535	0.0671	1.3300e-003	0.0684	0.0000	207.0158	207.0158	7.0000e-003	6.5200e-003	209.1347
Total	**0.1346**	**0.8993**	**1.1070**	**5.6500e-003**	**0.3650**	**7.1800e-003**	**0.3722**	**0.0998**	**6.8200e-003**	**0.1066**	**0.0000**	**535.9150**	**535.9150**	**7.9300e-003**	**0.0553**	**552.5979**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0898	0.8201	0.9862	1.6400e-003		0.0374	0.0374		0.0352	0.0352	0.0000	141.4278	141.4278	0.0334	0.0000	142.2639
Total	**0.0898**	**0.8201**	**0.9862**	**1.6400e-003**		**0.0374**	**0.0374**		**0.0352**	**0.0352**	**0.0000**	**141.4278**	**141.4278**	**0.0334**	**0.0000**	**142.2639**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0199	0.8202	0.2062	3.4400e-003	0.1130	5.7400e-003	0.1187	0.0327	5.4900e-003	0.0382	0.0000	328.8992	328.8992	9.3000e-004	0.0488	343.4632
Worker	0.1147	0.0790	0.9008	2.2100e-003	0.2520	1.4400e-003	0.2535	0.0671	1.3300e-003	0.0684	0.0000	207.0158	207.0158	7.0000e-003	6.5200e-003	209.1347
Total	**0.1346**	**0.8993**	**1.1070**	**5.6500e-003**	**0.3650**	**7.1800e-003**	**0.3722**	**0.0998**	**6.8200e-003**	**0.1066**	**0.0000**	**535.9150**	**535.9150**	**7.9300e-003**	**0.0553**	**552.5979**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0409	1.7241	0.4286	7.2100e-003	0.2417	0.0121	0.2538	0.0699	0.0115	0.0815	0.0000	690.6919	690.6919	1.8900e-003	0.1023	721.2206
Worker	0.2287	0.1508	1.7813	4.5700e-003	0.5392	2.9300e-003	0.5421	0.1435	2.7000e-003	0.1462	0.0000	432.2683	432.2683	0.0135	0.0129	436.4600
Total	**0.2696**	**1.8749**	**2.2099**	**0.0118**	**0.7809**	**0.0150**	**0.7959**	**0.2134**	**0.0142**	**0.2277**	**0.0000**	**1,122.9601**	**1,122.9601**	**0.0154**	**0.1152**	**1,157.6806**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0409	1.7241	0.4286	7.2100e-003	0.2417	0.0121	0.2538	0.0699	0.0115	0.0815	0.0000	690.6919	690.6919	1.8900e-003	0.1023	721.2206
Worker	0.2287	0.1508	1.7813	4.5700e-003	0.5392	2.9300e-003	0.5421	0.1435	2.7000e-003	0.1462	0.0000	432.2683	432.2683	0.0135	0.0129	436.4600
Total	**0.2696**	**1.8749**	**2.2099**	**0.0118**	**0.7809**	**0.0150**	**0.7959**	**0.2134**	**0.0142**	**0.2277**	**0.0000**	**1,122.9601**	**1,122.9601**	**0.0154**	**0.1152**	**1,157.6806**

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0395	1.6935	0.4186	7.0800e-003	0.2417	0.0118	0.2535	0.0699	0.0113	0.0812	0.0000	677.9571	677.9571	1.8000e-003	0.1003	707.8792
Worker	0.2138	0.1354	1.6562	4.4300e-003	0.5392	2.7700e-003	0.5420	0.1435	2.5500e-003	0.1460	0.0000	421.9505	421.9505	0.0123	0.0121	425.8521
Total	**0.2533**	**1.8289**	**2.0748**	**0.0115**	**0.7809**	**0.0146**	**0.7955**	**0.2134**	**0.0138**	**0.2273**	**0.0000**	**1,099.9076**	**1,099.9076**	**0.0141**	**0.1123**	**1,133.7313**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0395	1.6935	0.4186	7.0800e-003	0.2417	0.0118	0.2535	0.0699	0.0113	0.0812	0.0000	677.9571	677.9571	1.8000e-003	0.1003	707.8792
Worker	0.2138	0.1354	1.6562	4.4300e-003	0.5392	2.7700e-003	0.5420	0.1435	2.5500e-003	0.1460	0.0000	421.9505	421.9505	0.0123	0.0121	425.8521
Total	**0.2533**	**1.8289**	**2.0748**	**0.0115**	**0.7809**	**0.0146**	**0.7955**	**0.2134**	**0.0138**	**0.2273**	**0.0000**	**1,099.9076**	**1,099.9076**	**0.0141**	**0.1123**	**1,133.7313**

3.5 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0520	0.4739	0.6112	1.0200e-003		0.0201	0.0201		0.0189	0.0189	0.0000	88.1294	88.1294	0.0207	0.0000	88.6473
Total	**0.0520**	**0.4739**	**0.6112**	**1.0200e-003**		**0.0201**	**0.0201**		**0.0189**	**0.0189**	**0.0000**	**88.1294**	**88.1294**	**0.0207**	**0.0000**	**88.6473**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0111	0.4846	0.1193	2.0200e-003	0.0704	3.3600e-003	0.0738	0.0204	3.2200e-003	0.0236	0.0000	193.4250	193.4250	5.0000e-004	0.0286	201.9527
Worker	0.0583	0.0356	0.4504	1.2500e-003	0.1570	7.6000e-004	0.1578	0.0418	7.0000e-004	0.0425	0.0000	120.0502	120.0502	3.2500e-003	3.3000e-003	121.1133
Total	**0.0694**	**0.5201**	**0.5697**	**3.2700e-003**	**0.2274**	**4.1200e-003**	**0.2315**	**0.0622**	**3.9200e-003**	**0.0661**	**0.0000**	**313.4752**	**313.4752**	**3.7500e-003**	**0.0319**	**323.0660**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0520	0.4739	0.6112	1.0200e-003		0.0201	0.0201		0.0189	0.0189	0.0000	88.1293	88.1293	0.0207	0.0000	88.6472
Total	**0.0520**	**0.4739**	**0.6112**	**1.0200e-003**		**0.0201**	**0.0201**		**0.0189**	**0.0189**	**0.0000**	**88.1293**	**88.1293**	**0.0207**	**0.0000**	**88.6472**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0111	0.4846	0.1193	2.0200e-003	0.0704	3.3600e-003	0.0738	0.0204	3.2200e-003	0.0236	0.0000	193.4250	193.4250	5.0000e-004	0.0286	201.9527
Worker	0.0583	0.0356	0.4504	1.2500e-003	0.1570	7.6000e-004	0.1578	0.0418	7.0000e-004	0.0425	0.0000	120.0502	120.0502	3.2500e-003	3.3000e-003	121.1133
Total	**0.0694**	**0.5201**	**0.5697**	**3.2700e-003**	**0.2274**	**4.1200e-003**	**0.2315**	**0.0622**	**3.9200e-003**	**0.0661**	**0.0000**	**313.4752**	**313.4752**	**3.7500e-003**	**0.0319**	**323.0660**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.8800e-003	0.0953	0.1463	2.3000e-004		4.6900e-003	4.6900e-003		4.3100e-003	4.3100e-003	0.0000	20.0265	20.0265	6.4800e-003	0.0000	20.1885
Paving	0.0295					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0394**	**0.0953**	**0.1463**	**2.3000e-004**		**4.6900e-003**	**4.6900e-003**		**4.3100e-003**	**4.3100e-003**	**0.0000**	**20.0265**	**20.0265**	**6.4800e-003**	**0.0000**	**20.1885**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	3.8000e-004	4.3300e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9962	0.9962	3.0000e-005	3.0000e-005	1.0064
Total	**5.5000e-004**	**3.8000e-004**	**4.3300e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9962**	**0.9962**	**3.0000e-005**	**3.0000e-005**	**1.0064**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.8800e-003	0.0953	0.1463	2.3000e-004		4.6900e-003	4.6900e-003		4.3100e-003	4.3100e-003	0.0000	20.0265	20.0265	6.4800e-003	0.0000	20.1884
Paving	0.0295					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0394**	**0.0953**	**0.1463**	**2.3000e-004**		**4.6900e-003**	**4.6900e-003**		**4.3100e-003**	**4.3100e-003**	**0.0000**	**20.0265**	**20.0265**	**6.4800e-003**	**0.0000**	**20.1884**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	3.8000e-004	4.3300e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9962	0.9962	3.0000e-005	3.0000e-005	1.0064
Total	**5.5000e-004**	**3.8000e-004**	**4.3300e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9962**	**0.9962**	**3.0000e-005**	**3.0000e-005**	**1.0064**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6082					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0101	0.0683	0.1014	1.7000e-004		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003	0.0000	14.2982	14.2982	8.1000e-004	0.0000	14.3184
Total	**0.6184**	**0.0683**	**0.1014**	**1.7000e-004**		**3.4100e-003**	**3.4100e-003**		**3.4100e-003**	**3.4100e-003**	**0.0000**	**14.2982**	**14.2982**	**8.1000e-004**	**0.0000**	**14.3184**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0210	0.0145	0.1651	4.1000e-004	0.0462	2.6000e-004	0.0465	0.0123	2.4000e-004	0.0125	0.0000	37.9351	37.9351	1.2800e-003	1.2000e-003	38.3234
Total	**0.0210**	**0.0145**	**0.1651**	**4.1000e-004**	**0.0462**	**2.6000e-004**	**0.0465**	**0.0123**	**2.4000e-004**	**0.0125**	**0.0000**	**37.9351**	**37.9351**	**1.2800e-003**	**1.2000e-003**	**38.3234**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6082					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0101	0.0683	0.1014	1.7000e-004		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003	0.0000	14.2982	14.2982	8.1000e-004	0.0000	14.3183
Total	**0.6184**	**0.0683**	**0.1014**	**1.7000e-004**		**3.4100e-003**	**3.4100e-003**		**3.4100e-003**	**3.4100e-003**	**0.0000**	**14.2982**	**14.2982**	**8.1000e-004**	**0.0000**	**14.3183**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0210	0.0145	0.1651	4.1000e-004	0.0462	2.6000e-004	0.0465	0.0123	2.4000e-004	0.0125	0.0000	37.9351	37.9351	1.2800e-003	1.2000e-003	38.3234
Total	**0.0210**	**0.0145**	**0.1651**	**4.1000e-004**	**0.0462**	**2.6000e-004**	**0.0465**	**0.0123**	**2.4000e-004**	**0.0125**	**0.0000**	**37.9351**	**37.9351**	**1.2800e-003**	**1.2000e-003**	**38.3234**

3.7 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.4174					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
Total	**1.4397**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3200**	**33.3200**	**1.8200e-003**	**0.0000**	**33.3654**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0457	0.0301	0.3556	9.1000e-004	0.1076	5.8000e-004	0.1082	0.0286	5.4000e-004	0.0292	0.0000	86.2845	86.2845	2.7000e-003	2.5800e-003	87.1212
Total	**0.0457**	**0.0301**	**0.3556**	**9.1000e-004**	**0.1076**	**5.8000e-004**	**0.1082**	**0.0286**	**5.4000e-004**	**0.0292**	**0.0000**	**86.2845**	**86.2845**	**2.7000e-003**	**2.5800e-003**	**87.1212**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.4174					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
Total	**1.4397**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3199**	**33.3199**	**1.8200e-003**	**0.0000**	**33.3654**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0457	0.0301	0.3556	9.1000e-004	0.1076	5.8000e-004	0.1082	0.0286	5.4000e-004	0.0292	0.0000	86.2845	86.2845	2.7000e-003	2.5800e-003	87.1212
Total	**0.0457**	**0.0301**	**0.3556**	**9.1000e-004**	**0.1076**	**5.8000e-004**	**0.1082**	**0.0286**	**5.4000e-004**	**0.0292**	**0.0000**	**86.2845**	**86.2845**	**2.7000e-003**	**2.5800e-003**	**87.1212**

3.7 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.4174					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
Total	**1.4397**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3200**	**33.3200**	**1.8200e-003**	**0.0000**	**33.3654**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0427	0.0270	0.3306	8.8000e-004	0.1076	5.5000e-004	0.1082	0.0286	5.1000e-004	0.0292	0.0000	84.2250	84.2250	2.4500e-003	2.4100e-003	85.0038
Total	**0.0427**	**0.0270**	**0.3306**	**8.8000e-004**	**0.1076**	**5.5000e-004**	**0.1082**	**0.0286**	**5.1000e-004**	**0.0292**	**0.0000**	**84.2250**	**84.2250**	**2.4500e-003**	**2.4100e-003**	**85.0038**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.4174					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
Total	**1.4397**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3199**	**33.3199**	**1.8200e-003**	**0.0000**	**33.3654**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0427	0.0270	0.3306	8.8000e-004	0.1076	5.5000e-004	0.1082	0.0286	5.1000e-004	0.0292	0.0000	84.2250	84.2250	2.4500e-003	2.4100e-003	85.0038
Total	**0.0427**	**0.0270**	**0.3306**	**8.8000e-004**	**0.1076**	**5.5000e-004**	**0.1082**	**0.0286**	**5.1000e-004**	**0.0292**	**0.0000**	**84.2250**	**84.2250**	**2.4500e-003**	**2.4100e-003**	**85.0038**

3.7 Architectural Coating - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4670					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.3500e-003	0.0493	0.0778	1.3000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003	0.0000	10.9790	10.9790	6.0000e-004	0.0000	10.9940
Total	**0.4744**	**0.0493**	**0.0778**	**1.3000e-004**		**2.2100e-003**	**2.2100e-003**		**2.2100e-003**	**2.2100e-003**	**0.0000**	**10.9790**	**10.9790**	**6.0000e-004**	**0.0000**	**10.9940**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0132	8.0300e-003	0.1017	2.8000e-004	0.0355	1.7000e-004	0.0356	9.4400e-003	1.6000e-004	9.5900e-003	0.0000	27.1161	27.1161	7.3000e-004	7.4000e-004	27.3562
Total	**0.0132**	**8.0300e-003**	**0.1017**	**2.8000e-004**	**0.0355**	**1.7000e-004**	**0.0356**	**9.4400e-003**	**1.6000e-004**	**9.5900e-003**	**0.0000**	**27.1161**	**27.1161**	**7.3000e-004**	**7.4000e-004**	**27.3562**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4670					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.3500e-003	0.0493	0.0778	1.3000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003	0.0000	10.9790	10.9790	6.0000e-004	0.0000	10.9940
Total	**0.4744**	**0.0493**	**0.0778**	**1.3000e-004**		**2.2100e-003**	**2.2100e-003**		**2.2100e-003**	**2.2100e-003**	**0.0000**	**10.9790**	**10.9790**	**6.0000e-004**	**0.0000**	**10.9940**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0132	8.0300e-003	0.1017	2.8000e-004	0.0355	1.7000e-004	0.0356	9.4400e-003	1.6000e-004	9.5900e-003	0.0000	27.1161	27.1161	7.3000e-004	7.4000e-004	27.3562
Total	**0.0132**	**8.0300e-003**	**0.1017**	**2.8000e-004**	**0.0355**	**1.7000e-004**	**0.0356**	**9.4400e-003**	**1.6000e-004**	**9.5900e-003**	**0.0000**	**27.1161**	**27.1161**	**7.3000e-004**	**7.4000e-004**	**27.3562**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.2294	6.6143	37.4157	0.0647	6.6035	0.0701	6.6737	1.7684	0.0659	1.8343	0.0000	6,189.6381	6,189.6381	0.4829	0.3821	6,315.5651
Unmitigated	5.2294	6.6143	37.4157	0.0647	6.6035	0.0701	6.6737	1.7684	0.0659	1.8343	0.0000	6,189.6381	6,189.6381	0.4829	0.3821	6,315.5651

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Convenience Market with Gas Pumps	4,094.56	4,094.56	4094.56	3,080,698	3,080,698
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Single Family Housing	1,544.40	1,544.40	1544.40	4,232,964	4,232,964
Strip Mall	4,953.68	4,953.68	4953.68	10,341,005	10,341,005
Unrefrigerated Warehouse-No Rail	74.20	74.20	74.20	262,012	262,012
Total	10,666.84	10,666.84	10,666.84	17,916,679	17,916,679

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Convenience Market with Gas	10.40	10.40	10.40	0.80	80.20	19.00	14	21	65
Other Asphalt Surfaces	10.50	10.50	10.50	0.00	0.00	0.00	0	0	0
Parking Lot	10.50	10.50	10.50	0.00	0.00	0.00	0	0	0
Single Family Housing	11.00	4.85	7.93	35.00	17.00	48.00	86	11	3
Strip Mall	10.40	10.40	10.40	16.60	64.40	19.00	45	40	15
Unrefrigerated Warehouse-No	10.40	10.40	10.40	59.00	0.00	41.00	92	5	3

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Convenience Market with Gas Pumps	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Other Asphalt Surfaces	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Parking Lot	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Single Family Housing	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Strip Mall	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396
Unrefrigerated Warehouse-No Rail	0.513285	0.054320	0.183023	0.136713	0.038722	0.007953	0.011045	0.016068	0.000701	0.000407	0.032317	0.001051	0.004396

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	227.7987	227.7987	0.0369	4.4700e-003	230.0512
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	227.7987	227.7987	0.0369	4.4700e-003	230.0512
NaturalGas Mitigated	0.0311	0.2707	0.1516	1.6900e-003		0.0215	0.0215		0.0215	0.0215	0.0000	307.3746	307.3746	5.8900e-003	5.6400e-003	309.2011
NaturalGas Unmitigated	0.0311	0.2707	0.1516	1.6900e-003		0.0215	0.0215		0.0215	0.0215	0.0000	307.3746	307.3746	5.8900e-003	5.6400e-003	309.2011

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Convenience Market with Gas Pumps	38196	2.1000e-004	1.8700e-003	1.5700e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	2.0383	2.0383	4.0000e-005	4.0000e-005	2.0504
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.9662e+006	0.0214	0.1828	0.0778	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	211.6513	211.6513	4.0600e-003	3.8800e-003	212.9091
Strip Mall	806360	4.3500e-003	0.0395	0.0332	2.4000e-004		3.0000e-003	3.0000e-003		3.0000e-003	3.0000e-003	0.0000	43.0304	43.0304	8.2000e-004	7.9000e-004	43.2862
Unrefrigerated Warehouse-No Rail	949230	5.1200e-003	0.0465	0.0391	2.8000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	50.6545	50.6545	9.7000e-004	9.3000e-004	50.9555
Total		**0.0311**	**0.2707**	**0.1516**	**1.7000e-003**		**0.0215**	**0.0215**		**0.0215**	**0.0215**	**0.0000**	**307.3746**	**307.3746**	**5.8900e-003**	**5.6400e-003**	**309.2011**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Convenience Market with Gas Pumps	38196	2.1000e-004	1.8700e-003	1.5700e-003	1.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	2.0383	2.0383	4.0000e-005	4.0000e-005	2.0504
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.9662e+006	0.0214	0.1828	0.0778	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	211.6513	211.6513	4.0600e-003	3.8800e-003	212.9091
Strip Mall	806360	4.3500e-003	0.0395	0.0332	2.4000e-004		3.0000e-003	3.0000e-003		3.0000e-003	3.0000e-003	0.0000	43.0304	43.0304	8.2000e-004	7.9000e-004	43.2862
Unrefrigerated Warehouse-No Rail	949230	5.1200e-003	0.0465	0.0391	2.8000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	50.6545	50.6545	9.7000e-004	9.3000e-004	50.9555
Total		**0.0311**	**0.2707**	**0.1516**	**1.7000e-003**		**0.0215**	**0.0215**		**0.0215**	**0.0215**	**0.0000**	**307.3746**	**307.3746**	**5.8900e-003**	**5.6400e-003**	**309.2011**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Convenience Market with Gas Pumps	28512	2.6380	4.3000e-004	5.0000e-005	2.6641
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	24080	2.2280	3.6000e-004	4.0000e-005	2.2500
Single Family Housing	1.3157e+006	121.7338	0.0197	2.3900e-003	122.9376
Strip Mall	601920	55.6919	9.0100e-003	1.0900e-003	56.2426
Unrefrigerated Warehouse-No Rail	491840	45.5069	7.3600e-003	8.9000e-004	45.9569
Total		**227.7987**	**0.0369**	**4.4600e-003**	**230.0512**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Convenience Market with Gas Pumps	28512	2.6380	4.3000e-004	5.0000e-005	2.6641
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	24080	2.2280	3.6000e-004	4.0000e-005	2.2500
Single Family Housing	1.3157e+006	121.7338	0.0197	2.3900e-003	122.9376
Strip Mall	601920	55.6919	9.0100e-003	1.0900e-003	56.2426
Unrefrigerated Warehouse-No Rail	491840	45.5069	7.3600e-003	8.9000e-004	45.9569
Total		**227.7987**	**0.0369**	**4.4600e-003**	**230.0512**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.9074	0.0141	1.2271	6.0000e-005		6.8000e-003	6.8000e-003		6.8000e-003	6.8000e-003	0.0000	2.0073	2.0073	1.9300e-003	0.0000	2.0556
Unmitigated	21.4870	0.3827	24.9836	0.0429		3.3352	3.3352		3.3352	3.3352	315.9981	127.0642	443.0623	0.2850	0.0249	457.6003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3910					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.7400					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	19.3190	0.3686	23.7566	0.0429		3.3284	3.3284		3.3284	3.3284	315.9981	125.0569	441.0550	0.2831	0.0249	455.5447
Landscaping	0.0370	0.0141	1.2271	6.0000e-005		6.8000e-003	6.8000e-003		6.8000e-003	6.8000e-003	0.0000	2.0073	2.0073	1.9300e-003	0.0000	2.0556
Total	**21.4870**	**0.3827**	**24.9836**	**0.0429**		**3.3352**	**3.3352**		**3.3352**	**3.3352**	**315.9981**	**127.0642**	**443.0623**	**0.2850**	**0.0249**	**457.6003**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1303					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.7400					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0370	0.0141	1.2271	6.0000e-005		6.8000e-003	6.8000e-003		6.8000e-003	6.8000e-003	0.0000	2.0073	2.0073	1.9300e-003	0.0000	2.0556
Total	**1.9073**	**0.0141**	**1.2271**	**6.0000e-005**		**6.8000e-003**	**6.8000e-003**		**6.8000e-003**	**6.8000e-003**	**0.0000**	**2.0073**	**2.0073**	**1.9300e-003**	**0.0000**	**2.0556**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Tuscan Ridge Project - Butte County AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	26.2346	0.9413	0.0225	56.4719
Unmitigated	26.9037	0.9414	0.0225	57.1475

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Convenience Market with Gas Pumps	0.167315 / 0.102548	0.1701	5.4700e-003	1.3000e-004	0.3459
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	10.7504 / 6.77744	10.9875	0.3515	8.4200e-003	22.2849
Strip Mall	5.62951 / 3.45035	5.7217	0.1841	4.4100e-003	11.6373
Unrefrigerated Warehouse-No Rail	12.2563 / 0	10.0244	0.4004	9.5500e-003	22.8795
Total		**26.9037**	**0.9414**	**0.0225**	**57.1475**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Convenience Market with Gas Pumps	0.167315 / 0.0820383	0.1634	5.4700e-003	1.3000e-004	0.3392
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	10.7504 / 5.42195	10.5486	0.3515	8.4100e-003	21.8416
Strip Mall	5.62951 / 2.76028	5.4983	0.1840	4.4000e-003	11.4116
Unrefrigerated Warehouse-No Rail	12.2563 / 0	10.0244	0.4004	9.5500e-003	22.8795
Total		**26.2346**	**0.9413**	**0.0225**	**56.4719**

8.0 Waste Detail

8.1 Mitigation Measures Waste

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	60.8039	3.5934	0.0000	150.6391
Unmitigated	60.8039	3.5934	0.0000	150.6391

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	169.92	34.4922	2.0384	0.0000	85.4530
Strip Mall	79.8	16.1987	0.9573	0.0000	40.1315
Unrefrigerated Warehouse-No Rail	49.82	10.1130	0.5977	0.0000	25.0546
Total		**60.8039**	**3.5934**	**0.0000**	**150.6391**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	169.92	34.4922	2.0384	0.0000	85.4530
Strip Mall	79.8	16.1987	0.9573	0.0000	40.1315
Unrefrigerated Warehouse-No Rail	49.82	10.1130	0.5977	0.0000	25.0546
Total		**60.8039**	**3.5934**	**0.0000**	**150.6391**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	3	0.01	3	201	0.73	Diesel

Boilers

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (175 - 300 HP)	1.4800e-003	4.1500e-003	3.7800e-003	1.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	0.6889	0.6889	1.0000e-004	0.0000	0.6913
Total	**1.4800e-003**	**4.1500e-003**	**3.7800e-003**	**1.0000e-005**		**2.2000e-004**	**2.2000e-004**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.6889**	**0.6889**	**1.0000e-004**	**0.0000**	**0.6913**

11.0 Vegetation

Tuscan Ridge Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Butte County AQMD Air District, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demolition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Tuscan Ridge Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	1	No Change	0.00
Cranes	Diesel	No Change	0	1	No Change	0.00
Excavators	Diesel	No Change	0	5	No Change	0.00
Forklifts	Diesel	No Change	0	3	No Change	0.00
Generator Sets	Diesel	No Change	0	1	No Change	0.00
Graders	Diesel	No Change	0	1	No Change	0.00
Pavers	Diesel	No Change	0	2	No Change	0.00
Paving Equipment	Diesel	No Change	0	2	No Change	0.00
Rollers	Diesel	No Change	0	2	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	6	No Change	0.00
Scrapers	Diesel	No Change	0	2	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	9	No Change	0.00
Welders	Diesel	No Change	0	1	No Change	0.00
Concrete/Industrial Saws	Diesel	No Change	0	1	No Change	0.00

Tuscan Ridge Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	6.20600E-002	4.16490E-001	6.51340E-001	1.07000E-003	1.90700E-002	1.90700E-002	0.00000E+000	9.19171E+001	9.19171E+001	5.04000E-003	0.00000E+000	9.20431E+001
Concrete/Industrial Saws	7.80000E-004	6.04000E-003	9.13000E-003	2.00000E-005	2.80000E-004	2.80000E-004	0.00000E+000	1.34414E+000	1.34414E+000	6.00000E-005	0.00000E+000	1.34574E+000
Cranes	9.95500E-002	1.01585E+000	5.49030E-001	1.82000E-003	4.30100E-002	3.95700E-002	0.00000E+000	1.59691E+002	1.59691E+002	5.16500E-002	0.00000E+000	1.60982E+002
Excavators	6.76000E-003	5.26100E-002	1.22440E-001	1.90000E-004	2.59000E-003	2.38000E-003	0.00000E+000	1.70187E+001	1.70187E+001	5.50000E-003	0.00000E+000	1.71564E+001
Forklifts	9.51800E-002	8.95910E-001	1.22547E+000	1.65000E-003	4.86400E-002	4.47500E-002	0.00000E+000	1.45035E+002	1.45035E+002	4.69100E-002	0.00000E+000	1.46207E+002
Generator Sets	9.70400E-002	8.71460E-001	1.31769E+000	2.37000E-003	3.52700E-002	3.52700E-002	0.00000E+000	2.03475E+002	2.03475E+002	7.64000E-003	0.00000E+000	2.03666E+002
Graders	5.32000E-003	6.23400E-002	2.48500E-002	1.00000E-004	2.02000E-003	1.86000E-003	0.00000E+000	8.71588E+000	8.71588E+000	2.82000E-003	0.00000E+000	8.78635E+000
Pavers	3.67000E-003	3.48400E-002	5.78600E-002	9.00000E-005	1.63000E-003	1.50000E-003	0.00000E+000	8.25832E+000	8.25832E+000	2.67000E-003	0.00000E+000	8.32510E+000
Paving Equipment	3.30000E-003	2.99200E-002	5.14000E-002	8.00000E-005	1.45000E-003	1.33000E-003	0.00000E+000	7.15707E+000	7.15707E+000	2.31000E-003	0.00000E+000	7.21493E+000
Rollers	2.91000E-003	3.04900E-002	3.70000E-002	5.00000E-005	1.61000E-003	1.48000E-003	0.00000E+000	4.61114E+000	4.61114E+000	1.49000E-003	0.00000E+000	4.64843E+000
Rubber Tired Dozers	3.47500E-002	3.56380E-001	1.56550E-001	4.30000E-004	1.60600E-002	1.47700E-002	0.00000E+000	3.75112E+001	3.75112E+001	1.21300E-002	0.00000E+000	3.78145E+001
Scrapers	2.28000E-002	2.30870E-001	1.79010E-001	4.60000E-004	9.13000E-003	8.40000E-003	0.00000E+000	3.99823E+001	3.99823E+001	1.29300E-002	0.00000E+000	4.03056E+001
Tractors/Loaders/Backhoes	1.36820E-001	1.38116E+000	2.26447E+000	3.17000E-003	5.77500E-002	5.31300E-002	0.00000E+000	2.78070E+002	2.78070E+002	8.99300E-002	0.00000E+000	2.80319E+002
Welders	8.01000E-002	4.85500E-001	5.95330E-001	9.20000E-004	1.51200E-002	1.51200E-002	0.00000E+000	6.77594E+001	6.77594E+001	6.52000E-003	0.00000E+000	6.79224E+001

Tuscan Ridge Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	6.20600E-002	4.16490E-001	6.51340E-001	1.07000E-003	1.90700E-002	1.90700E-002	0.00000E+000	9.19170E+001	9.19170E+001	5.04000E-003	0.00000E+000	9.20430E+001
Concrete/Industrial Saws	7.80000E-004	6.04000E-003	9.13000E-003	2.00000E-005	2.80000E-004	2.80000E-004	0.00000E+000	1.34414E+000	1.34414E+000	6.00000E-005	0.00000E+000	1.34574E+000
Cranes	9.95500E-002	1.01585E+000	5.49030E-001	1.82000E-003	4.30100E-002	3.95700E-002	0.00000E+000	1.59691E+002	1.59691E+002	5.16500E-002	0.00000E+000	1.60982E+002
Excavators	6.76000E-003	5.26100E-002	1.22440E-001	1.90000E-004	2.59000E-003	2.38000E-003	0.00000E+000	1.70187E+001	1.70187E+001	5.50000E-003	0.00000E+000	1.71563E+001
Forklifts	9.51800E-002	8.95910E-001	1.22547E+000	1.65000E-003	4.86400E-002	4.47500E-002	0.00000E+000	1.45034E+002	1.45034E+002	4.69100E-002	0.00000E+000	1.46207E+002
Generator Sets	9.70400E-002	8.71460E-001	1.31769E+000	2.37000E-003	3.52700E-002	3.52700E-002	0.00000E+000	2.03474E+002	2.03474E+002	7.64000E-003	0.00000E+000	2.03665E+002
Graders	5.32000E-003	6.23400E-002	2.48500E-002	1.00000E-004	2.02000E-003	1.86000E-003	0.00000E+000	8.71587E+000	8.71587E+000	2.82000E-003	0.00000E+000	8.78634E+000
Pavers	3.67000E-003	3.48400E-002	5.78600E-002	9.00000E-005	1.63000E-003	1.50000E-003	0.00000E+000	8.25831E+000	8.25831E+000	2.67000E-003	0.00000E+000	8.32509E+000
Paving Equipment	3.30000E-003	2.99200E-002	5.14000E-002	8.00000E-005	1.45000E-003	1.33000E-003	0.00000E+000	7.15706E+000	7.15706E+000	2.31000E-003	0.00000E+000	7.21493E+000
Rollers	2.91000E-003	3.04900E-002	3.70000E-002	5.00000E-005	1.61000E-003	1.48000E-003	0.00000E+000	4.61114E+000	4.61114E+000	1.49000E-003	0.00000E+000	4.64842E+000
Rubber Tired Dozers	3.47500E-002	3.56380E-001	1.56550E-001	4.30000E-004	1.60600E-002	1.47700E-002	0.00000E+000	3.75112E+001	3.75112E+001	1.21300E-002	0.00000E+000	3.78145E+001
Scrapers	2.28000E-002	2.30870E-001	1.79010E-001	4.60000E-004	9.13000E-003	8.40000E-003	0.00000E+000	3.99823E+001	3.99823E+001	1.29300E-002	0.00000E+000	4.03055E+001
Tractors/Loaders/Backhoes	1.36820E-001	1.38116E+000	2.26447E+000	3.17000E-003	5.77500E-002	5.31300E-002	0.00000E+000	2.78070E+002	2.78070E+002	8.99300E-002	0.00000E+000	2.80318E+002
Welders	8.01000E-002	4.85500E-001	5.95330E-001	9.20000E-004	1.51200E-002	1.51200E-002	0.00000E+000	6.77594E+001	6.77594E+001	6.52000E-003	0.00000E+000	6.79223E+001

Tuscan Ridge Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.08794E-006	1.08794E-006	0.00000E+000	0.00000E+000	1.19509E-006
Concrete/Industrial Saws	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Cranes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18980E-006	1.18980E-006	0.00000E+000	0.00000E+000	1.18025E-006
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.17518E-006	1.17518E-006	0.00000E+000	0.00000E+000	1.16575E-006
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.24108E-006	1.24108E-006	0.00000E+000	0.00000E+000	1.16273E-006
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.17951E-006	1.17951E-006	0.00000E+000	0.00000E+000	1.17840E-006
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.14733E-006	1.14733E-006	0.00000E+000	0.00000E+000	1.13813E-006
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.21090E-006	1.21090E-006	0.00000E+000	0.00000E+000	1.20119E-006
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.39722E-006	1.39722E-006	0.00000E+000	0.00000E+000	0.00000E+000
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	2.15126E-006
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.33293E-006	1.33293E-006	0.00000E+000	0.00000E+000	1.05779E-006
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.25055E-006	1.25055E-006	0.00000E+000	0.00000E+000	1.24052E-006
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18675E-006	1.18675E-006	0.00000E+000	0.00000E+000	1.17723E-006
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18065E-006	1.18065E-006	0.00000E+000	0.00000E+000	1.17781E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input	Mitigation Input	Mitigation Input

Tuscan Ridge Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	0.30	0.08	0.30	0.08	0.00	0.00
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	2.15	0.59	2.15	0.59	0.00	0.00
Demolition	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Demolition	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Grading	Fugitive Dust	0.14	0.05	0.14	0.05	0.00	0.00
Grading	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Fugitive Dust	0.20	0.10	0.20	0.10	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Tuscan Ridge Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	66.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.77	2.49	0.01	0.09	1.18
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00	0.00	0.00	
No	Land Use	Increase Diversity	0.16	0.42		
No	Land Use	Improve Walkability Design	0.00	0.00		
No	Land Use	Improve Destination Accessibility	0.00	0.00		
No	Land Use	Increase Transit Accessibility	0.25	0.00		

Tuscan Ridge Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

No	Land Use	Integrate Below Market Rate Housing	0.00	0.00		
	Land Use	Land Use SubTotal	0.00			
No	Neighborhood Enhancements	Improve Pedestrian Network	2.00	Project Site and Connecting Off-Site		
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00	0.00		
No	Parking Policy Pricing	Unbundle Parking Costs	0.00	0.00		
No	Parking Policy Pricing	On-street Market Pricing	0.00	0.00		
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00	0.00		
No	Transit Improvements	Expand Transit Network	0.00	0.00		
No	Transit Improvements	Increase Transit Frequency	0.00		0.00	
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge		0.00		
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			

Tuscan Ridge Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			
No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
Yes	No Hearth	
No	Use Low VOC Cleaning Supplies	
Yes	Use Low VOC Paint (Residential Interior)	50.00
Yes	Use Low VOC Paint (Residential Exterior)	50.00
Yes	Use Low VOC Paint (Non-residential Interior)	50.00
Yes	Use Low VOC Paint (Non-residential Exterior)	50.00
Yes	Use Low VOC Paint (Parking)	50.00
No	% Electric Lawnmower	0.00
No	% Electric Leafblower	0.00
No	% Electric Chainsaw	0.00

Energy Mitigation Measures

Tuscan Ridge Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Apply Water Conservation on Strategy	0.00	20.00
No	Use Reclaimed Water	0.00	0.00
No	Use Grey Water	0.00	
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction	0.00	
No	Use Water Efficient Irrigation Systems	6.10	

Tuscan Ridge Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

No	Water Efficient Landscape	0.00	0.00

Solid Waste Mitigation

Mitigation Measures	Input Value
Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

APPENDIX D

LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

TUSCAN RIDGE PLANNED DEVELOPMENT
BIOLOGICAL EVALUATION
BUTTE COUNTY, CALIFORNIA

Prepared by
LIVE OAK ASSOCIATES, INC.

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EXECUTIVE SUMMARY

Live Oak Associates, Inc., investigated the biological resources of an approximately 163-acre property known as the former Tuscan Ridge Golf Course, located along Skyway Road, between the City of Chico and Town of Paradise, in Butte County, California. LOA analyzed the potential biological impacts associated with the future site development of 165 single-family residential homes, commercial development, mini storage, roadways, and other infrastructure including a sewer and sanitary waste disposal station.

The site predominantly consists of two land uses—developed/gravel clearings and wastewater disposal basins (plastic lined)—and three habitats—blue oak woodland, California annual grassland/naturalized golf course turf, and an ephemeral channel. The central portion of the site is generally heavily impacted by development including former golf course buildings and other structures, and a vast leveled and gravel-covered clearing that was established onsite in approximately 2018 to serve as a base camp as part of the 2018 Camp Fire response effort. Habitats of the site have been impacted by severe drought conditions in California, development of the golf course starting in 2001, the 2018 Camp Fire, and clearing of the site to support a staging camp for the fire response. As such, trees of the site have sustained significant declines.

Site development will occur within a majority of the site, but approximately 30% of the site will remain as open space, mostly along the site's elongated northwest boundary. Project buildout will result in removal of a large number of trees from the site, and it may minorly impact the ephemeral channel of the site. Much of the remnant blue oak woodlands of the site will remain intact.

The presence of special status plants could constrain project design and development. One special status plant species, Butte County checkerbloom, is likely to occur in the site's oak woodlands and veiny monardella may possibly occur within the woodlands and/or grasslands of the site. A focused rare plant survey should be completed during the overlapping blooming periods of the Butte County checkerbloom and veiny monardella (i.e., May-June) to determine if populations of these species occur on the site. Compensatory mitigation may be required if any of these species are present.

A formal tree survey was completed by California Tree and Landscape Consulting, Inc. (CalTLC 2019 & 2020). Approximately 843 trees were documented onsite by a consulting arborist (CalTLC 2019 & 2020). While many of the trees onsite are badly damaged or dead and recommended for removal, 459 trees are not recommended for removal. Trees of the site are approximately 99.6% native species, the vast majority of which are blue oaks (*Quercus douglasiana*). These trees are scattered throughout the land use areas and habitats of the site, with the higher concentrations within the remnant blue oak woodlands. Project buildout would impact approximately 20% to 40% of the living trees of the site, which would require compensatory mitigation in the form of onsite tree replacement restoration within the preserved open spaces of the site.

Special status wildlife that could occur on the site and utilize the site as roosting, denning, or nesting habitat include the Swainson's hawk, white-tailed kite, Townsend's big-eared bat, and

ringtail. Pre-construction surveys for nesting birds, roosting bats, and denning ringtails, along with avoidance and minimization measures to ensure that these protected species are not impacted during project buildout, are summarized herein. These avoidance measures will ensure that these species are not impacted by project buildout.

The Project Site is located within the western edge of the Winter Migration Area of Butte County as noted in the Butte County 2030 General Plan (see Figure LU-4 from the General Plan in Appendix B).However, habitat on site is marginal at best for deer as nearly 92% of the site consist of developed/gravel (44.7%), California annual grassland/naturalized golf course turf (42.2%) and wastewater disposal basins (4.7%). Some marginal habitats for deer exist in blue oak woodlands that have been damaged in the Camp Fire make up about 8.2% of the site. The site is further compromised by a busy 4-lane highway that is situated on its NW boundary. Therefore, development on this site will result in a less than significant impact to deer Winter Migration Habitat.

Night lighting associated with the site may impact the movement of wildlife that utilize the ephemeral channel of the site. Therefore, the project is required to design street lighting, park lighting, and residential lighting to avoid directing light into the ephemeral channel areas of the site.

While the ephemeral channel of the site is within the northwestern area of the site that will be largely retained as open space, some portions of this feature may be impacted during buildout of the project. If this channel is found to be under the jurisdiction of the U.S. or State, then impacts may require restoration and or enhancement of the channel. In addition, impacts may require that the project proponent obtain a Section 404 Clean Water Act permit from the USACE, Section 401 water quality certification from the RWQCB, and/or Section 1602 Streambed Alteration Agreement from the CDFW.

Photographic documentation of the project site is provided as Appendix A.

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1 INTRODUCTION

1.1 PURPOSE AND OBJECTIVES

Live Oak Associates, Inc. (LOA), evaluated the biological resources of the 163-acre Tuscan Ridge Planned Development site ("site" or "study area") located on the southeast side of Skyway Road, between Chico and Paradise, California. (APNs 040-520-104 through 040-520-111) to ascertain whether future build-out of a proposed development project would have a significant impact (as defined by CEQA) on the biological resources of the site and the region.

In general, the development of parcels can damage or modify biotic habitats used by sensitive plant and wildlife species. In such cases, site development may be regulated by state or federal agencies, subject to provisions of the California Environmental Quality Act (CEQA), and/or covered by policies and ordinances of Butte County. Therefore, this report addresses 1) sensitive biotic resources occurring in the study area; 2) the federal, state, and local laws regulating such resources; 3) project impact to these resources; and 4) mitigation measures that, once implemented, would mitigate impacts to a less-than-significant level.

1.2 PROJECT LOCATION

The project site is located at 3100 Skyway Road in unincorporated Paradise, California, within Butte County (Figure 1). The site is bounded by Skyway Road to the northwest, the Paradise Rod and Gun Club to the east, and undeveloped rangeland for the remainder of the boundary.

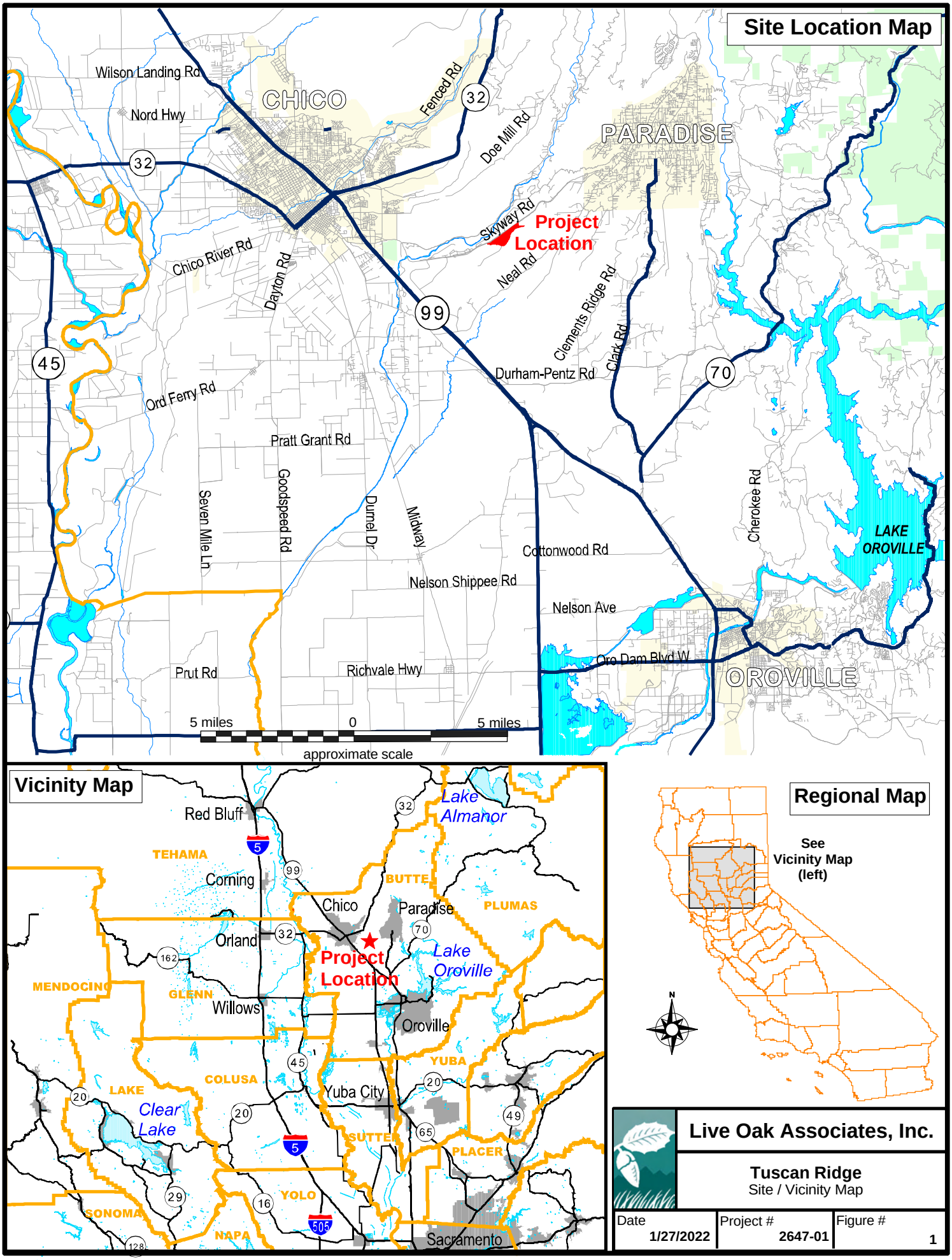
The site is located on the west-facing foothills of the Cascade Mountains in the Hamlin Canyon 7.5-minute U.S. Geological Survey (USGS) quadrangle. The Tuscan Ridge project site is on portions of four townships and can be described as: SE 1/4, SE 1/4, SE ¼ of Section 35, Township 22N, Range 2E; SW 1/4 and NW 1/4 SE 1/4 and SW 1/4 NE 1/4 of Section 36, Township 22N, Range 2E; NE 1/4 NE 1/4, Section 2, Township 21N, Range 2E; and N 1/2 NW 1/4, Section 1, Township 21N, Range 2E. All these township portions are based on the Mt. Diablo Meridian.

1.3 PROJECT DESCRIPTION

The proposed project includes subdivision of the project site to develop a total of 165 single-family residential lots ranging in size from 4,000 square feet (sf) to 40,000 sf. The proposed project also includes a commercial development occupying approximately 17.3 acres of the project site, including approximately four acres for improved buildings and parking and approximately 13.3 acres for mini storage units (53,000 sf) and outdoor RV and boat storage. The proposed project also includes the development of a sanitary waste disposal station.

Approximately 49.4 acres of the site will consist of recreational and open space areas to include bicycle and pedestrian trails and landscaped areas. The trails would utilize existing golf course paths, portions of which may require refurbishment.

Various associated improvements would be included in the development of the


Site Location Map
Wilson Landing Rd
Nord Hwy
CHICO
Fenced Rd
32
Doe Mill Rd
PARADISE
Skyway Rd
Project Location
Neal Rd
Chico River Rd
Dayton Rd
99
Clements Ridge Rd
Clark Rd
45
Durham-Pentz Rd
70
Ord Ferry Rd
Pratt Grant Rd
Seven Mile Ln
Goodspeed Rd
Durnel Dr
Midway
Cherokee Rd
LAKE OROVILLE
Cottonwood Rd
Nelson Shippee Rd
Nelson Ave
Oro Dam Blvd W
Prut Rd
Richvale Hwy
OROVILLE
5 miles
0
5 miles
approximate scale
Vicinity Map
Red Bluff
Lake Almanor
TEHAMA
Corning
BUTTE
Chico
Paradise
PLUMAS
Orland
Project Location
Lake Oroville
MENDOCINO
GLENN
Willows
Oroville
YUBA
COLUSA
LAKE
Clear Lake
Yuba City
SUTTER
PLACER
YOLO
SONOMA
NAPA
Sacramento
Regional Map
See Vicinity Map (left)
N
Live Oak Associates, Inc.
Tuscan Ridge
Site / Vicinity Map
Date
1/27/2022
Project #
2647-01
Figure #
1

proposed project infrastructure. Access to the site would be provided through the existing driveway from Skyway Road near the center of the site, which would be improved as part of the project, and a new access near the eastern end of the site. Internal roadways throughout the site would be public, to be dedicated to the County for maintenance. An emergency access road would also be built within the western end of the project area.

The area of the project site within 350 feet of the centerline of Skyway Road is within the associated Scenic Highway (SH) Overlay Zone. The proposed project would require County approval of a General Plan Text Amendment; Planned Development (PD) Rezone; Subdivision Map; and a Minor Use Permit for development within the SH Overlay Zone. Additional Minor Use Permits and/or Conditional Use Permits may subsequently be required in the future for specific commercial uses. Other approvals necessary to implement the proposed project would include annexation of the project site into the service area of the Paradise Irrigation District (PID) for the operation of the on-site water and wastewater facilities, subject to approval by the Butte Local Agency Formation Commission (LAFCo), and formation of a Permanent Road Division for maintenance of the proposed roads, drainage facilities and lighting.

1.4 STUDY METHODOLOGY

This biological evaluation of the Tuscan Ridge Planned Development project is based on the known and potential biotic resources of the site, discussed in Section 2, and the regulatory framework described in Section 3. Thus, the site's broader environmental setting is described to provide context for the discussion more specifically related to threatened and endangered species, wetlands, and other sensitive habitats. The biotic habitats observed on the study area, along with their constituent plants and animals, are also described. As such, the following were completed for this biological evaluation:

Background review. LOA reviewed resource agency data and literature, including, but not limited to, the following:

- The California Natural Diversity Database Rarefind 5 (CNDDB; CDFW 2022);
- The California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2022);
- United States Department of Agriculture (USDA) Natural Resource Conservation Service Custom Soil Resource Report for Butte County, California (NRCS 2022);
- Reports previously prepared for other projects in the site's vicinity;
- Arborist reports for the project site prepared by California Tree and Landscape Consulting in 2019 and 2020 (CalTLC 2019 & 2020); and
- Manuals and references related to plants and animals of Butte County.

Field survey. LOA ecologist Nathan Hale conducted a field survey of the site on January 31 and February 1, 2022. The field survey included the identification of onsite habitats, plant communities, and/or land uses. The site was inspected from the ground and, where necessary, using binoculars. All identifiable plants and animals observed on the site were noted.

2 EXISTING CONDITIONS

2.1 SITE HISTORY AND REGIONAL SETTING

The project site is located approximately 3 miles west of the Town of Paradise and 4 miles east of the City of Chico within the arid foothills of the Cascade Mountains. Butte Creek Canyon occurs approximately 0.25 miles northeast of the site, and Nance Canyon occurs approximately 0.2 miles south of the site. The site occurs within a sloped foothill of Coon Ridge that connects Chico to Paradise via Skyway Road.

In 2001, the site was developed into the Tuscan Ridge Golf Course, which included a clubhouse and bistro restaurant, and which was in operation through 2017. In mid-2018, a portion of the site was used as a vegetation management camp for Pacific Gas & Electric (PG&E). After that, the site was burned during the 2018 Camp Fire. The site was subsequently leveled and graded to be used as a base camp for wildfire response and a post-fire housing and staging area by PG&E and debris removal contractors. This usage was completed in mid-2020, and a small footprint of the site is currently used as a staging area for a construction firm.

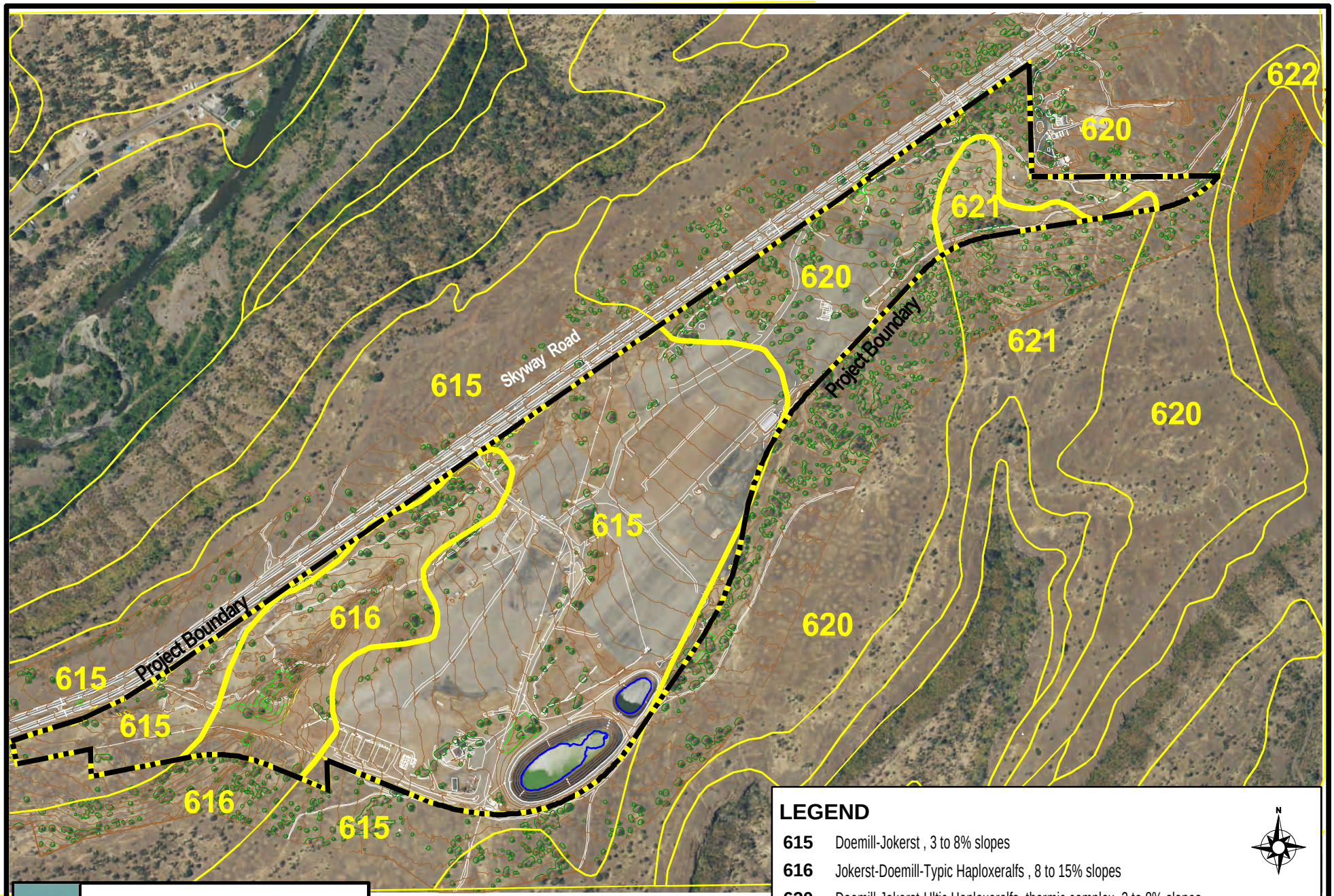
Currently, surrounding land uses are open space and rangelands. The site itself consists of expansive graded and gravel-covered areas, three remnant buildings from the golf course operation period, the construction company staging area, and natural lands. A network of golf course paths occurs throughout the site. Natural lands within the site include grasslands (including prior golf course turf areas that are transitioning into grasslands), blue oak woodlands, and an ephemeral channel within a slight ravine.

Like much of California, the project site experiences a Mediterranean climate with dry, hot summers and cool, wet winters. Annual precipitation in the general vicinity of the site is highly variable. Average annual rainfall is approximately 25 inches, most of which occurs from October to May (NCEI 2022). However, in recent years, California has experienced an extended drought of historically unprecedented severity.

The site's topography is flat to gently sloping to strongly sloping in some areas. Site elevations range from 550 ft (168 m) above mean sea level (AMSL) in the southwestern portions of the site to 925 ft (282 m) AMSL within the eastern portions of the site.

2.2 SOILS

Four soil types comprised of two soil series occur on the site (Figure 2). The Doemill and Jokerst soil series are both considered shallow, poorly drained soils formed in residuum from volcanic mudflow breccia. Jokerst soils are considered slightly acidic and Doemill soils are slightly acidic to neutral. One of the soil types mapped within the site—the Doemill-Jokerst, 3 to 8% slopes soil—is a potentially hydric soil (NRCS 2022). Hydric soils are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. Under sufficiently wet conditions, they support the growth and regeneration of hydrophytic vegetation. Neither soil series is alkaline, thus precluding plant



Live Oak Associates, Inc.

Tuscan Ridge
Soils

Date	Project #	Figure #
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LEGEND

615	Doemill-Jokerst , 3 to 8% slopes
616	Jokerst-Doemill-Typic Haploxeralfs , 8 to 15% slopes
620	Doemill-Jokerst-Ultic Haploxeralfs, thermic complex, 3 to 8% slopes
621	Doemill-Jokerst-Ultic Haploxeralfs, thermic complex, 8 to 15% slopes
622	Xerorthents, shallow-Typic Haploxeralfs-Rock outrcrop, cliffs complex, 15 to 30% slopes

N

1,000' 0 500' 1,000 feet
approximate scale

Source:
U.S.D.A. Soil Conservation Service

species adapted to alkaline soils from successfully maintaining populations on the site. Serpentine soils are also absent from the site, and plants adapted to such soils would not have colonized the site in the past or under current conditions (NRCS 2022).

2.3 BIOTIC HABITATS AND LAND USES

For the purposes of this analysis, two land use and three biotic habitats were identified on the site. The land uses are 1) developed/gravel clearings and 2) wastewater disposal basins. The biotic habitats are 1) blue oak woodland, 2) California annual grassland/naturalized golf course turf, and 3) ephemeral channel (Figure 3). These habitats and land uses, along with their constituent plant and animal species, are described in more detail in the following subsections. Selected photographs of the project site are presented in Appendix A.

2.3.1 Developed / Gravel Clearings

Approximately 72.9 acres of the site constitutes development or areas that have been cleared and covered with gravel. These land areas include the facilities from the former golf course, including a clubhouse building, a former restaurant, a large Quonset hut, and areas housing vehicles, storage containers, and other equipment. Also included in this land use designation are leveled and gravel-covered areas that provided camp housing for PG&E and fire-related contractors. This area also includes gravel roads connecting the gravel areas and a large area with sewer treatment leach fields and tanks.

The graveled and developed portions of the site are sparsely vegetated with some minor remnant landscaping around the golf course buildings but very little vegetation within the large gravel areas. Species observed include typical non-native ruderal field species including shepherd's purse (*Capsella bursa-pastoris*), Medusa head (*Elymus caput-medusae*), filarees (*Erodium* spp.), stinkwort (*Dittrichia graveolens*), California burclover (*Medicago polymorpha*), wild radish (*Raphanus sativus*), and Russian thistle (*Salsola tragus*). Some remnant blue oak (*Quercus douglasii*) trees occur around the buildings and along pathways that are mapped as part of the developed and gravel clearing areas of the site.

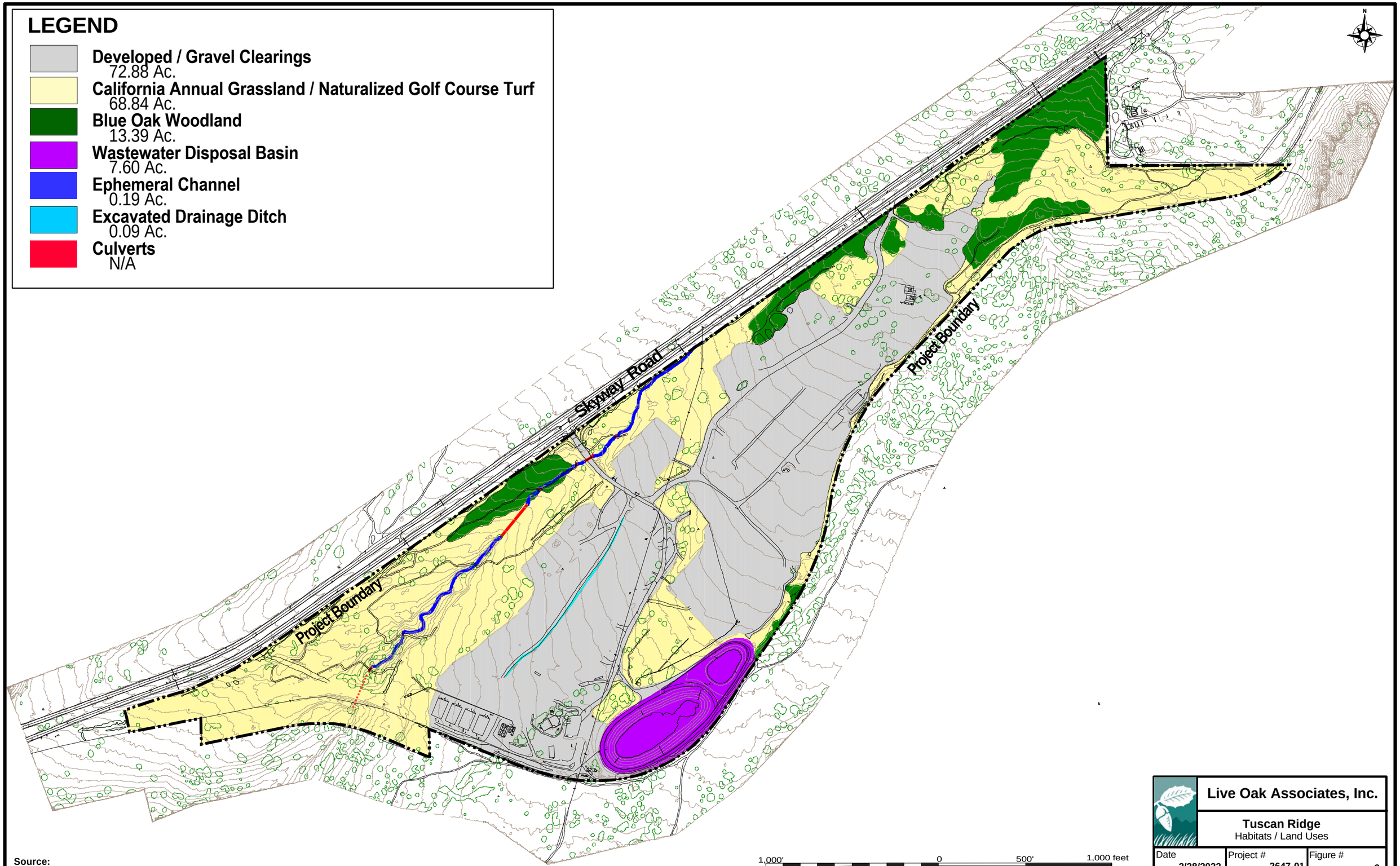
The developed portion of the site has limited potential to support a diversity of wildlife due to the reduction in vegetation within these areas and impacts to soil structure and composition. The only evidence of animal use were a few scattered small mammal burrows within the margins of these area, the presence of a killdeer (*Charadrius vociferus*), and other bird species flying over the developed and gravel covered areas to more suitable foraging habitat (e.g., annual grasslands and woodlands). The buildings could serve as cover habitat for some species such as mice, rats and/or bats, and bird species may build nests within suitable areas of these developed lands. In fact, killdeer often choose gravel clearing areas to build non-descript nests.

2.3.2 Wastewater Disposal Basin

The site contains two wastewater disposal basins that were constructed within the last four years in the southern portion of the site. The basins are hydrologically connected by an overflow pipe, and both are composed of engineered slopes covered with black plastic. They

LEGEND

- **Developed / Gravel Clearings**
  72.88 Ac.
- **California Annual Grassland / Naturalized Golf Course Turf**
  68.84 Ac.
- **Blue Oak Woodland**
  13.39 Ac.
- **Wastewater Disposal Basin**
  7.60 Ac.
- **Ephemeral Channel**
  0.19 Ac.
- **Excavated Drainage Ditch**
  0.09 Ac.
- **Culverts**
  N/A



Source:
Topographic and Planimetric features courtesy of Raney Planning & Management, Inc.

1,000' 0 500' 1,000 feet
approximate scale

Live Oak Associates, Inc.

Tuscan Ridge
Habitats / Land Uses

Date	Project #	Figure #
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are surrounded by a chain link fence and gravel-covered levee roads. Both had a small amount of water in the bottom. One pair of killdeer and a mallard (*Anas platyrhynchos*) were observed in the bottom of one of the basins. Plants were extremely sparse within the levee road areas but included stinkwort, which was likely brought to the site by seed in the imported gravel.

Since these features are lined with a stable plastic liner, they are unlikely to support aquatic species other than birds that are likely to find the basins to be lacking in suitable forage. In general, this land use also has limited potential to support habitat for wildlife.

2.3.3 Blue Oak Woodland

Approximately 13.4 acres of the site consist of blue oak woodland, which primarily occur between Skyway Road and the former golf course play areas and between some of the course areas (Figure 3). A small portion of this habitat occurs on the site's southern boundary. Golf course pathways meander through the blue oak woodlands.

Based on a review of aerial imagery from the 1990s (Google Earth, accessed February 2022), the blue oak woodland that occurs on the site today are fragmented portions of what was once a larger and more contiguous habitat area, especially toward the northern portion of the site. The woodlands of the site have undergone losses during development of the golf course, during the 2018 Camp Fire, and again during clearing of portions of the site for the fire response camp operation between 2018 and 2020. Severe drought experienced in California may have also played a role in blue oak die-off in recent decades. In fact, blue oak mortality has increased significantly in California due to drought experienced in the past 10 years (Swiecki & Bernhardt 2020; Das et al. 2019). Many of the trees that were burned during the Camp Fire have continued to die-off over the subsequent years (CalTLC 2019 & 2020). Arborist reporting for the whole site (not just blue oak woodlands) makes clear that the trees that are listed as alive may not persist due to fire damage. The remaining living blue oak trees within the site represent a cohort of individual trees that have undergone significant threats.

This habitat is dominated by blue oak trees with subdominant trees within the canopy including California foothill pine (*Pinus sabiniana*). A few interior live oaks (*Quercus wislizenii*) were also present. A small stand of mostly California foothill pines is present in the northeastern part of the site, but for the rest of this habitat, blue oaks are the dominant tree. For the most part, the blue oak woodland understory is comprised of many of the same plants found within the California annual grassland habitat type (Section 2.3.4). However, a few additional shrubs and forbs were noted, especially within the southernmost thin margin of blue oak woodland within the site. The understory of the blue oak woodland includes some shrubs such as buckbrush (*Ceanothus cuneatus* ssp. *cuneatus*), coffeeberry (*Frangula californica*), Spanish broom (*Spartium junceum*), snowberry (*Symphoricarpos albus*), and poison oak (*Toxicodendron diversilobum*). In general, shrubs were not abundant, possibly due to the 2018 Camp Fire and competitive exclusion from annual plants. Other understory plants include Miner's lettuce (*Claytonia* sp.), stinkwort, panicled willow-herb (*Epilobium brachycarpum*), common St. John's-wort (*Hypericum perforatum*), and common mullein (*Verbascum thapsus*).

Oak woodlands typically serve as habitat for a rich suite of faunal species owing to the cover provided by the tree canopies, the increased forage offered by leaf litter and acorn production, and the numerous invertebrates that are adapted to oak species. Because the oak woodlands of this site have been reduced or damaged from waves of impacts (i.e., golf course development, Camp Fire, drought, and fire response grading), the species richness may be somewhat less than what would be expected under more pristine conditions. However, given that the site is surrounded by open space on most sides and is near somewhat intact oak woodlands, many of the animals that historically would have used this habitat type may still use the remnant oak woodlands that are present onsite.

Rock piles, fallen trees and tree limbs, shaded areas, and leaf litter in this habitat provide cover for amphibians and reptiles such as northwestern fence lizards (*Sceloporus occidentalis* ssp. *occidentalis*), southern alligator lizards (*Elgaria multicarinata*), ring-necked snake (*Diadophis punctatus*), Sierran tree frog (*Pseudacris sierra*), Skilton's skink (*Plestiodon skiltonianus skiltonianus*), and valley garter snakes (*Thamnophis sirtalis fitchi*), which forage in this habitat for insects, frogs, lizards, or small mammals.

Avian species utilize blue oak woodlands for multiple life functions including foraging, breeding habitat, and roosting or cover habitat. Species observed during the 2022 site visits included the red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), kestral (*Falco sparverius*), Stellar's jay (*Cyanocitta stelleri*), acorn woodpecker (*Melanerpes formicivorus*), northern flicker (*Colaptes auratus*), Anna's hummingbird (*Calypte anna*), Say's phoebe (*Sayornis saya*), western meadowlark (*Sturnella neglecta*), and western bluebird (*Sialia mexicana*).

The structural diversity of woodlands provides a reasonable food source for and can attract a variety of mammalian species, such as the black-tailed jackrabbit (*Lepus californicus*) that was observed while onsite. Mammalian predators such as cougars (*Puma concolor*), coyotes (*Canis latrans*), gray foxes (*Urocyon cinereoargenteus*), and bobcats (*Lynx rufus*), may occur within the site to hunt smaller mammals. Coyote scat was observed during the 2022 surveys. Evidence of small mammals was seen in the forms of small burrows, worn paths through the grasses, and characteristic digging by Botta's pocket gopher (*Thomomys bottae*). Other mammals that may occur include mule deer (*Odocoileus hemionus*), northern raccoon (*Procyon lotor*), western striped skunk (*Mephitis mephitis*), deer mouse (*Peromyscus maniculatus*), and brush rabbit (*Sylvilagus bachmani*).

2.3.4 California annual grassland/naturalized golf course turf

Approximately 68.8 acres of the site is comprised of California annual grassland, much of it consisting of former golf course turf and reclaimed course features such as sand bunkers. A former golf cart pathway meanders through portions of this habitat type. Due to the 2018 Camp Fire, some of the grasslands have increased after most of the trees of the site were fatally burned, reducing the previous extent of blue oak woodlands within the site (CalTLC 2019 & 2020). A few scattered blue oaks and grey pines persist within the grasslands, though their canopies are not sufficiently dominant to constitute being an extension of the blue oak woodland habitat. Several rocky outcrops and patches of exposed bedrock were also noted.

The dominant plant forms within this habitat are grasses, many of which were too undeveloped to identify during the January and February 2022 site visits. It is likely much of the grass consists of remnant perennial turf grasses that have persisted in areas of the site following discontinuation of the golf course. Plant species that were identified include fire weed (*Amsinckia* sp.), yellow carpet (*Blennosperma nanum*), ripgut brome (*Bromus diandrus*), buckbrush, yellow star thistle (*Centaurea solstitialis*), Bermuda grass (*Cynodon dactylon*), blue dicks (*Dipterostemon capitatus*), Medusa head, fillarees, shield-bracted mimulus (*Erythranthe glaucescens*), California poppy (*Eschscholzia californica*), common St. John's-wort, white horehound (*Marrubium vulgare*), wild radish, common groundsel (*Senecio vulgaris*), milk thistle (*Silybum marianum*), fringepods (*Thysanocarpus radians*), and butter-and-eggs (*Triphysaria eriantha eriantha*). A few species were noted in association with the rocky outcrops including soap plant (*Chlorogalum* sp.), yerba santa (*Eriodictyon californicum*), buckwheat (*Eriogonum* sp.), and bird's foot cliffbrake (*Pellaea mucronata*).

Many of the same suite of species described within the blue oak woodlands would also be present within the grasslands of the site, although the habitat usage and forage options would slightly differ. Animal species that were specifically observed within the California annual grasslands included the Anna's hummingbird, meadowlark, house finch (*Haemorhous mexicanus*), horned larks (*Eremophila alpestris*), black-tailed jackrabbit. Evidence of Botta's pocket gopher was also present.

2.3.5 Ephemeral Channel

An ephemeral channel occurs in the northwestern portion of the site just south of Skyway Road. The channel conveys water southwest through grassland, blue oak woodland, and then through an onsite ravine within the site. The channel flows through several culverts and along the extant golf course pathway for a portion of its length (Appendix A, Photos 11 and 12). At the downstream end of the channel, it enters a large culvert beneath a berm that directs the channel offsite. At the top of the ravine, the channel passes over a cave-like rock formation in the form of a short waterfall. Portions of the channel contained shallow, stagnant to very slow-moving water. Other portions of the channel, including the upstream reaches of the channel, were dry during the 2022 site visit.

In general, the channel was fairly rocky. Vegetation in association with the channel contained many of the same species observed within the oak woodland and grassland areas of the site. Scattered blue oaks, buckbrush, and poison oak provided much of the limited tree and shrub layer of the channel banks. Dead cottonwood trees (*Populus fremontii*) were also observed near the channel. The dominant plants of this habitat area included unidentified grasses and forbs such as poison hemlock (*Conium maculatum*), summer mustard (*Hirschfeldia incana*), milk thistle, monkey flower, and a spurge (*Euphorbia* sp.).

While well-developed channel systems typically exhibit structural complexity, this channel appears to be highly ephemeral in nature and tends to have a limited riparian influence. It is likely that the ravine in which the channel occurs (Attachment A) was carved down by water, but the hydrology of the channel does not appear to support moisture much beyond storm events except for a few shallow pools that persist for a short period after such events.

Wildlife that occurs elsewhere in the region are likely drawn to the water source of the channel when water is available.

2.4 TREE RESOURCES OF THE SITE

In 2019 and 2020, an arborist firm conducted an evaluation of trees of the site following the 2018 Camp Fire. Arborist documentation of tree resources of the site include 843 trees (CalTLC 2019 & 2020). Approximately 89% of the trees of the site are native blue oak trees. California foothill pine trees make up approximately 9% of the trees of the site. The remaining approximately 2% of trees include interior live oak, Fremont cottonwood, willows, one fig tree (*Ficus carica*), and Italian stone pines (*Pinus pinea*). The trees are dominant within the woodlands of the site, but they also occur in large numbers throughout the remaining habitats and land use areas. Approximately 99.6% of the trees documented onsite are considered native to the site (i.e., all trees except the fig and Italian stone pines), meaning these species would have likely been found onsite, occurring naturally, prior to human manipulation of this site (i.e., prior to initial construction of the golf course in 2001). Furthermore, many of these trees are recommended for removal by the certified arborists who have evaluated the site (CalTLC 2019 & 2020). This recommendation is based on potential hazards posed by the trees and appears to be unrelated to the proposed Tuscan Ridge Development project. Recommendations are largely due to damage sustained by the vegetation of the site during the 2018 Camp Fire, damage that may have been exacerbated by severe drought in California in the years preceding the fire. Of the 459 trees that are not recommended for removal, 426 of them (approximately 93%) are blue oak trees.

Given the recent occurrence of the fire and the potential time lag of tree death that may occur after drought and fire impacts, it is possible that additional trees have died since these arborist studies. Also, this arborist study did not evaluate the potential impacts to trees from the proposed Tuscan Ridge Planned Development project.

2.5 SPECIAL STATUS PLANTS AND ANIMALS

Many plant and animal species in California have naturally low populations, limited distributions, or both. Such species are vulnerable to extirpation as the state's human population grows and the habitats these species occupy are converted to urban, agricultural, and other human uses. Plant and wildlife species have also experienced an anthropogenic decline in population numbers due to habitat loss and degradation, climate change, the introduction of non-native competitors, hunting, and other factors.

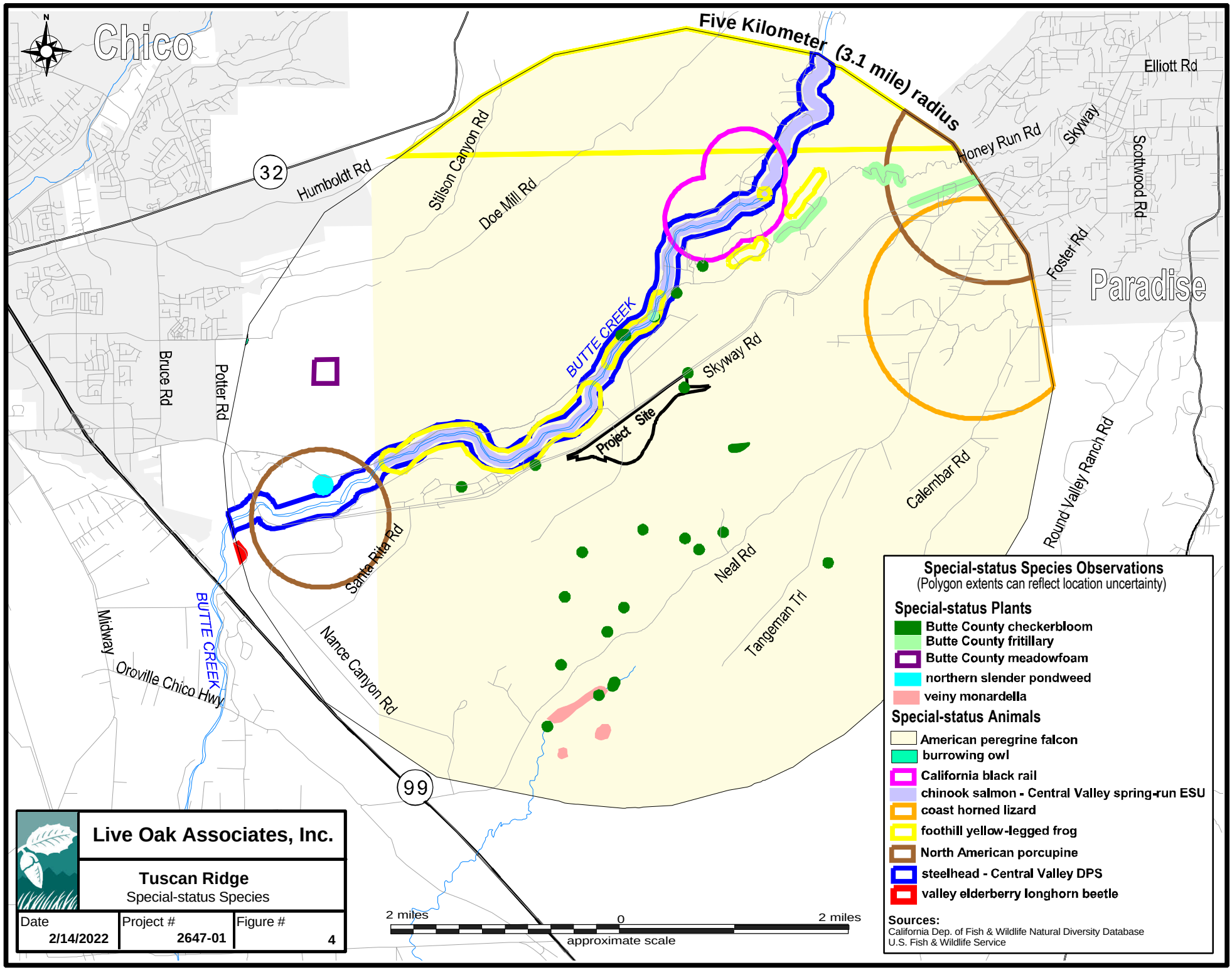
Federal and state endangered species legislation provides a legal mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. As described more fully in Section 3.2, state and federal laws provide the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. Many native plants and animals have been formally designated as threatened or endangered under state and federal endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as "species of special concern" by the CDFW. The California Native Plant Society (CNPS) has

developed its own set of lists of native plants considered rare, threatened, or endangered (CNPS 2022). Collectively, these plants and animals are referred to as "special status species."

The California Natural Diversity Database (CDFW 2022) and the California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2022) were queried for special status species occurrences in the Hamlin Canyon USGS 7.5" quadrangle in which the project site occurs and for the eight surrounding quadrangles (Richardson Springs, Paradise West, Paradise East, Chico, Nelson, Shippee, Cherokee, and Oroville). These species and their potential to occur on the project site are summarized in Tables 1 and 2. This information was used to evaluate the potential for special status plant and animal species to occur on the project site. Other factors considered in this evaluation include the ability of the habitats occurring on the site to support the species, geographical distance of the project site from known populations or occurrences of the species, and ability of the species to travel from areas of known populations or occurrences to the project site. Figure 4 presents the location of special status species reported in the California Natural Diversity Data Base (CNDDB).

Because serpentine, adobe, and alkaline soils are absent from the site, those species that are uniquely adapted to these soil conditions are also considered to be absent. These include the Jepson's onion (*Allium jepsonii*), chaparral sedge (*Carex xerophila*), pink creamsacs (*Castilleja rubicundula* var. *rubicundula*), recurved delphinium (*Delphinium recurvatum*), Ahart's buckwheat (*Eriogonum umbellatum* var. *ahartii*), caribou coffeeberry (*Frangula purshiana* spp. *ultramafica*), adobe lily (*Fritillaria pluriflora*), and Colusa layia (*Layia septentrionalis*).

Other plant species occur in habitats that are not present on the site (e.g., vernal pools, chaparral, coniferous forest, chenopod scrub, marshes, broadleaf upland forest, etc.) or at elevations that are significantly higher than the site and, therefore, are also considered absent from the project site. These species include the Butte County morning-glory (*Calystegia atriplicifolia* ssp. *buttensis*), dissected-leaved toothwort (*Cardamine pachystigma* var. *dissectifolia*), Hoover's spurge (*Euphorbia hooveri*), Woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*), California satintail (*Imperata brevifolia*), closed-throated beardtongue (*Penstemon personatus*), California beaked-rush (*Rhynchospora californica*), brownish beaked-rush (*Rhynchospora capitellata*), northern slender pondweed (*Stuckenia filiformis* ssp. *alpina*), and Green's tuctoria (*Tuctoria greenei*).


Chico
Five Kilometer (3.1 mile) radius
Elliott Rd
Honey Run Rd
Skyway
Scottwood Rd
Foster Rd
Paradise
32
Humboldt Rd
Stilson Canyon Rd
Doe Mill Rd
BUTTE CREEK
Skyway Rd
Project Site
Bruce Rd
Potter Rd
Calernbar Rd
Round Valley Ranch Rd
Santa Rita Rd
Neal Rd
Midway
Oroville Chico Hwy
BUTTE CREEK
Nance Canyon Rd
Tangeman Trl
99
Special-status Species Observations
(Polygon extents can reflect location uncertainty)
Special-status Plants
Butte County checkerbloom
Butte County fritillary
Butte County meadowfoam
northern slender pondweed
veiny monardella
Special-status Animals
American peregrine falcon
burrowing owl
California black rail
chinook salmon - Central Valley spring-run ESU
coast horned lizard
foothill yellow-legged frog
North American porcupine
steelhead - Central Valley DPS
valley elderberry longhorn beetle
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
U.S. Fish & Wildlife Service
2 miles
0
2 miles
approximate scale
Live Oak Associates, Inc.
Tuscan Ridge
Special-status Species
Date
2/14/2022
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2647-01
Figure #
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Table 1. Special status plant species that could occur on the project site and vicinity (CDFW 2022; CNPS 2022).

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Acts

Common and scientific names	Status	General habitat description and blooming period	*Occurrence in the study area
Butte County meadowfoam *Limnanthes floccosa* ssp. *californica*	FE, CE, CRPR 1B	Habitat: Valley and foothill grassland and vernal pools. Elevation: 46-930 meters. Blooms: March–May. Life form: annual herb.	**Absent.** Vernal pools are absent from the site. The nearest documented occurrence of this species is 2.5 miles from the site, across Butte Creek Canyon from the site.
PLANTS (adapted from CDFW 2022 and CNPS 2022) ***Other special status plants listed by CNPS***			
Big-scale balsamroot *Balsamorhiza macrolepis*	CRPR 1B	Habitat: Chaparral, cismontane woodland, and valley and foothill grasslands; sometimes on serpentinite Elevation: 45-1555 meters. Blooms: March–June. Life form: Perennial herb.	**Unlikely.** While potentially suitable habitats are present onsite, the nearest documented occurrence of this species is from more than 6 miles to the west and 7 miles to the south of the site. Serpentine soils are lacking from the site.
Brandegee's clarkia *Clarkia biloba* ssp. *brandegeeae*	CRPR 1B	Habitat: Chaparral, cismontane woodland, lower montane coniferous forest; often on roadsides. Elevation: 75-915 meters. Blooms: May-July. Life form: Annual herb.	**Absent.** This species not known to occur near the site; in fact, this species has not been documented within 14 miles of the site.
White-stemmed clarkia *Clarkia gracilis* ssp. *albicaulis*	CRPR 4	Habitat: Chaparral, cismontane woodland; sometimes on serpentinite. Elevation: 30-840 meters. Blooms: May–July. Life form: Annual herb.	**Unlikely.** While potentially suitable habitat is present in the form of the blue oak woodlands, serpentine soils are absent from the site and this species has not been documented within 6 miles of the site.
Mildred's clarkia *Clarkia mildrediae* ssp. *mildrediae*	CRPR 1B	Habitat: Cismontane woodland, lower montane coniferous forest within sandy soils and usually on granitic soils. Elevation: 245-1710 meters. Blooms: May–August. Life form: Annual herb.	**Absent.** The site is at the lower end of the elevation range for this species, and this species is more commonly found within yellow pine forests than woodlands. The nearest documented occurrence of this species is more than 10 miles from the site.
Mosquin's clarkia *Clarkia mosquinii*	CRPR 1B	Habitat: Cismontane woodland and lower montane coniferous forests in rocky soils along roadsides. Elevation: 185-1490 meters. Blooms: May-July (rarely through September). Life form: Annual herb.	**Absent.** While potentially suitable habitat is present on the site, the nearest documented occurrences of this species are more than 9 miles from the site, and these occurrences are within openings of coniferous forests.

Table 1. Special status plant species that could occur on the project site and vicinity (CDFW 2022; CNPS 2022).

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Acts

Common and scientific names	Status	General habitat description and blooming period	*Occurrence in the study area
Butte County fritillary *Fritillaria eastwoodiae*	CRPR 3	Habitat: Chaparral, cismontane woodland, Lower montane coniferous forest; sometimes on serpentinite. Elevation: 50-1500 meters. Blooms: March-June. Life Form: Perennial bulbiferous herb	**Unlikely.** This species has been documented less than 1 mile from the site at the bottom of Butte Creek Canyon near the Honey Run Bridge that once spanned Butte Creek. This species often occurs within serpentinite soils that are absent from the site, and it occurs more typically in coniferous forests or openings of such forests, which are lacking from the site.
Red Bluff dwarf rush *Juncus leiospermus* var. *leiospermus*	CRPR 4	Habitat: Chaparral, cismontane woodland, meadows and seeps, valley and foothills grassland, vernal pools; within vernally mesic soils. Elevation: 35-1250 meters. Blooms: March-June. Life Form: Annual herb	**Absent.** Vernally mesic soils are absent from the site. In addition, the nearest documented occurrence of this species is more than 6 miles to the east of the site.
Woolly meadowfoam *Limnanthes floccosa* ssp. *floccosa*	CRPR 4	Habitat: Chaparral, cismontane woodland, valley and foothill grassland, and vernal pools; within vernally mesic soils. Elevation: 60-1335 meters. Blooms: March- May (rarely through June). Life Form: Annual herb	**Absent.** This species primarily occurs in association with vernal pool complexes in moist soils. Vernal pools are absent from the site. The nearest documented occurrence of this species is more than 6 miles from the site.
Veiny monardella *Monardella venosa*	CRPR 1B	Habitat: Cismontane woodland and valley and foothill grasslands; on clay soils. Elevation: 60-410 meters. Blooms: May-July. Life Form: Annual herb	**Possible.** This species is documented as occurring just over 2 miles from the site, and potentially suitable habitats are present within the site. This species was once thought to be extinct, so known populations are well studied. However, soils of the site may not be suitable.
Lewis Rose's ragwort *Packera eurycephala* var. *lewisrosei*	CRPR 1B	Habitat: Chaparral, cismontane woodland, Lower montane coniferous forest; typically on serpentine soils. Elevation: 274-1890 meters. Blooms: March-June (rarely in August and September). Life Form: Perennial herb.	**Absent.** This species typically occurs on serpentine soils, which are absent from the site. The nearest documented occurrence of this species is more than 8 miles from the site.

Table 1. Special status plant species that could occur on the project site and vicinity (CDFW 2022; CNPS 2022).

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Acts

Common and scientific names	Status	General habitat description and blooming period	*Occurrence in the study area
Ahart's paronychia *Paronychia ahartii*	CRPR 1B	Habitat: Cismontane woodland, valley and foothill grassland, and vernal pools. Elevation: 50-510 meters. Blooms: February-June. Life Form: Annual herb	**Absent.** The nearest documented occurrence is more than 7.5 miles northwest of the site, and vernal pools are absent from the site. Also, the grasslands of the site have been largely damaged through conversion to the golf course and other impacts.
Butte County Checkerbloom *Sidalcea robusta*	CRPR 1B	Habitat: Chaparral and cismontane woodland. Elevation: 90-1600 meters. Blooms: April-June. Life Form: Annual herb	**Likely.** This species occurs in woodlands typical of the site, and it has been identified in multiple locations surrounding the site including from one location within or immediately adjacent to the site.
Butte County golden clover *Trifolium jokerstii*	CRPR 1B	Habitat: Valley and foothill grassland and vernal pools. Elevation: 50-480 meters. Blooms: March-May. Life Form: Annual herb	**Absent.** Suitable habitat is generally lacking from the site, and this rare plant is only known from the North Table Mountain Preserve, more than 10 miles to the southeast from the site.

Table 2. Special status wildlife species that could occur on the project site and vicinity (CDFW 2022).

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Acts

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	Vernal pools of California's Central Valley.	**Absent**. Vernal pools are absent from the site. The nearest documented occurrences of this species are more than 8 miles south of the site.
Vernal pool tadpole shrimp *Lepidurus packardi*	FE	Occurs in vernal pools containing clear to highly turbid water in unplowed grasslands of the Central Valley.	**Absent**. Vernal pools are absent from the site. The nearest documented occurrence of this species is approximately 4 miles west of the site.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	Occur strictly in association with their host plant, elderberry trees. Larvae burrow into stems upon hatching and can persist for several years within the stem of the tree before exiting. Mating occur	**Absent.** Elderberry trees are absent from the site; however, one was observed just offsite to the south within oak woodland habitat. This tree will not be impacted by project activities.

Table 2. Special status wildlife species that could occur on the project site and vicinity (CDFW 2022).

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Acts

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Foothill yellow-legged frog *Rana boylii*	FE, CSC	Occurs in swiftly flowing streams and rivers with rocky substrate with open, sunny banks in forest, chaparral, and woodland habitats, and can sometimes be found in isolated pools and ponds.	**Absent.** Suitable habitat is completely lacking.
Giant gartersnake *Thamnophis gigas*	FT, CT	Considered a fairly aquatic snake, this species prefers freshwater marsh and low gradient streams. It has adapted to drainage canals and irrigation ditches. Can also occur within adjacent habitats.	**Absent.** Suitable aquatic habitat is lacking from the site; the channel of the site is highly ephemeral and is not considered sufficient to support this species. Also, this snake has not been documented within 10 miles of the site.
California black rail *Laterallus jamaicensis coturniculus*	CT, FP	Inhabits freshwater marshes, wet meadows, and shallow margins of saltwater marshes bordering larger bays.	**Absent.** Suitable habitat is completely lacking.
Swainson's hawk *Buteo swainsoni*	CT	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	**Possible.** While an individual may forage within the site from time to time, breeding within the site would be very unlikely. Swainson's hawks typically nest in trees or tall structures adjacent to open farmland, grassland, or prairie. The site is fairly impacted by historical uses, and it would not be considered important foraging habitat given the amount of development / gravel surfacing. Nesting has been documented approximately 6 miles from the site to the west.
Bald eagle *Haliaeetus leucocephalus*	CT (Federally delisted), FP	Primarily known to occur near water bodies, especially within or near heavily forested areas. Fish constitutes the primary food, so they only occur near suitable aquatic habitat for foraging and breeding.	**Unlikely.** Suitable nesting and breeding habitat are absent from the site. A bald eagle may fly over the site from time to time, and one may perch temporarily within a tree of the site, however, the site does not offer important habitat resources for this species.
Least Bell's vireo *Vireo bellii pusillus*	FE, CE	Occurs primarily within dense riparian habitat, especially willow riparian forests.	**Absent.** Suitable willow riparian habitat is lacking for this species.

Table 1. Special status wildlife species that could occur on the project site and vicinity (CDFW 2022).

California Species of Special Concern and Protected Species

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Western spadefoot *Spea hammondii*	CSC	Primarily occurs in grasslands, but also occurs in valley and foothill hardwood woodlands. Requires vernal pools or other temporary wetlands for breeding.	**Absent.** Vernal pools required for breeding are absent from the Project Site.
Western pond turtle *Emys marmorata*	CSC	Intermittent and permanent waterways that are either still or slow-moving including streams, marshes, rivers, ponds and lakes throughout much of California. Needs rocks/logs for basking and sandy banks or grassy open fields for egg laying.	**Absent.** Suitable habitat is completely lacking.
Coast horned lizard *Phrynosoma blainvillii*	CSC	Grasslands, scrublands, oak woodlands, etc. of central California. Common in sandy washes with scattered shrubs.	**Possible.** Potentially suitable habitat is present within the site, and this species is known to occur within 11 miles of the site. The nearest record (shown on Figure 3) is from 1933 and has a locational error of several miles.
White-tailed kite *Elanus leucurus*	CP	Open grasslands and agricultural areas throughout central California.	**Possible**. Potentially suitable foraging and nesting habitat is present onsite and abundant within the region.
Northern harrier *Circus cyaneus*	CSC	Frequents meadows, grasslands, open rangelands, freshwater emergent wetlands; uncommon in wooded habitats.	**Unlikely**. Marginal foraging habitat is present onsite, but nesting habitat is absent. This species would most likely fly over the site from time to time en route to more typical habitat.
American Peregrine Falcon (nesting) *Falco peregrinus anatum*	CP	Individuals breed on cliffs in the Sierra or in coastal habitats; occurs in many habitats of the state during migration and winter.	**Possible.** Breeding habitat for this species is absent; however, potential breeding habitat occurs in the rocky cliffs near the site. An individual may reasonably be expected to fly over the site from time to time during foraging or en route to more suitable habitats, but suitable nesting areas are absent.
Burrowing owl *Athene cunicularia*	CSC	Frequents open, dry annual or perennial grasslands, deserts, scrublands, and ruderal areas characterized by low growing vegetation. Dependent upon burrowing mammals, most notably the California ground squirrel, for nest burrows.	**Absent.** Suitable burrows were not observed during the 2022 site visit. Furthermore, burrowing owls do not burrow or forage within wooded areas. While grasslands are present on site, they are studded with trees, and they are part of a mosaic within oak woodlands. This species has been documented as occurring approximately 9 miles from the site.

Table 1. Special status wildlife species that could occur on the project site and vicinity (CDFW 2022).

California Species of Special Concern and Protected Species

Common and scientific names	Status	General habitat description	*Occurrence in the study area
California yellow warbler *Dendroica petechia brewsteri*	CSC	Nests in riparian thickets, especially in alders, willows, and cottonwoods. May also utilize chaparral/scrubland.	**Absent.** Suitable habitat is completely lacking.
Tricolored blackbird *Agelaius tricolor*	CSC	Breeds near fresh water, primarily emergent wetlands, with tall thickets, typically of cattails or bulrushes. Forages in nearby grassland and cropland habitats.	**Absent.** Suitable habitat is completely lacking.
Pallid bat *Antrozous pallidus*	CSC	Typically occurs in deserts, but can also occur in grasslands, chaparral, woodlands, and forests; most common in dry rocky open areas providing roosting opportunities. Roost sites include caves, mines, rock crevices, and large cavities of trees.	**Unlikely.** At best, the site provides marginal foraging habitat for this species, but it is unlikely to occur within the site because the site is not the typical habitat for this species. Only one occurrence from 1992 with limited information has been documented regionally.
Townsend's big-eared bat *Corynorhinus townsendii*	CSC	Primarily a cave-dwelling bat that may also roost in buildings, bridges, rock crevices, and hollow trees. Occurs primarily in deserts and conifer forest habitats.	**Possible.** Potential foraging habitat is present on the site. Tree hollows and unused buildings of the site may provide, at best, marginal roosting habitat.
Western red bat *Lasiurus blossevillii*	CSC	Roosts primarily in trees, typically mature riparian species or fruit and nut trees. They can occasionally use caves. Prefers habitat edges and mosaics with trees.	**Possible.** Roosting habitat for this species is absent from the site. A foraging individual may pass through the site from time to time.
Western mastiff bat *Eumops perotis californicus*	CSC	Frequents open, semi-arid to arid habitats, including conifer, and deciduous woodlands, coastal scrub, grasslands, palm oasis, chaparral and urban. Requires tall locations for roosting in cliff faces, high buildings, trees and tunnels.	**Unlikely.** This species typically roosts in cavities within cliff faces, which are absent from the site. Also, foraging is often high above the ground. An individual may fly over the site from time to time.
American badger *Taxidea taxus*	CSC	Drier open stages of most shrub, forest and herbaceous habitats with friable soils, specifically grassland environments. Natal dens occur on slopes.	**Unlikely.** This species has not been documented within 12 miles of the site, and it appears to be rare in the region. Also, soils of the site are shallow and generally unsuitable for badger habitat.

Table 1. Special status wildlife species that could occur on the project site and vicinity (CDFW 2022).

California Species of Special Concern and Protected Species

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Ringtail *Bassariscus astutus*	CSC	Occurs in riparian habitats, forested habitats, and mature woodlands, within rocky areas, or forests. They utilize caves, tree hollows, mine shafts, and abandoned burrows of other animals as denning habitat.	**Possible.** Ringtails are known to occur regionally, but the woodlands of the site have been fragmented, and some areas have been highly disturbed over the last 20 years. Still, ringtails could forage within or pass through the site from time to time. Given the site disturbances, it is somewhat unlikely they would utilize the site for extended periods. However, there is still a chance that they could utilize hollows of trees from the site, rock crevices, or attic spaces of buildings for roosting or as breeding habitat.

***Explanation of Occurrence Designations and Status Codes**

Present: Species observed on the Project Site at time of field surveys or during recent past.
Likely: Species not observed on the Project Site, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed on the Project Site, but it could occur there from time to time.
Unlikely: Species not observed on the Project Site, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed on the Project Site and precluded from occurring there because habitat requirements not met.

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CR	California Rare
FC	Federal Candidate	CP	California Protected
		CTC	California Threatened (Candidate)
		CSC	California Species of Special Concern

CRPR	California Rare Plant Rank		
1A	Plants Presumed Extinct in California	3	Plants about which we need more information – a review list
1B	Plants Rare, Threatened, or Endangered in California and elsewhere	4	Plants of limited distribution – a watch list
2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere		

2.6 DESIGNATED CRITICAL HABITAT

The USFWS often designates areas of critical habitat when it lists species 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.

There is no designated critical habitat for any species on or adjacent to the project site.

2.7 SENSITIVE NATURAL COMMUNITIES

California contains a wide range of natural communities, or unique assemblages of plants and animals. These communities have largely been classified and mapped by CDFW as part of its natural heritage program. Natural communities are assigned state and global ranks according

to their rarity and the magnitude and trend of the threats they face. Natural communities with a state rank of 1-3 (on a 1-5 scale) are considered sensitive and must be considered in CEQA review. Examples of sensitive natural communities include various types of wetlands and riparian habitat.

Some blue oak woodland alliances are considered sensitive natural communities by the CDFW based on their range, limited distribution, rarity, and threats from development (CDFW 2022). However, while blue oak woodlands occur onsite, no blue oak woodland alliances that are currently considered sensitive (e.g., blue oak and California juniper alliance) are present. Blue oak woodlands such as those occurring onsite have a global rank of G4 and a state rank of S4. These rankings mean these habitats may be secure from threat, but factors exist to cause some concern (i.e., there is some threat, or somewhat narrow habitat).

2.8 WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors are areas where regional wildlife populations regularly and predictably move during dispersal or migration. Landscape linkages refer to areas that allow for the movement of wildlife and plant species from a specific area of suitable habitat to another (Ament et al. 2014). A linkage can vary from a narrow strip of habitat that functions as a conduit for movement (i.e., a corridor) to a large area of intact habitat that can allow for daily travel by animals throughout their home ranges, accommodate migration to support life history needs (e.g., breeding or foraging), support genetic diversity, and provide ability for species to adapt to climate change (Nathan et al. 2008). Many landscape linkages are broad areas of regional movement corridors for wildlife that generally include a wide swath of land used for movement between two or more core areas for multiple regional species (Bastille-Rousseau and Wittemyer 2020).

Landscape linkages are vital to terrestrial animals for connectivity between core habitat areas (i.e., larger intact habitat areas where species carry out their life cycle). Connections between two or more core habitat areas help ensure that genetic diversity is maintained, thereby diminishing the probability of inbreeding depression and geographic extinctions. Linkages between core habitat areas allow wildlife to access key locations containing diverse biological resources essential for survival and maintenance of their life cycles.

In California, movement corridors are typically associated with valleys, rivers and creeks supporting riparian vegetation, and ridgelines. Corridors containing higher-quality habitat have minimal human footprints (e.g., roads and buildings) and are preferable to wildlife over corridors supporting little cover (i.e., sparse vegetation) and development (e.g., high-density roads).

The importance of an area as a movement corridor depends on the wildlife species being considered and their consistent use patterns. Animal movements generally can be divided into three major behavioral categories:

- Movements within a home range or territory;
- Movements during migration; and
- Movements during dispersal.

The site occurs adjacent to Skyway Road, a 4-land road which supports moderate to heavy traffic. However, the remainder of the surrounding land uses are open space areas that serve as suitable movement habitat for species. The ephemeral channel of the site likely serves as a movement corridor for some species in a more meaningful way, especially when water is present.

2.9 JURISDICTIONAL WATERS

Jurisdictional waters include rivers, creeks, and drainages that have a defined bed and bank and which, at the very least, carry ephemeral flows. Jurisdictional waters also include, but are not limited to, lakes, ponds, reservoirs, and wetlands. Such waters may be subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Wildlife (CDFW), and the California Regional Water Quality Control Board (RWQCB).

As of the date of this report, a formal aquatic resources delineation of the site has not been completed. The site occurs within the Butte Creek watershed, and the ephemeral channel in the northwest half of the site is a potentially jurisdictional water. In general, this feature has a defined bed and bank and indicators of an ordinary high water mark. At its downstream end within the site boundary, this feature is represented as a USGS blue line. It flows downslope to the southwest, passes under Highway 99, and drains into the Durham Mutual Water Company Ditch, which conveys diverted water from Butte Creek to the Durham service area. Downstream, the Durham Mutual Water Company Ditch hydrologically connects to Hamlin Slough, which is tributary to Butte Creek. Butte Creek is tributary to the Sacramento River, a known water of the U.S.

If the ephemeral drainage is determined by the USACE to be a water of the U.S. (Section 3.6), the limit of USACE jurisdiction, as well as that of the RWQCB, is the ordinary high water mark in the absence of adjacent wetlands. It is our experience that the RWQCB will claim jurisdiction to the same limits as those of the CDFW (i.e., to the top of bank or edge of associated riparian vegetation, whichever is greater). The ephemeral channel would also be subject to the CDFW's jurisdiction. Their limit of jurisdiction would be the top of bank or the edge of associated riparian vegetation, whichever is greater. Recently, the CDFW has also attempted to exert jurisdiction over the 100-year floodplain of creek channels where the floodplain extends beyond the riparian limits of that channel.

A drainage ditch was excavated in the gravel clearings around 2020 (Figure 3 Appendix A, Photo 4), presumably to drain surface runoff from base camp operations. This feature is manmade, was excavated in and drains uplands, and does not replace any historical, natural watercourse. Therefore, this feature should not be considered a jurisdictional water.

The wastewater disposal basins are lined, manmade features that were created in uplands and are used for treating wastewater. These features would not be regulated by the USACE, RWQCB, or CDFW.

3 REGULATORY FRAMEWORK

This section discusses the regulatory framework within which the project must be implemented. This includes a summary of the federal, state, and local laws regulating biological resources and any other environmental policies and plans relevant to this analysis.

3.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

In California, any project carried out or approved by a public agency that will result in a direct or reasonably foreseeable indirect physical change in the environment must comply with CEQA. The purpose of CEQA is to ensure that a project's potential impacts on the environment are evaluated, and methods for avoiding or reducing these impacts are considered before the project is allowed to move forward. A secondary aim of CEQA is to provide justification to the public for the approval of any projects involving significant impacts on the environment.

According to *2019 CEQA Status and Guidelines* (2019), a significant effect on the environment means "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest." Although the lead agency may set its own CEQA significance thresholds, project impacts to biological resources are generally considered to be significant if they would meet any of the following criteria established in Appendix G of the CEQA Guidelines:

- 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 Wildlife 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 Wildlife or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on state or federally protected wetlands (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; and
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Furthermore, CEQA Guidelines Section 15065(a) states that a project may trigger the requirement to make a "mandatory findings of significance" if the project has the potential to:

- Substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare or threatened species; or eliminate important examples of the major periods of California history or prehistory.
- Achieve short-term environmental goals to the detriment of long-term environmental goals.
- Produce environmental effects that are individually limited but cumulatively considerable, meaning that the incremental effects of the project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects.
- Produce environmental effects that cause substantial adverse effects on human beings, either directly or indirectly.

3.2 THREATENED AND ENDANGERED SPECIES

State and federal "endangered species" legislation has provided the CDFW and USFWS with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Species listed as threatened or endangered under provisions of the state and federal Endangered Species Acts, candidate species for such listing, state species of special concern, and some plants listed as endangered by the California Native Plant Society are collectively referred to as "species of special status." Permits may be required from both the CDFW and USFWS if activities associated with a proposed project will result in the take of a listed species. To "take" a listed species, as defined by the state of California, is "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" said species (California Fish and Game Code, Section 86). "Take" is more broadly defined by the federal Endangered Species Act to include "harm" of a listed species (16 USC, Section 1532(19), 50 CFR, Section 17.3). Furthermore, the CDFW and the USFWS are responding agencies under CEQA. Both agencies review CEQA documents to determine the adequacy of their treatment of endangered species issues and to make project-specific recommendations for their conservation.

3.3 MIGRATORY BIRDS

State and federal laws also protect most bird species. The State of California signed Assembly Bill 454 into law in 2019, which clarifies native bird protection and increases protections where California law previously deferred to Federal law. The Federal Migratory Bird Treaty Act (FMBTA: 16 U.S.C., scc. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

3.4 BIRDS OF PREY

Birds of prey are protected in California under provisions of the State Fish and Game Code, Section 3503.5, which states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the CDFW.

Additionally, the Bald and Golden Eagle Protection Act (16 U.S.C., scc. 668-668c) prohibits anyone from taking bald or golden eagles, including their parts, nests, or eggs, unless authorized under a federal permit. The act prohibits any disturbance that directly affects an eagle or an active eagle nest as well as any disturbance caused by humans around a previously used nest site during a time when eagles are not present such that it agitates or bothers an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

3.5 BATS

Section 2000 and 4150 of the California Fish and Game Code states that it is unlawful to take or possess a number of species, including bats, without a license or permit, as required by Section 3007. Additionally, Title 14 of the California Code of Regulations states it is unlawful to harass, herd, or drive a number of species, including bats. To harass is defined as "an intentional act which disrupts an animal's normal behavior patterns, which includes, but is not limited to, breeding, feeding or sheltering." For these reasons, bat colonies in particular are sensitive and therefore, disturbances that cause harm to bat colonies are unlawful.

3.6 JURISDICTIONAL WATERS AND WETLANDS

Jurisdictional waters include waters of the United States subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE) and waters of the State of California subject to the regulatory authority of the California Department of Fish and Wildlife (CDFW) and the California Regional Water Quality Control Board (RWQCB).

3.6.1 Clean Water Act, Section 404

The USACE regulates the filling or grading of Waters of the U.S. under the authority of Section 404 of the Clean Water Act. Drainage channels and adjacent wetlands may be considered "waters of the United States" or "jurisdictional waters" subject to the jurisdiction of the USACE. The extent of jurisdiction has been defined in the Code of Federal Regulations and clarified in federal courts.

The definition of waters of the U.S. have changed several times in recent years. In January 2020, the Environmental Protection Agency (EPA) and USACE jointly issued the Navigable Waters Protection Rule. The new rule was published in the Federal Register on April 21, 2020 and took effect on June 22, 2020.

On August 30, 2021, the U.S. District Court for the District of Arizona issued an order vacating and remanding the Navigable Waters Protection Rule. In light of this order, the EPA and USACE have halted implementation of the Navigable Waters Protection Rule and are interpreting "waters of the United States" consistent with the pre-2015 regulatory regime until further notice.

The pre-2015 regulatory regime defines waters of the U.S. as:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    a. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    c. Which are used or could be used for industrial purposes by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under this definition;
5. Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;
6. The territorial sea;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

All activities that involve the discharge of dredge or fill material into waters of the U.S. are subject to the permit requirements of the USACE under Section 404 of the Clean Water Act. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued without a CWA Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards (Section 3.6.2).

3.6.2 Porter-Cologne Water Quality Act/Clean Water Act, Section 401

There are nine Regional Water Quality Control Boards (RWQCB) statewide; collectively, they oversee regional and local water quality in California. The RWQCB administers Section 401

of the Clean Water Act and the Porter-Cologne Water Quality Control Act. The RWQCB for a given region regulates discharges of fill or pollutants into waters of the State through the issuance of various permits and orders.

Pursuant to Section 401 of the Clean Water Act, the RWQCB regulates waters of the State that are also waters of the U.S. Discharges into such waters require a Section 401 Water Quality Certification from the RWQCB as a condition to obtaining certain federal permits, such as a Clean Water Act Section 404 permit (Section 3.6.1). Discharges into all Waters of the State, even those that are not also Waters of the U.S., require Waste Discharge Requirements (WDRs), or a waiver of WDRs, from the RWQCB.

The Porter-Cologne Water Quality Control Act, Water Code Section 13260, requires that "any person discharging waste, or proposing to discharge waste, within any region that could affect the 'waters of the State' to file a report of discharge" with the RWQCB. Waters of the State as defined in the Porter-Cologne Act (Water Code Section 13050[e]) are "any surface water or groundwater, including saline waters, within the boundaries of the state." This gives the RWQCB authority to regulate a broader set of waters than the Clean Water Act alone; specifically, in addition to regulating waters of the U.S. through the Section 401 Water Quality Certification process, the RWQCB also claims jurisdiction and exercises discretionary authority over "isolated waters," or waters that are not themselves waters of the U.S. and are not hydrologically connected to waters of the U.S.

The RWQCB also administers the Construction Stormwater Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one or more acres of soil must obtain a Construction General Permit under the Construction Stormwater Program. A prerequisite for this permit is the development of a Stormwater Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, stormwater, or other pollutants into a Water of the U.S. may require a NPDES permit.

3.6.3 California Fish and Game Code, Section 1602

The CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the diversion or obstruction of their natural flow, change or use of any material from their bed or bank, or the deposition of debris require a Notification of Lake or Streambed Alteration. If the CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

3.7 BUTTE COUNTY POLICIES AND ORDINANCES

The Butte County 2030 General Plan (2030 GP) provides guidance and policies for future development within the County related to sensitive biological resources. Two of which focus on potential impacts associated with deer migration from the summer range (to the east) to the lower elevations within the foothills of Butte County. Figure LU-4 from the 2030 GP (see Appendix B) provides an overlay of deer Winter Migration Areas and deer Critical Winter

Migration Areas. This overlay was developed from a joint meeting with the Board of Supervisors and Planning Commission focusing on the Migratory Deer Range Technical Study and GIS Modeling effort that was conducted specifically to inform policies for the 2030 GP. In 2013 to 2015 the California Department of Fish and Wildlife (CDFW) conducted a study of the Eastern Tehama deer herd (Hill and Figura 2020). During this study they radio-collared 28 female black-tailed deer (*Odocolieus hemionus columbianus*). They documented spatial patterns of deer migration between winter and summer ranges and concluded that conservation efforts should not just focus on winter and summer ranges, but also stopover sites and migration corridors. The mean elevation of winter sites was approximately 1500 ft, well above the elevations of the Tuscan Ridge Project site which range between 550 to 925 ft. While their study area included the Tuscan Ridge Project Site, the closest radio collared deer from this study was several miles north of the Project Site and several miles east of Corning. As such, this study provides little direct evidence of deer migration patterns within the proximity of the Project Site; but it is possible to draw some limited inference based on site conditions (e.g., available habitat) and elevations.

In addition to polices related to deer, a Draft Final Oak Woodland Ordinance was developed but not ratified in 2018; though it was not ratified it does provide some guidance for evaluating potential impacts to oak woodland habitats.

3.7.1 Relevant 2030 GP Policies

The following are relevant Policies from Butte County 2030 General Plan.

LU-P1.10 The County shall limit development in foothill and mountain areas that are constrained by fire hazards, water supply, migratory deer habitat, or infrastructure.

Goal D2N-5 Protect and maintain areas of native vegetation which include riparian forest, valley freshwater marsh, valley oak woodland, vernal pools, annual grasslands and designated natural areas. Such areas deserve protection as part of the heritage of the communities, for the way such areas add to the aesthetic environment, and as important examples of the diversity of habitats and the wildlife they support within the Planning Area and the State.

3.7.2 Draft Final Oak Woodland Ordinance (not ratified)

Butte County drafted a Final Oak Woodland Mitigation Ordinance in 2018, but this proposed chapter for the Municipal Code has not been ratified. The timing of hearings related to the ordinance were immediately prior to the 2018 Camp Fire. Therefore, the County's fire response may have drawn all focus temporarily off the ordinance. If this ordinance is adopted/ratified prior to the project being approved, then provisions of the ordinance may be relevant to the project. These provisions may include the project applicant having an Oak Woodland Evaluation Plan prepared and mitigating for losses to oak woodland resources.

3.8 HABITAT CONSERVATION PLANS

No known habitat conservation plans are in effect for this property. A proposed county-wide conservation plan called the Butte Regional Conservation Plan has been drafted, but it has not been formally approved and adopted. If this conservation plan becomes adopted prior to this project being approved, then provisions of the plan may be relevant to the project.

4 IMPACTS AND MITIGATIONS SPECIFIC TO THE PROJECT

This analysis assumes that the majority of the site would be developed/redeveloped with 165 single-family residential lots, 17.3 acres of commercial development, 4 acres of improved buildings and parking, 13.3 acres of mini storage and outdoor RV and boat storage, a sanitary waste disposal station, landscaped areas, and roadways. Approximately 49.4 acres of the site would be a mix of open space, landscaped areas, and existing and refurbished pathways. The majority of the northern margin of the site between Skyway Road and the proposed development would be preserved; preserved areas include portions of the remnant blue oak woodlands, grassland areas, and the ephemeral channel.

4.1 POTENTIAL IMPACTS TO SPECIAL STATUS PLANTS

Potential Impact. Of the 14 special status plants that occur regionally and occur within habitats and at elevations that are consistent with those occurring onsite, one species, the Butte County Checkerbloom, was determined to be likely to occur, and another species, the veiny monardella, was considered possible to occur within the site. Three additional plant species were considered unlikely to occur. These include the big-scale balsamroot, white-stemmed clarkia, and Butte County fritillary. The remaining nine plants are considered absent from the site (Table 1).

If a population of a special status plant species were to occur within or immediately adjacent to the grading envelope, the project could result in direct impacts to these population(s). Grading and construction impacts could damage or extirpate any occurring populations. Use of lands adjacent to the construction footprint, once the site is constructed, may further impact special status plant populations as people engage in recreation (e.g., hiking, riding mountain bikes or ATVs, picking flowers, etc.). Also, future human uses of residential and industrial properties of the project may result in impacts to special status plant populations occurring near the residential properties. These impacts could occur from occupants planting invasive plant species that invade into areas where the special status species occur or through the use of herbicides and fertilizers around their yards that drift into the special status plant areas. These impact to special status plant species would be a significant impact of the project.

Mitigation. The project should implement the following measures to avoid and/or compensate for impacts resulting from project-related disturbances to, or loss of, special status plant populations.

An appropriately timed botanical survey (May through June) conducted by a qualified botanist within the vicinity of the development footprint shall be conducted to determine presence or absence of Butte County Checkerbloom and veiny monardella within the site. If feasible, this survey should be paired with reference population inspections of known populations in the region to ensure that the timing of the survey is suitable. If this survey determines that a special status plant species are absent, no further mitigation would be required. If a population of a special status plant species is identified within 50 feet from the development footprint of the project site, mitigation would be required.

Avoidance. In consultation with a qualified botanist, and to the maximum extent feasible, the project should be reconfigured in such a way as to avoid substantial direct and indirect impacts to this species. Avoidance measures should include a permanent disturbance-free buffer around the plant population(s). The size of the buffer will be determined by the botanist, based on the species, slope of the population, and type of construction disturbance occurring near the plant population. The disturbance-free buffer will be no less than 10 feet and no greater than 100 feet.

Compensation. If open space that will not be developed as part of the project contains a healthy population of the impacted plant species, and these areas comprise equal or more area and equal or more plants than the impact footprint of the project, then onsite preservation can be used as mitigation.

The mitigation site must be confirmed by a qualified botanist to support populations of the impacted species and protected in perpetuity with a deed restriction, conservation easement, or other such vehicle which prohibits future disturbance. Also, a qualified botanist should prepare a Preservation Plan for the site containing, at a minimum, the following elements:

- A monitoring plan and performance criteria for the preserved plant population.
- A description of remedial measures to be performed if performance criteria are not met.
- A description of maintenance activities to be conducted on the site during the maintenance period including weed control, trash removal, irrigation, and control of herbivory by livestock and wildlife.

If onsite preservation is not an option, offsite preservation can be used if an equivalent population occurs within an offsite parcel that can be deed restricted or otherwise encumbered to prevent future impacts. The same criteria for preservation of an onsite population would be required for offsite preservation. If neither suitable onsite populations nor offsite preservation is available, mitigation can be achieved through restoration of an onsite population and subsequent onsite preservation as discussed above.

Onsite Habitat Restoration and Preservation. If the project cannot be designed to avoid impacts to a rare plant population and if onsite populations within preserved open space are not sufficient to offset the impact, then onsite restoration and preservation should be utilized to establish and preserve an onsite population that is equivalent to or greater in extent than the impacted population. A Habitat Restoration Plan should be developed for the species by a qualified botanist and/or restoration ecologist and approved by the County prior to the start of project construction. The objective of this mitigation measure would be to replace the special status plant numbers and area lost during project implementation. This could include increasing the extent of a smaller onsite population within the preserved open space portions of the site. The habitat restoration plan should be based on the best available science and ecological research for the impacted species. The restoration plan should include a monitoring program wherein the mitigation site should be monitored for a period of 10 years

(e.g., Years 1-3, 5, 7, and 10) from the date of initial restoration installation. At a minimum, the habitat restoration plan should contain the following:

- Identification of appropriate locations on site as determined by the botanist or plant ecologist (i.e., areas with habitat types, suitable soils, aspect, hydrology, etc.) to restore lost plant populations.
- A description of any additional plant species to be used in the mitigation. For example, it is known that Butte County checkerbloom occurs near blue oak trees, including under the canopies of such trees. Therefore, planting of additional blue oak trees to replace those that were lost during site impacts (i.e., trees lost due to development of the golf course and fire recovery camp and/or due to the Camp Fire) and thus increase the potential habitat for this species may be a critical element for restoration of Butte County checkerbloom.
- A description of the propagation and planting techniques to be employed in the restoration effort, including evidence that the plant materials are provided from local sources (onsite is preferred) and grown under sanitary nursery conditions.
- A timetable for implementation of the restoration plan.
- A monitoring plan, performance criteria, and final success criteria.
- Adaptive management measures to be performed if initial restoration measures are unsuccessful in meeting the performance criteria.
- A site maintenance plan. This may include weed control, irrigation, control of herbivory by livestock and wildlife, and public education to reduce potential tromping or vandalism impacts.
- Documentation of any research used to prepare the Habitat Restoration Plan.
- Successful implementation of an onsite preservation plan, an offsite preservation plan, **or** an onsite habitat restoration plan with onsite preservation would adequately mitigate for impacts to rare plant species to a less-than-significant effect.

4.2 LOSS OF HABITAT FOR SPECIAL STATUS WILDLIFE

Potential Impact. Twenty-four (24) special status animal species occur, or once occurred, regionally. Of these, seventeen species are absent or unlikely to occur on the site due to a lack of suitable habitat for these species or because the site occurs outside of the range of these species. Species that are considered absent include the vernal pool fairy shrimp, vernal pool tadpole shrimp, valley elderberry longhorn beetle, foothill yellow-legged frog, western spade foot, giant garter snake, western pond turtle, California black rail, western burrowing owl, tricolored blackbird, and California yellow warbler. Those species that are considered unlikely to occur include the bald eagle, northern harrier, pallid bat, western mastiff bat, and American badger. Buildout of the project is not expected to impact any of these species.

The remaining seven special status animal species from Table 1 could occur on the project site more frequently as potential regular foragers, transients, or may be resident to the site.

These species include the coast horned lizard, Swainson's hawk, white-tailed kite, peregrine falcon, Townsend's big-eared bat, western red bat, and ringtail. Of these, the peregrine falcon and western red bat would not be expected to breed within the site, and the site is considered to provide only occasional foraging habitat, which is equivalent or lesser in quality than potential foraging habitat that is abundant in the region for these species. Therefore, project buildout would not result in a significant impact to peregrine falcon or western red bat habitat or individuals.

The site provides mediocre habitat value for the coast horned lizard. While this species could possibly occur within the site from time to time, disturbances to the site over the past 20 years have reduced the habitat value for the coast horned lizard and has likely reduced the occurrences of these species (if any) within the site. Buildout of the project is a less than significant effect to the loss of habitat for the Coast horned lizard. Furthermore, individuals of this species are expected to escape the site once construction disturbances start, reducing the chance that individuals are directly impacted. Therefore, potential impacts to coast horned lizard individuals are also considered to be less-than-significant.

Habitats of the site provide potential nesting, roosting, denning, and/or foraging habitat for the remaining four species from Table 1—Swainson's hawk, white-tailed kite, Townsend's big-eared bat, and ringtail—but the site does not represent important, unique, or quality habitat for any of them. So proposed site buildout is expected to result in a less-than-significant impact to the loss of habitat for all of these species due to the vast areas in the region with equivalent or superior habitat available for these species. Potential impacts to individuals of these species are discussed in sections 4.3, 4.4 and 4.5.

Mitigation. No mitigation is warranted.

4.3 POTENTIAL IMPACTS TO ACTIVE MIGRATORY BIRD NESTS INCLUDING NESTING SWAINSON'S HAWKS AND WHITE-TAILED KITES FROM CONSTRUCTION ACTIVITIES DURING PROJECT IMPLEMENTATION

Potential Impact. The site provides potentially suitable nesting habitat for numerous bird species that occur regionally. Trees, buildings, and other structures onsite and immediately adjacent to the site may support nesting birds and raptors, including Swainson's hawks and/or white-tailed kites. Swainson's hawk nesting is considered unlikely to occur (Table 1). Gravel areas of the site and other ground areas provide potential nesting habitat for ground-nesting species such as the killdeer and California quail. Build-out of the project during the nesting period for migratory birds (i.e., typically between February 1 to August 31), including initial site grading, soil excavation, and/or tree and vegetation pruning, or removal poses a risk to any nesting birds within or near the site in the form of nest abandonment and death of any eggs or young that may be present within the nest. Such an effect would be considered a significant impact. To ensure that any active nests will not be disturbed, and individual birds will not be harmed by construction activities, the following avoidance measures shall be followed.

Mitigation. If initial site disturbance activities, including tree removal, grading, and mobilization of project equipment and materials, is to occur during the breeding season (1

February to 31 August), a qualified biologist will conduct pre-construction surveys for nesting migratory birds onsite and within 250 feet of the construction footprint, including laydown areas and ingress and egress, where accessible. The survey shall occur within 14 days of the onset of ground disturbances if such disturbances are to commence during the nesting bird season. If site impacts will be phased such that impacts to some areas will occur more than 14 days after impacts to other areas, additional surveys shall be conducted so that nesting bird surveys correspond with the timing of impacts such that all areas of the site are surveyed within 14 days of the direct implementation of impacts within those areas.

If a nesting migratory bird were to be detected during these surveys, an appropriate construction-free buffer will be established. Actual size of the buffer, which will be determined by the project biologist, would depend on the nesting species, topographical relationship of the nest to the project disturbance area, and the type of activity that would occur in the vicinity of the nest. The buffer shall be monitored periodically by the biologist to ensure compliance, and the buffer shall not be removed until the biologist has confirmed that the nest(s) is complete and young of the nest have fledged.

Completion of these measures will ensure there are no impacts to nesting migratory birds, including raptors.

4.4 POTENTIAL IMPACTS TO PROTECTED BAT SPECIES INCLUDING TOWNSEND'S BIG-EARED BAT

Potential Impact. Bats could forage within the site, and the tree hollows and remnant buildings of the site provide potentially suitable roosting habitat for several species including the Townsend's big-eared bat and more common bat species that are protected by CDFW code. While there was no evidence of bats (i.e., individuals, guano and/or staining) observed during reconnaissance surveys of the site, a formal bat survey was not conducted. Bats may use the trees and buildings of the site for roosting habitat. The removal of trees bearing suitable cavities and the demolition of the onsite buildings could result in mortality to bats. The mortality of bat individuals, which violates state law, would constitute a significant adverse impact of the project.

Mitigation. A detailed bat survey shall be conducted by a qualified bat biologist within 30 days of any tree removal or partial or complete building demolition to determine if bats are roosting or breeding in the onsite trees or buildings prior to the work. The biologist shall look for individuals, guano, staining, and vocalization by direct observation. Ideally, the survey should be conducted during the times of year when bats are active, from March 1—April 15 and from August 15—October 15; however, the survey could be conducted at any point during the year. If bats are detected between October 15 and March 1, demolition must be delayed until after March 1 or until a qualified biologist determines that bats are absent. An initial survey could be conducted to provide early warning if bats are present, but a follow-up survey will be necessary within 30 days of demolition. If no bats are observed to be roosting or breeding in these structures, then no further action would be required, and tree removal and/or demolition can proceed.

If a non-breeding bat colony is found in the trees or structures to be demolished, the individuals shall be humanely evicted using accepted methods. For example, humane eviction can include opening up the tree canopy or partial dismantlement of the buildings prior to demolition. This eviction shall be conducted under the direction and supervision of a qualified biologist to ensure that no harm or "take" would occur to any bats as a result of tree removal or demolition activities. Although not likely, if a maternity colony is detected, then a construction-free buffer—to be determined by the qualified bat biologist—shall be established around the structure and remain in place until it has been determined by the bat biologist that the nursery is no longer active.

Full implementation of the measures identified above would ensure there are no impacts to protected bat species potentially occurring on the site.

4.5 POTENTIAL IMPACTS TO RINGTAIL

Potential Impact. Ringtail could utilize tree hallows, suitable crevices in rocky outcrops, or remnant buildings of the site for denning habitat. Between early spring through mid-summer, Ringtail dens may function as natal dens wherein recently born ringtail pups are cared by parents for until they are old enough to forage outside of the den with their mother. While it is unlikely for a ringtail to den within the site, if one were to be denning during tree removal or partial building demolition, the individual(s) could be killed, which would constitute a significant impact of project development under CEQA.

The following avoidance measures shall be implemented to ensure ringtails are not impacted during project buildout.

Mitigation. A ringtail survey shall be conducted by a qualified biologist within 30 days of any tree removal or partial or complete building demolition to determine if ringtails are denning and/or breeding in the onsite trees or buildings prior to the start of construction work. This survey can be paired with the bat survey, given the overlap in suitable habitat types (Section 4.4). The biologist shall look for individuals, scat, and prints, and they may utilize tools such as camera scopes to investigate suitable crevices such as tree hollows. If ringtails are detected during the times of year when ringtails may be breeding, from March 15 through July 31, and a natal den (i.e., an active breeding den) is detected, tree removal and demolition must be delayed within a 300-foot disturbance-free buffer of the natal den until after a qualified biologist determines that ringtails are absent. The buffer should be delineated with bright and secure fencing such as chain-link and/or snow fencing.

If a non-breeding ringtail den is found in the trees or structures to be demolished, construction or demolition actions should not commence until the ringtail has self-relocated. Self-relocation when a natal den is not present can be encouraged by utilizing methods that are considered safe for ringtails such as implementing work up to 50 feet from the den. If no ringtails are observed to be denning in these trees or structures, then no further action is required, and tree removal and/or demolition can proceed.

Full implementation of the measures identified above would ensure there are no impacts to ringtails potentially occurring on the site.

4.6 LOSS OF HABITAT FOR NATIVE WILDLIFE

Potential Impact. For regional wildlife, the habitats of the site comprise only a portion of the entire home range or territory for most species. In addition, the existing conditions of the site are such that surrounding open space provide higher quality habitat than the average quality of habitat within the Tuscan Ridge site (i.e., some portions of the site are pockets of generally intact habitat, such as some of the oak woodlands, but overall, the quality of the site is diminished). Therefore, the value of the site as habitat for wildlife ranges from poor to fair, and it is not expected to be critical habitat for any species of native wildlife.

This site supports marginal habitat for deer as nearly 92% of the site consists of marginal habitat for deer (developed/gravel (44.7%), California annual grassland/naturalized golf course turf (42.2%) and wastewater basins (4.7%)), with only 8.2% of the site supporting blue oak woodland habitat that deer may occasionally forage. This woodland habitat is rather marginal given the historic use of the site and serious adverse effects from the Camp Fire. This site is marginal at best for deer even though it falls within the western edge of the Winter Migration Area as determined by the Butte County General Plan 2030. As noted above, the site provides poor to marginal foraging habitat for deer, it is noticeably lower in elevations (i.e., 550 to 925 ft.) than what has been reported regionally for deer Winter Migration habitat (Hill and Figura 2020), and a busy 4-lane highway borders its NW boundary; all of these factors work in concert to render this site poor to marginal for wintering deer.

Therefore, the loss of this mostly degraded habitat is not expected to affect the sustainability of local wildlife populations, including wintering deer. Therefore, development of the site will result in a less-than-significant impact to habitat for native wildlife.

Mitigation. No mitigation is warranted.

4.7 INTERFERENCE WITH THE MOVEMENT OF NATIVE WILDLIFE

Potential Impact. While no detailed study of animal movements has been conducted for the study area, knowledge of the site and site vicinity, its land uses, and the ecology of the species occurring onsite permits sufficient predictions about the types of movements occurring in the region and whether proposed construction activities within the site and subsequent project build-out may result in a disruption of local wildlife movements.

The study area consists of a former golf course facility and recently installed gravel clearings with oak woodlands and grassland areas, and an ephemeral channel. The site occurs within an area that is predominantly undeveloped and adjacent to the busy 4-lane roadway of Skyway Road, that acts as a soft barrier for some wildlife species. Surrounding land uses are primarily open space lands. Other than Skyway Road, movement of native wildlife is generally unrestricted in the project vicinity, and there is significant area near the site that wildlife are likely to use for movement pathways between desirable habitat areas. Given the reduced habitat values offered by the developed and cleared areas of the site, the surrounding open space areas of the site are likely to be more attractive for wildlife to use in this capacity. The ephemeral channel is likely to be used by wildlife as a movement corridor, especially when water is present.

As noted in Section 4.6 above, deer use of the site is expected to be low at best as the site provides limited habitat for them to forage. Even though the site falls within the Winter Migration Area, as determined by the 2030 GP, the low use of the site by deer (as reasoned above in Section 4.6), indicates that development of the site would not result in a significant impact on migratory deer.

Site development may shift the way wildlife move through the general project vicinity due to the presence of new structures, residential night lighting, and human activity. For the most part, this development is not expected to interfere with wildlife movements in a detrimental way due to the wide margin of open space surrounding the site. However, any night lighting (e.g., street and porch lights and park lighting) that shines into the ephemeral stream portion of the site may cause impacts such as avoidance of these areas by nocturnal animals including possible discontinued use of this aquatic resource by some species, including nesting birds or bats. This impact would be considered a significant impact on the movements of native wildlife.

Mitigation. As part of development planning and project build-out, all proposed lighting associated with the development (e.g., street lighting, park lighting, and porch lighting) shall be designed to avoid any significant light and glare impacts to the ephemeral channel are of the site. Light sources shall not be visible from riparian areas and should not illuminate riparian areas.

4.8 POTENTIAL IMPACTS TO NATIVE TREES AND OAK WOODLANDS

Potential Impact. Arborist documentation of tree resources of the site from 2019 and 2020 include 843 trees. Approximately 99.6% of the trees documented onsite are considered native to the site. Many are dead, dying, or hazardous, but of the 459 trees that are not recommended for removal in those studies (CalTLC 2019 & 2020), 426 of them (approximately 93%) are blue oak trees. No project-specific arborist study of the site has been conducted to determine which of these trees would be impacted by project buildout.

Given the litany of impacts that the trees of this site have encountered, and the intense loss of trees, including blue oaks and California foothill pines, regionally, within the Camp Fire footprint, and the increase in blue oak mortality across California, the value of the remaining living trees is significant. These trees, and those that survived the fire in the vicinity of the site, constitute a diminished source population of native trees, especially blue oak trees, to provide a critical seed source for tree recolonization and as a food source for native wildlife. They constitute the remaining structural habitat to support roosting, nesting, foraging, and shade cover for local species in the project vicinity. Such structural habitat was significantly diminished by the Camp Fire regionally. Finally, these trees onsite and in the project vicinity, represent a population that is likely to contain genetic variants that are uniquely adapted to soil and weather conditions in this part of the southern Cascade Mountain foothills.

Based on a course comparison of the arborist survey documentation and the project plans, LOA estimates that approximately 20% to 40% of the live trees (approximately 150 trees) of the site are likely to be subject to removal to develop the proposed project. Even at the low end of this estimate range, removal at this level is considered to be a significant impact to

native trees and oak woodlands due to the unique conditions of these tree resources described in the preceding paragraph. The following impact avoidance and mitigation measures are warranted.

Prior to site impacts, a living tree impact assessment will need to be conducted to provide an accurate accounting of trees that will be removed and/or protected from impacts during project buildout.

Mitigation. *Avoidance Measures*. To the extent feasible, the project should be designed to reduce the number of living native trees that are removed. All trees that may potentially be retained and that occur near the project footprint shall be mapped and incorporated into project plans to ensure that trenching and grading do not impact the trees. The location of each of these trees and their corresponding critical root zones (CRZ)—approximately 1.25 times the dripline area of the tree—shall be included in project plans.

Minimization Measures. Once the project development footprint and thus the grading and demolition plans are finalized, and prior to grading and tree removal, a certified arborist will review the final grading plan and prepare a Tree Resources Protection Plan that identifies which trees require protection measures during project buildout. The plan should incorporate tree protection measures outlined below to protect trees that occur near the project footprint, including any areas used for material storage, laydown, parking, ingress/egress, or soil borrowing, from development impacts.

The Tree Resources Protection Plan shall be implemented throughout the development phase of the project:

- Each tree to be retained that is near the project development footprint will be enclosed by a "tree protection zone," to be established prior to site grading and retained for the duration of construction. Where possible, tree protection zones should be designed to encompass an area approximately 1.5 times the dripline area of the trees. The zones should be marked with sturdy and highly visible fencing material. Off-limits signs should be posted on the fences that state that no equipment is to enter the tree protection zone. No signs will be posted on the trunk of any trees. Fencing shall be maintained and not removed during the project development period. The type of fencing to be utilized will be at the direction of the consulting arborist.
- Stockpiling of materials, soils, and equipment storage will not be permitted within the fenced tree protection zone.
- Any activities that must take place within the dripline of retained trees will be done by hand or with light equipment that does not cause soil compaction. If roots will be impacted, a certified arborist should be present to provide guidance on the action.
- Any limb or root pruning to be conducted on retained trees shall be approved and supervised by the consulting arborist and shall follow best management practices developed by the International Society of Arboriculture. If feasible, schedule any pruning work within the vicinity of the trees for fall or winter, when the trees are dormant or semi-dormant.

- Should any roots need to be severed during construction, cover any exposed or cut roots with burlap, soil, or mulch as soon as possible until the native soil can be backfilled. Clean and sharp tools (chainsaw or axe) shall be used for pruning roots. Equipment such as excavators shall not be used for root pruning, as the damage from such equipment can be extensive.
- Supplemental irrigation shall be applied to retained trees as determined by the consulting arborist.
- If any of the retained trees should be damaged during the construction phase, they will be evaluated at the earliest possible time by the consulting arborist so that appropriate measures can be taken.
- Provide a copy of the Tree Resources Protection Plan to all contractors and project managers, including the architect, civil engineer, and landscape designer or architect.

Implementation of tree protection measures as described above is anticipated to result in the highest survival of the trees to be retained.

Mitigation 3. *Compensation Measures*. To mitigate for the trees that are removed as part of project buildout, replacement trees shall be accommodated within the open space of the site at replacement ratios described in Table 2. Replacement trees shall be installed, maintained, and monitored semi-annually for a period of 7-years (e.g., Years 1-3, 5, and 7). A Habitat Restoration Plan shall be prepared by a qualified restoration ecologist to guide the tree planting effort. The Habitat Restoration Plan shall include a summary of impacts and mitigations, and it should define a planting strategy, a maintenance approach, monitoring methods, and adaptive management measures to overcome potential interim setbacks and failures (e.g., from vandalism, herbivory, or general dieback). The plan shall include success criteria that must be met for the restoration/tree planting effort to be considered completely implemented. Success criteria shall include, at a minimum, survival of a minimum of 60% of the required number of replacement trees by Year 5, and 50% of the required number of replacement trees by Year 7. The required replacement trees are determined by an accounting of the number of trees that are removed from the site and their corresponding replacement ratios. All native trees with a DBH 5 inches or greater will be replaced with at a 3:1 ratio.

For the Tuscan Ridge Project, the replacement plantings constitute a blue oak woodland habitat restoration/enhancement. If onsite areas of the site cannot accommodate the required numbers of trees, an offsite location shall be identified to accommodate the remainder of the blue oak woodland habitat restoration. This means, the offsite location shall be appropriate for restoration and/or enhancement of blue oak woodlands.

Successful implementation of these measures will ensure that impacts to trees are reduced to a less-than-significant level.

4.9 POTENTIAL IMPACTS TO JURISDICTIONAL WATERS AND OTHER SENSITIVE AQUATIC OR RIPARIAN HABITAT

Potential Impact. The ephemeral channel is presumed to be a water of the U.S. and water of the State subject to regulation by the USACE, RWQCB, and CDFW. Although most of the channel is proposed to be avoided, permanent impacts to the channel are anticipated to occur from 1) widening of and improvements to the existing access driveway from Skyway Road and 2) conversion of the golf course paths to a multi-use trail. These project elements are likely to result in some fill of the channel associated with replacement of existing culverts, recontouring of the channel banks, or realignment of channel near the proposed trail. At the southwest end of the site, an access easement is proposed for an emergency access road. Construction of the emergency access road may also require the replacement of an existing culvert and additional fill at that location. Temporary impacts associated with the buildout of these project elements likely include minor grading of the channel bed and/or banks. Permanent and temporary impacts to the ephemeral channel would be considered significant.

Any impact to Waters of the U.S. or State would constitute a significant impact. The following mitigation is designed to reduce any impacts to Waters of the U.S. and/or State to a less than significant level.

Mitigation. The project should be designed to avoid impacts to jurisdictional waters to the maximum extent practicable. Where impacts are necessary for project design, the following compensation measures will be required.

A formal wetland delineation has not been completed for the site at this time. An aquatic resources delineation should be completed and submitted to the USACE for verification to determine if areas under the jurisdiction of the USACWE and/or RWQCB occur within the site.

Avoidance: If this survey determines the project supports Waters of the U.S. or State, then the project to the maximum extent practicable, should be designed as to avoid impacts to these sensitive resources.

Minimization: If regulated features exist on site, the project should also be designed as to provide a suitable setback and ensure project elements do not drain into these features (e.g., hardscape such as roads, roof tops, parking lots, etc.).

Compensation: If the project is unable to avoid features deemed to be under the jurisdiction of either the USACE or RWQCB then either the project applicant purchases suitable credits at an approved wetland mitigation bank or create/enhance suitable aquatic features on or off-site. Compensation measures should include habitat replacement at a minimum of a 1:1 replacement-to-loss ratio and no more than 3:1 for permanent acreage impacts (up to 3 acres created for each acre permanently impacted) as well as reseeding of vegetation in temporarily disturbed areas according to a site-specific mitigation plan.

This usually entails preparing a habitat mitigation and monitoring plan which would define the extent of compensation. It is expected that all compensation measures can be accommodated at one or more locations along the channel or elsewhere onsite in areas that are proposed for preservation as open space. If these areas cannot fully accommodate the

compensation measures, then offsite restoration would be necessary. Compensation measures should either result in the creation of new habitat as replacement for habitat lost or enhance the quality of existing habitat for native plants and wildlife.

Regulatory issues. The project proponent may be required to obtain a Section 404 Clean Water Act permit from the USACE, Section 401 water quality certification from the RWQCB, and/or Section 1602 Streambed Alteration Agreement from the CDFW prior to initiating any construction within the ephemeral channel if this feature is found to be under the jurisdiction of the U.S., and/or State.

4.10 POTENTIAL IMPACTS TO WATER QUALITY IN SEASONAL DRAINAGES AND DOWNSTREAM WATERS

Potential Impacts. Proposed construction activities, particularly site grading, can result in soils of the construction zone being barren of vegetation and vulnerable to sheet, rill, or gully erosion. Eroded soil can be carried as sediment in seasonal creeks to be deposited in creek beds and adjacent wetlands. Furthermore, runoff could also be polluted with grease, oil, pesticide and herbicide residues, heavy metals, or other contaminants.

The applicant is expected to comply with the provisions of a grading permit, including standard erosion control measures that employ best management practices (BMPs). Projects involving the grading of large tracts of land must also be in compliance with provisions of a General Construction permit (a type of NPDES permit) available from the California Regional Water Quality Control Board. Compliance with the above permit(s) should result in no impact to water quality in seasonal creeks, reservoirs, and downstream waters from the site and should not result in the deposition of pollutants and sediments in sensitive riparian and wetland habitats.

Mitigation. No mitigation is warranted.

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APPENDIX A: PHOTOGRAPHS OF THE STUDY AREA

All photographs were taken by LOA ecologist Nathan Hale on February 1, 2022.

Photo 1 (above) & 2 (below). Existing development and remnant equipment of the site.

Photo 3. Typical gravel clearings of the site.

Photo 4. Drain trench cut into gravel clearing.

Photo 5. Grassland of the site with erosional damage from runoff of gravel areas. Also shown is a row of small oaks, a section of golf course path, and what appear to be leach field vent pipes.

Photo 6. Weathered and overgrown golf course path in grassland.

Photo 7. Ephemeral channel in ravine with blue oaks and grassland vegetation.

Photo 8. Ephemeral channel in ravine through grassland.

Photo 9. Ephemeral channel with slow moving water section.

Photo 10. Ephemeral channel through blue oak woodland and remnant, naturalized turf grass.

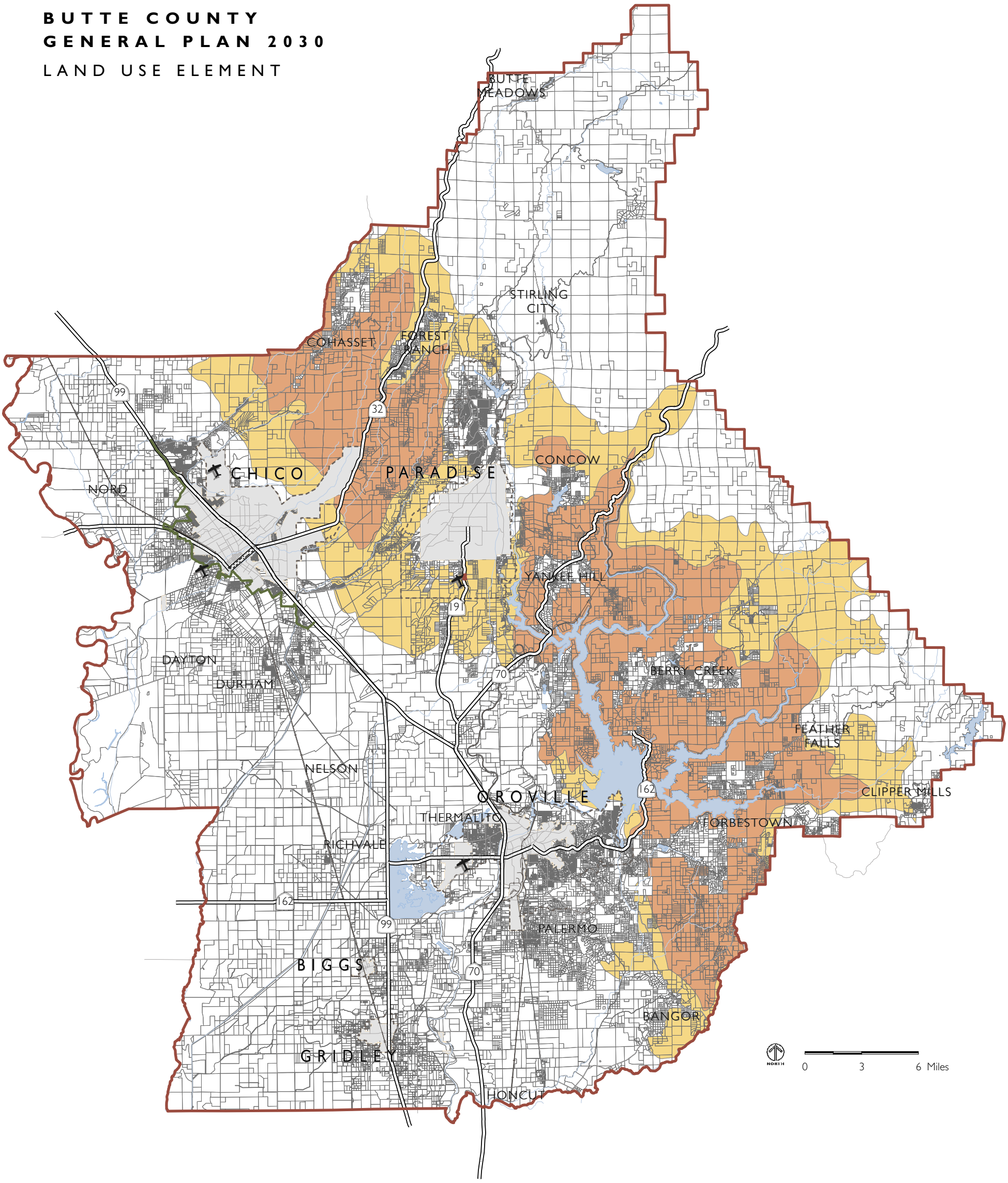
Photo 11. Ephemeral channel through blue oak woodland along golf course path.

Photo 12. Ephemeral channel in grassland and blue oak woodland with culvert under golf course path.

APPENDIX B: FIGURE LU-4 DEER HERD MIGRATION AREA OVERLAY FROM BUTTE COUNTY GENERAL PLAN 2030

BUTTE COUNTY
GENERAL PLAN 2030

LAND USE ELEMENT



Source: Butte County GIS, 2009.

FIGURE LU-4

DEER HERD MIGRATION AREA OVERLAY

APPENDIX E

WallaceKuhl & ASSOCIATES | A Universal Engineering Sciences Company

Geotechnical Engineering Report

TUSCAN RIDGE SUBDIVISION

WKA No. 12206.07

May 6, 2021

Prepared For:

Tuscan Ridge Associates, LLC

c/o NexGen Engineering & Consulting, LLC

1043 Nichols Court, Suite 200

Rocklin, California 95765

Geotechnical Engineering Report

TUSCAN RIDGE SUBDIVISION

Paradise, California

WKA No. 12206.07

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Geotechnical Engineering Report
TUSCAN RIDGE SUBDIVISION
3100 Skyway Road
Paradise, California
WKA No. 12206.07
May 6, 2021

INTRODUCTION

We have completed a geotechnical engineering study for the proposed Tuscan Ridge residential subdivision to be constructed south of Skyway Road, between Chico and Paradise, California. The purpose of our study has been to explore the existing site, soil, bedrock and groundwater conditions, and to provide geotechnical engineering conclusions and recommendations for the design and construction of the planned residential development. This report presents the results of our study.

Scope of Services

Our scope of services for this project included the following tasks:

1. A site reconnaissance;
2. Review of United States Geological Survey (USGS) topographic maps, geologic maps and reports that included the project area, historical aerial photographs, and available groundwater information;
3. Review of previous environmental assessments completed by Wallace-Kuhl and Associates (WKA) at the project area. These assessment included the excavation of 40 test pits to a maximum depth of approximately 6½ feet below existing site grade (bsg). Practical refusal was encountered at each of the test pits in resistant volcanic mudflow deposits (lahars) of the Tuscan Formation;
4. Subsurface exploration, including the excavation of 11 supplemental test pits to a maximum depth of approximately three feet bsg. Like the previous test pits, practical refusal was encountered at each of the current test pits in resistant lahars of the Tuscan Formation;
5. Laboratory testing of selected soil samples to determine engineering properties of the soil;
6. Engineering analyses; and,
7. Preparation of this report.

Supplemental Information

Supplemental information used in the preparation of this report included review of the following environmental and hydro-geologic studies prepared for the subject property:

- *Phase I Environmental Site Assessment* (WKA No. 12206.01 and 12206.04, dated February 26, 2019 and April 21,2020);
- *Hydrogeologic Investigation* (WKA No. 12206.03, ongoing); and,
- *Site Inspection Report II* (WKA No. 12206.04, dated April 15, 2020).

Figures and Attachments

This report contains a Vicinity Map as Figure 1; a Site Plan showing the previous and current test pit locations as Figure 2; a geologic map for the project area as Figure 3; a graph summarizing the soil profiles encountered at the test pits as Figure 4; and the current test pit logs as Figures 5 through 15. An explanation of the symbols and classification system used on the boring logs is contained on Figure 16. Appendix A contains general information regarding the exploratory methods used during our field investigation and the laboratory test results that are not included on the logs.

Proposed Development

We understand the 175-acre property (Site) will be subdivided into individual lots for low to medium density residential homes. The Site is identified by two Butte County Assessor Parcel Numbers (APNs): 040-520-100 and -103. We anticipate the proposed homes will be one and two-story, wood frame structures supported on shallow spread foundations with interior concrete slab-on-grade floor systems. Structural loading is anticipated to be relatively light, typical for the anticipated type of structures. Appurtenant construction is anticipated to include buried utilities, paved streets, retaining walls and various concrete flatwork.

Topographically, the site is gently to moderately sloping with general drainage to the southwest with about 280 feet of relief based on the 2012 United States Geological Survey (USGS) 7.5-Minute Series Topographic map of the Hamlin Canyon, California quadrangle. The proposed project currently is in the conceptual stage, and grading plans were not available to us at the time this report was prepared. We anticipate the proposed lots will be graded to generally conform to the existing topography with maximum cuts and fills in the range of about five feet or less. Excavations for buried utilities are not anticipated to extend more than 10 feet below final site grade.

FINDINGS

Site Description

Prior to our current site investigation, we understand that the irregular-shaped property was once occupied by the Tuscan Ridge Golf Club golf course that was abandoned on or about 2018. In the summer and fall of 2018, the site was used as a Pacific Gas &Electric (PG&E) vegetation management Camp and then used as a basecamp for emergency response operations during the Camp Fire until April 2019. PG&E then used the site as a basecamp for debris removal until March 2020.

At the time of our current field explorations, PG&E had removed all previous structures, equipment, stockpiled materials, and vehicles. Except for a strip of land adjacent to Skyway Road in the northwest portion and the northern portion of the site, it appeared that most of the area was disturbed to some degree during construction and operation of the basecamp. Large areas of the site were covered by crushed rock and aggregate base material that had been used to construct pads for various roads, parking areas and temporary structures. A vacant Quonset hut-type structure with a concrete floor slab was located in the eastern one-third of the property. Other structures on the property included the former golf clubhouse in the southwest portion of the site, a maintenance building, and former golf cart storage canopy. Santa Rosa Road extends south and southeast from Skyway Road to the former clubhouse location.

Two ponds were noted near the southeastern property line and appeared to be approximately 4½ acres. The ponds were lined and surrounded by chain-link fence. Green vent pipes were located west of the former clubhouse. We understand the vent pipes are apparently associated with a leach field bioactive system installed for the basecamp operations. Several square concrete pads were noted in the central portion of the property. The pads each had numerous conduits protruding from them.

The remainder of the site had a hummocky appearance and was covered by a moderate to heavy growth of weeds, grasses and scattered cobbles and boulders. Mature oak and other trees and brush were dispersed throughout. A gate with large piles of decorative boulders on both sides was located at the entrance to the site at the intersection of Santa Rosa Road and Skyway Road. Long rows of boulders extended east and west from the entrance along the north boundary of the site.

The site is bounded to the north by Skyway Road, beyond which is vacant land, Butte Creek Canyon and Butte Creek. The Paradise Rod and Gun Club and vacant land are located to the east of the site. Undeveloped vacant land is located to the south and west of the site.

Historical Aerial Photograph Review

We reviewed historical aerial photographs of the site available from our files, Google Earth Pro software (Google, 2018), and the website HistoricalAerials.com. The reviewed photographs were taken intermittently from 1941 to 2018.

Review of the aerial photograph from 1941 shows the site to be essentially open grassland with scattered trees. An unpaved road generally traverses the south perimeter of the property. In a 1951 photograph, the site appears essentially the same, however, Skyway Road has now been constructed along the northern boundary of the property. In several photographs from 1951 to about 2002, the site appears to be essentially unchanged.

In a 2003 aerial photograph, the Tuscan Ridge Golf Club and golf course have been constructed in the southern portion of the property, with the golf course in the central portion of the site still under construction. One of the two ponds currently located in the southwestern portion of the site is visible. The second pond appears to have been excavated but not filled with water. The northern portion of the site appears undisturbed. Santa Rosa Road, running north-south from Skyway Road, is visible. The golf course appears to be complete in a 2005 photograph with a club house and parking lot, at the south end of Santa Rosa Road, and several structures with a gravel covered driveway, parking, and storage in the east-central portion of the site. The site appears to be essentially unchanged in several photographs between 2005 and 2018.

In an early 2018 photograph, the golf course appears to be abandoned with brown fairways and greens. In a December 2018 photograph, the central and southwestern portions of the site is occupied by what appears to be the beginning stages of the emergency basecamp erected after the Camp Fire by PG&E and other contractors.

Geology

The project site is located along the northeastern edge of the Great Valley geomorphic province of California. Situated between the granitic and metamorphic basement rock which forms the Sierra Nevada range and the sedimentary and volcanic rock units of the Coast Ranges, the province is a vast asymmetrical, synclinal trough formed by uplifting of the Sierran block to form the Sierra Nevada mountains with the western side dropping to form the valley. Erosion of the

adjacent Sierra Nevada and Coast Ranges has in-filled the valley with a thick sequence of unconsolidated to semi-consolidated Quaternary (Pleistocene and Holocene) age alluvial, basin, and delta plain sediments deposited by the Sacramento and San Joaquin rivers and their tributaries.

The project site is located within the Sierra Foothills, east of the Chico Monocline, a broad upwarping caused by uplift on the east side of the Chico Monocline fault, located a few miles east of Chico. The primary geologic formation with the project area is the Tuscan Formation extending from Redding south to near Oroville, where surface exposures are seen on the east side of the Great Valley. Overall, the Tuscan Formation is composed of a series of volcanic lahars (mudflows) that include volcanic conglomerate, sandstone, siltstone, and pumiceous tuff layers that were deposited over a period of about 1 million years (Helley and Harwood 1985)[1]. The source areas of the lahars were the eroded ancestral volcanoes, Mount Yana and Mount Maidu, which were historically located northwest and south of Lassen Peak in the Cascade Range (Lydon 1968)[2]. As the lahars flowed westward off the ancestral volcanoes and onto the valley floor, they fanned out, causing deposition that varies in thickness and topographic elevation. Over time, ancient streams and rivers flowed downslope over the lahars, forming channels which were then infilled with reworked volcanic sand and gravel sediments. East of the of the Chico Monocline, the Tuscan Formation has been uplifted to form the south to southwest sloping Sierra Foothills east of Chico. Subsequent streams and other drainages have cut their way into the Tuscan to form deep, steep-sided, narrow canyons separated by equally long and narrow, fingerlike ridges or mesas. The total effect is a subparallel arrangement of canyons and southwestward sloping ridge-crests.

The site is situated on one of the fingerlike ridges (Coon Ridge) between Butte Creek Canyon to the north and Nance Canyon to the south. Rock exposed at the surface of the site is mapped by Helley and Harwood (1985) as Unit C (denoted as Ttc) of the Tuscan Formation. Unit C is described as lahars with some interbedded volcanic conglomerate and sandstone locally, separated from overlying units by partially stripped soil horizon. Within the general project area, the lahars are described as 3 to 12 meters thick layers separated from each other by thin layers of volcanic sediments containing abundant casts of wood fragments and prominent cooling fractures. Per Harwood et al (1981)[3], Unit C is described as predominantly lahars composed of angular to subrounded volcanic fragments (cobbles and boulders) in a matrix of gray-tan

[1] Helley E.J. and Harwood D.S. (1985), Geologic Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierran Foothills, California, 1:62,500: United states Geological Survey Map MF-1790
[2] Lydon P.A (1968), Geology of Lahars of the Tuscan Formation, Northern California, The Geological Society of America Volume 116
[3] Harwood D.S. (1981), Geologic Map of the Chico Monocline and Northeastern Park of the Sacramento Valley, California, 1:62,5500: United States Geological Survey Map I-1238

volcanic mudstone in excess of 150 feet in total thickness. A geologic map of the project area is presented as Figure 3.

Surface exposures of the lahar are common all over the site. Areas where hard lahar is exposed at the surface or beneath a thin mantle of soil are referred to by the local contractors as "lava cap." The individual lahar units dip at approximately one to five degrees to the southwest, which also generally conforms to the topography of the site. Many of the current and former tree lines visible on aerial photographs generally follow the boundaries between lahar units.

Subsurface Soil Conditions

The subsurface soil conditions at the project site were initially explored on March 15, 2019, by excavating 40 test pits using a track mounted excavator to depths ranging from a few inches to about 6½ feet bgs. On March 17, 2021, 11 additional test pits were excavated using a small excavator to depths ranging from about six inches to about three feet bgs. The approximate test pit locations are presented as Figure 2.

In general, the site is mantled with relatively thin soil deposits, ranging from less than ½ foot to about 3½ feet (average of about 14 inches), underlain by lahar of the Tuscan Formation, Unit C. The soils generally are composed of clayey sand to sandy lean clay with variable concentrations of gravel, cobble and occasional boulder to clayey gravels. Based on laboratory testing, these soils are low plasticity clays with a very low to low expansion potential. At many of the test pits, the native soil and lahar were overlain by crushed gravel, aggregate base and disturbed fill soils placed during construction of the PG&E basecamp.

The underlying Tuscan formation consists of variably weathered and strong lahar. The lahar is a fine-grained matrix of mud, volcanic ash, sand and gravel with inclusions of cobble and boulder. At each test pit explored, the lahar allows none to a few inches of penetration with the excavators before practical refusal to further excavation was encountered.

The subsurface conditions described above are a generalized interpretation of the soil and bedrock conditions encountered. For specific information regarding the soil conditions encountered at each of the most recent exploration locations, refer to the exploration logs presented as Figures 5 through 15. Detailed test pit logs were not maintained during the explorations in 2019. A graph showing a summary of the previous test pit findings, along with our current findings, is presented as Figure 4.

Groundwater

Groundwater was not encountered at the time of our field explorations. Furthermore, no surface evidence of springs or seepage was observed. A well log completed for a well on the property suggests that groundwater in the project area is greater than 500 feet below the existing ground surface (bgs). This geotechnical evaluation assumes that high groundwater at the project site will not exceed this elevation.

CONCLUSIONS

It is our opinion that development of the site with a residential subdivision is feasible from a geotechnical standpoint, provided that the conclusions and recommendations presented in this report are incorporated into the project design and specifications.

The principal geotechnical considerations are discussed in the following sections.

Seismic Design Criteria

The 2019 edition of the California Building Code (CBC) references the American Society of Civil Engineers (ASCE) Standard 7-16 for seismic design. Using the latitude and longitude for the approximate center of the project site, Table 1 provides 2019 seismic design parameters developed using a web interface developed by the Structural Engineers Association of California (SEAOC) and the California Office of Statewide Health Planning and Development (OSHPD) (https://seismicmaps.org). Since S_1 is greater than 0.2g, the 2019 *CBC* coefficient values F_v, S_{M1}, and S_{D1} presented are valid for seismic design, provided the requirements in Exception Note No. 2 in Section 11.4.8 of *ASCE 7-16* apply, specifically if $T \leq 1.5T_S$. If not, a site-specific ground motion hazard analysis is required.

Table 1

Latitude: 39.7129° N Longitude: 121.7086° W	ASCE 7-16 Table/Figure	2019 CBC Table/Figure	Factor/ Coefficient	Value
Short-Period MCE at 0.2 seconds	Figure 22-1	Figure 1613.2.1(1)	S_S	0.714
1.0 second Period MCE	Figure 22-2	Figure 1613.2.1(2)	S_1	0.297
Soil Class	Table 20.3-1	Section 1613.2.2	Site Class	C
Site Coefficient	Table 11.4-1	Table 1613.2.3(1)	F_a	1.214
Site Coefficient	Table 11.4-2	Table 1613.2.3(2)	F_v	1.5
Adjusted MCE Spectral Response Parameters	Equation 11.4-1	Equation 16-36	S_{MS}	0.867
	Equation 11.4-2	Equation 16-37	S_{M1}	0.446
Design Spectral Acceleration Parameters	Equation 11.4-3	Equation 16-38	S_{DS}	0.578
	Equation 11.4-4	Equation 16-39	S_{D1}	0.297
Seismic Design Category	Table 11.6-1	Table 1613.2.5(1)	Risk Category I to IV	D
	Table 11.6-2	Table 1613.2.5(2)	Risk Category I to IV	D

Notes: MCE = Maximum Considered Earthquake; g = gravity

Soil Expansion Potential

The near-surface sandy clays and clayey gravels encountered during our explorations are low-plasticity materials with low expansion (shrink/swell) characteristics (EI = 14). Furthermore, the underlying lahar bedrock is non-expansive. Accordingly, measures to resist or control potential soil expansion pressures are not considered necessary on this project

Foundation Support

Based on the native subsurface conditions encountered, shallow spread foundations should provide adequate support for the anticipated one- to two-story single-family homes provided the recommendations presented in this report are incorporated into the project design and specifications. In areas of fill, these soils and/or an approved import soil should also provide adequate support for foundations provided they are placed and compacted in accordance recommendations provided in this report.

Excavation Conditions

The relatively thin layer of surface and near-surface soil and surficial cobbles and boulder at the site should be readily excavated using conventional earthmoving and trenching equipment. The underlying lahar or "lava cap", however, can be particularly resistant, requiring heavy equipment such as a Caterpillar D10L fitted with a single tooth ripper for general earthwork and hydraulic shovels with case hardened steel ripper or rock trenching equipment, i.e., a "rock wheel", to excavate utility and foundation trenches. Localized blasting or the use of a jack hammer may be required to remove large andesitic boulders in confined trenches.

Shallow excavations (less than five feet deep) in the soil mantel covering the lahar should stand vertically for a period long enough for typical foundation and utility construction, unless they become wet or are disturbed. Sand, however, may cave and/or slough soon after it is exposed in the excavation. Where encountered, the contractor should be prepared to brace or shore the excavations, as necessary. Excavations into the lahar (lava cap) and any conglomerates, if encountered, should stand near vertical, although fractures in the rock may result in local instability.

Temporarily excavations less than 20 feet in depth should be constructed in accordance with federal, local and OSHA standards (29 CFR Part 1926) under the guidance of the Contractors qualified "competent person." For preliminary evaluation, the soils encountered would classify as Cal-OSHA Type C soil, while the lahar would classify as Type A soil. In no case should the information provided be interpreted to mean that Wallace-Kuhl & Associates is assuming responsibility for site safety or the Contractor's activities.

Excavated materials should not be stockpiled directly adjacent to an open excavation to prevent surcharge loading of the excavation sidewalls. Heavy or frequent truck and equipment traffic should also be avoided near excavations. If material is stored or heavy equipment is stationed and/or operated near an excavation, a shoring system must be designed to resist the additional pressure due to the superimposed loads.

Soil Suitability for Engineered Fill Construction

The soils encountered are considered suitable for use in engineered fill construction provided these materials do not contain rubble, rubbish, significant organic concentrations and are at a moisture content appropriate for compaction. Screening may be required to remove over-sized cobbles and boulder. Imported materials, if necessary, should be granular and approved by our office prior to importing the materials to the site.

The lahar (lava cap) includes andesite cobbles and boulders in a fine grained matrix of hardened mud, volcanic ash, sand and gravel. During excavation, it is expected that large fragments will be generated that will need to be broken-down or crushed to six inches or less in size in order to use the material for engineered fill. Resistant fragments will need to be placed in the lower portion of deep fills or screened and disposed outside of lots and pavement areas. Even with processing, fills composed of fractured lahar may need to be mixed with soil to avoid concentrations or nesting of rock fragments.

Crushing of the fine-grained matrix of the lahar may produce materials suitable for uses such as aggregate base or pervious sand or gravel drainage material. While potentially feasible, it not known whether crushing will produce a material with the appropriate aggregate sizes or if the material will meet Caltrans standards for durability (Durability Index, R-value, Sand Equivalent) specified for aggregate base. If considered, we suggest that a trial be performed prior to bidding to evaluate equipment capabilities and procedures so that bidders can develop responsive bids. The trial should also include laboratory tests on the processed material to determine its physical properties.

Groundwater and Seasonal Moisture

Based on our observations and previous referenced data, no spring activity was observed and groundwater levels should not encroach near-surface or impede grading operations at the site. It's not uncommon, however, to encountered seepage accumulating and/or flowing from between individual lahar units, within fractures of the lahar and/or as moisture perching atop and seeping over the lahar. Furthermore, if site grading is performed during or following extended periods of rainfall (winter and spring months), the moisture content of the near-surface soils may be significantly above optimum and unstable.

Controlling and diverting seepage and stormwater runoff away from the proposed improvements will be a critical element in developing the Site. Since the project is in the conceptual stage and grading plans are not currently available, the layout for the proposed subdivision is unknown. In most instances, gravel filled utility trenches and pavement subgrades can be utilized to intercept and collect seepage, runoff and landscape irrigation. To prevent water accumulation in the trenches or pavement baserock, it will be necessary to install a passive drainage system that collects the accumulated water and diverts it to the storm drain system for the development. If an extensive storm drain system is not planned, it will be necessary to install drainage ditches or gravel filled trenches (French drains) that intercept the subsurface water and safely divert it away from the development.

Typical remedial measures for unstable soil conditions include discing and aerating the soils during dry weather, mixing the soils with dryer materials, removing and replacing the soils with an approved fill material, stabilization with a geotextile fabric or grid, or mixing the soils with an approved hydrating agent such as a lime or cement product. Our firm should be consulted prior to implementing any remedial measure to observe the unstable subgrade condition and provide site-specific recommendations.

Pavement Subgrade Quality

The results of our laboratory tests indicate the near-surface soil should provide fair support characteristics for pavements as represented by Resistance ("R") values (California Test 301) ranging from 24 to 40. The R-value test results are shown on Plates A4 and A5. Given the anticipated grading and mixing of soils during earthwork construction, and R-value of 25 was used to evaluate pavements supported by native soil or engineered soil fill. The underlying lahar or crushed lahar fills should provide good support for pavements with an R-value of at least 50. Therefore, an R-value of 50 was used to develop pavement sections supported on this material.

Undocumented Fill

During construction of the emergency basecamp during and following the Camp Fire in 2018, PG&E performed extensive grading and placed large areas of aggregate base throughout the central and southern portions of the site. It's unknown if the fill and aggregate was compacted as engineered fill, however, we speculate that that no quality control or testing was performed during grading. Based on this assumption, it is our opinion that the soils disturbed and the fill and aggregate placed will not be suitable in their current condition for support of the proposed improvements due to potential settlement issues.

Seismic and Geologic Hazards

Butte County has a history of relatively low seismicity in comparison with more active seismic regions, such as the Bay area or Southern California. The site is not located within an Earthquake Fault Study Zone (Hart and Bryant, 2007) or an Earthquake Hazards Zone designed by the California Geologic Survey (CGS). The evaluation of potential seismic hazards was not within the scope of this study. Based on our findings and previous hazards studies in the general project area, however, it is our professional opinion that the potential for geologic hazards, such as liquefaction, fault rupture or slope instability, is unlikely.

Soil Corrosion Potential

Two samples of near-surface soil were submitted to Sunland Analytical Lab of Rancho Cordova, California, for testing to determine pH, chloride and sulfate concentrations, and minimum resistivity to help evaluate the potential for corrosive attack upon buried concrete. The results of the corrosivity testing are summarized in Table2. Copies of the test reports are presented on Figures A6 through A9.

Table 2

Analyte	Test Method	Sample Identification	
		TP43 (0'-0.5')	TP51 (0'-3')
pH	CA DOT 643 Modified*	7.14	6.18
Minimum Resistivity	CA DOT 643 Modified*	1210 Ω-cm	4560 Ω-cm
Chloride	CA DOT 422	23.5 ppm	4.0 ppm
Sulfate	CA DOT 417	118.3 ppm	4.9 ppm
Sulfate – SO4	ASTM D-516	108.8 mg/kg	5.0 mg/kg

Notes: * = Small cell method, Ω-cm = Ohm-centimeters, ppm = Parts per million, mg/kg= milligrams per kilogram

The California Department of Transportation Corrosion and Structural Concrete Field Investigation Branch, 2015 Corrosion Guidelines (Version 2.1), considers a site to be corrosive to foundation elements if one or more of the following conditions exists for the representative soil samples taken: the soil has a chloride concentration greater than or equal to 500 ppm, sulfate concentration greater than or equal to 2000 ppm, or the pH is 5.5 or less. Based on this criterion, the on-site soils tested are not considered unusually corrosive to steel reinforcement properly embedded within Portland cement concrete (PCC).

The California Amendments to Section 10.7.5 of the American Association of State Highway and Transportation Officials (AASHTO) bridge design specifications, 6th Edition (AASHTO 2012) considers soils to be corrosive to buried metals if the minimum resistivity is 1,000 ohm-cm or less. Based on this criterion, the on-site soils tested are also not considered significantly corrosive to buried metal.

Table 19.3.1.1 – Exposure Categories and Classes, of American Concrete Institute (ACI) 318-14, Section 19.3 – Concrete Design and Durability Requirements, as referenced in Section 1904.1 of the 2016 CBC, indicates the severity of sulfate exposure for the sample tested is Exposure Class S0 (water-soluble sulfate concentration in contact with concrete is low and

injurious sulfate attack is not a concern). The project structural engineer should evaluate the requirements of ACI 318-14 and determine their applicability to the site.

Wallace-Kuhl & Associates are not corrosion engineers. Therefore, if it is desired to further define the soil corrosion potential at the site, a corrosion engineer should be consulted.

RECOMMENDATIONS

General

The recommendations presented below are appropriate for construction in the late spring through fall months. The on-site soils will become very moist and wet following rainfall in the winter and early spring months, and likely will not be suitable for earthwork without drying by aeration, chemical treatment, or geogrid stabilization. Should the construction schedule require work to start or continue during the wet months, additional recommendations can be provided, as conditions dictate.

Site preparation should be accomplished in accordance with the provisions of this report. A representative of the Geotechnical Engineer should be present during all earthwork and ground improvement construction operations to evaluate compliance with our recommendations and the guide specifications included in this report. The Geotechnical Engineer of Record referenced herein should be considered the Geotechnical Engineer that is retained to provide geotechnical engineering observation and testing services during construction and shall include either the Geotechnical Engineer or his or her representative.

Site Clearing

Construction areas should be cleared of any existing surface and subsurface structures to expose firm and stable soils as determined by the Geotechnical Engineer's representative. The area to be cleared should extend at least five feet beyond the edge of all exterior foundations and at least five feet beyond any exterior flatwork or pavements, where practical. Demolition debris should be removed from the site, or used as engineered fill, provided it is processed per the recommendations included in this report.

Any existing underground utilities designated to be removed or relocated should include all trench backfill and bedding materials. The resulting excavations should be restored with engineered fill placed and compacted in accordance with the recommendations included in this

report. On-site wells, septic systems, or below-grade tanks should be properly abandoned in accordance with State and local requirements.

Any existing pavements designated for removal may be broken up, pulverized, and reused as engineered fill where appropriate, or removed from the site. If pavement rubble is to be reused as engineered fill, the material should be pulverized to fragments less than three inches in largest dimension, mixed with soil to form a compactable mixture, and must be approved by the owner.

Existing surface vegetation/organics and organically laden soil within construction areas should be stripped from the site. Debris from the stripping should not be used as general fill within structure, concrete slab or pavement areas. With prior approval from the Geotechnical Engineer, strippings may be used in proposed park and landscape areas, provided they are kept at least five feet from building footprints, pavements, concrete slabs and other surface improvements.

Discing of the organics into the surface soils may be a suitable alternate to stripping, depending on the condition and quantity of the organics at the time of grading. The decision to utilize discing in lieu of stripping should be made by the Geotechnical Engineer, or his representative, at the time of earthwork construction. Discing operations, if approved, should be observed by the Geotechnical Engineer's representative, and be continuous until the organics are adequately mixed into the surface soils to provide a compactable mixture of soil containing minor amounts of organic matter. Pockets or concentrations of organics will not be allowed.

Any trees, bushes and other vegetation designated for removal should include the entire root-ball and roots larger than ½-inch in diameter. Adequate removal of debris and roots may require laborers and handpicking to clear the subgrade soils to the satisfaction of the Geotechnical Engineer's representative.

Any on-site ditches, swales or detention ponds should be fully drained of water and cleaned of organics. Saturated and unstable soils exposed should be removed to expose firm, native soil or rock, as verified by the Geotechnical Engineer. These soils will likely be saturated and will require aeration and a period of drying to allow proper compaction. Organically contaminated soils will not be suitable for use in engineered fill construction.

Depressions resulting from site clearing operations, as well as any loose, soft, disturbed, wet, or organically contaminated soils, as identified by the Geotechnical Engineer's representative, should be cleaned out to firm, undisturbed soils or lahar and backfilled with engineered fill placed and compacted in accordance with the recommendations in this report. It is important

that the Geotechnical Engineer's representative be present during site clearing operations to verify adequate removal of the surface and subsurface items, as well as the proper backfilling of resulting excavations.

Subgrade Preparation

Based on our findings, a large portion of the Site is underlain by anywhere from a few inches to over three feet of undocumented, variably-dense, soil fill, gravel and scattered debris. In our opinion, these materials, in their current condition, will not be suitable for support of the proposed structures and pavements due to potential settlement issues. The most direct method to improve the subgrade conditions would be to overexcavate the undocumented and deleterious materials to expose firm soil or rock, remove any deleterious materials encountered, and restore the area with compacted engineered fill. The zone of overexcavation and compaction should extend at least five feet beyond any structural foundations or concrete slabs. In proposed exterior flatwork and pavement areas, the lateral zone of overexcavation and compaction can be reduced to two feet beyond the proposed improvements.

Where building pads will be located over former ponds and depressions from the golf course development, the depressions should be widened as necessary to reduce the overall fill differential to less than two feet. The affected lots should be clearly shown on the project grading plans.

The native, undisturbed soils and highly weathered lahar are relatively loose and we anticipate that clearing operations will likely cause additional disturbance to the upper soils. Therefore, in all areas that will support concrete slabs, engineered fill or pavement, the surface soils should be thoroughly scarified to a depth of at least 12-inches, brought to a uniform moisture content above the optimum moisture content, and compacted to not less than 90 percent of the maximum dry density per ASTM D1557 specifications. In pavement areas, the relative compaction of the upper 6-inches of final soil subgrade should be increased to 95 percent of the maximum dry density.

Where moderately to unweathered lahar rock is exposed, no scarification should be necessary; however, these surfaces should be proof-rolled to a firm and unyielding condition. Any localized zones of soft or pumping materials observed should be scarified and compacted or be overexcavated and replaced with engineered fill.

The performance of pavement is critically dependent upon uniform and adequate compaction of the soil subgrade, as well as all engineered fill and utility trench backfill within the limits of the pavements. Final pavement subgrade preparation (i.e. scarification, moisture conditioning and

compaction) should be performed after underground utility construction is completed and just prior to aggregate base placement.

Pavement subgrades should be stable and unyielding under heavy wheel loads of construction equipment. To help identify unstable subgrades within the pavement limits, a proof-roll should be performed with a fully-loaded, water truck on the exposed subgrades prior to placement of aggregate base. The proof-roll should be observed by the Geotechnical Engineer's representative.

The prepared subgrade soils should be protected from disturbance until covered by capillary break material or aggregate base. Disturbed subgrade soils may require additional processing and recompaction just prior to construction of these improvements, depending on the level of disturbance.

All subgrade preparation must be performed in the presence of the Geotechnical Engineer's representative who will evaluate the performance of the subgrade under compaction loads and identify any loose or unstable soil conditions that could require remediation. We suggest that a rippability evaluation be performed prior to bidding to evaluate equipment capabilities and procedures for excavation and processing of the lahar and that the information be provided to the bidders. In addition, we suggest that construction bid documents should contain unit prices (price per cubic foot) for additional excavation due to unsuitable materials and replacement with engineered fill and for blasting.

Engineered Fill

From a geotechnical engineering standpoint, the on-site native soils blanketing the site and existing undocumented gravel and soil are considered suitable for use as engineered fill provided that they do not contain significant quantities of organics, rubble and deleterious debris, and are at a proper moisture content to achieve the desired degree of compaction.

The lahar bedrock, boulder, or approved inert debris, i.e., concrete or asphalt-concrete pavement, that breaks into fragments less than six inches in maximum dimension can be used as engineered fills within the upper three feet of final soil subgrade beneath proposed floor slabs and pavement, and within the upper five feet of final soil subgrade beneath building foundations. The lahar and debris fragments should be thoroughly mixed with soil to avoid concentrating or nesting the material.

Lahar or concrete or asphalt fragments ranging from six to 18 inches in maximum dimension may be placed below these depths provided they are also thoroughly mixed with soil. If the rock

and/or debris does not break down to a gradation compatible with in-place density testing, then compactive effort should be applied using track equipment weighing at least 20 tons (Caterpillar 815 or larger) until there is no perceptible increase in fragmentation of the particles or observable consolidation of the fill during repeated passes of the compaction equipment.

In pavement areas, lahar or debris fragments greater than 18 inches in maximum size may be included in engineered fills below a depth of five feet, but only at the foundation level for the fill. The boulders or fragments should be staggered and spaced so that soil or crushed lahar fill can be machine placed and compacted between them to form an interstitial fill. As an alternative, flooding and jetting can be used to sluice cohesionless soil, i.e., sand, into voids between the boulders and fragments. Following sluicing, this fill course should be proof-rolled with heavy track equipment until there is no observable consolidation of the fill beneath the equipment. Fragments greater than 24 inches in maximum size should not be included in any fill.

Engineered fill consisting of on-site soil, highly weathered lahar, existing undocumented fill material, or import materials should be placed in lifts not exceeding six inches in compacted thickness, with each lift being thoroughly moisture conditioned to at least the optimum moisture content and uniformly compacted to at least 90 percent relative compaction. The upper six inches of engineered fill placed in pavement areas should be uniformly compacted to at least 95 percent relative compaction at a moisture content of at least the optimum moisture content.

Imported fill materials should be compactable, well-graded, granular soils with a Plasticity Index not exceeding 15 when tested in accordance with ASTM D4318; an Expansion Index of 20 or less when tested in accordance with ASTM D4829; and, should not contain particles greater than three inches in maximum dimension. Imported fill material to be used within pavement areas should possess a Resistance value of 40 or higher, when tested in accordance with California Test 301. In addition, with the exception of imported aggregate base and bedding/initial fill materials for underground utility construction, the contractor should provide appropriate documentation for all imported fill materials that designates the import materials do not contain known contaminants per Department of Toxic Substances Control's guidelines for clean imported fill material (DTSC, 2001), and have corrosion characteristics within acceptable limits. Imported soils should be approved by the Geotechnical Engineer prior to being transported to the site.

The Geotechnical Engineer's representative be present on a regular basis during all earthwork operations to observe and test the engineered fill and to verify compliance with the recommendations of this report and the project plans and specifications.

Cut-Fill Transitions

We anticipate that some structures could be supported by building pads that transition between compressible fill or native soil and essentially uncompressible lahar. Because of the different physical properties and thus support characteristics of these two materials, there is a possibility that unpredictable and sometimes adverse differential settlement and concrete cracking could occur within this transition. In these situations, the lahar should be undercut, if feasible, and replaced with engineered fill to maintain a maximum differential fill thickness of two feet. As an alternative, foundations should be deepened to bear on the lahar and floor slabs should be reinforced to resist differential movement and cracking. The overexcavation should extend laterally at least five feet beyond the perimeter of the structure.

Cut and Fill Slopes

Although grading plans were not available at the time this report was prepared, we anticipate that slopes ranging from about five to 10 feet in vertical height may be planned. In our professional opinion, permanent cut and fill slopes should be inclined no steeper than two horizontal to one vertical (2(h):1(v)). This slope recommendation is based on our experience with similar conditions since no detailed slope stability analysis was performed to justify steeper slopes. Cut slopes in the lahar can likely be inclined at gradients of 1(h):1(v) or steeper if no adverse fractures are present. If slopes with gradients steeper than 2(h):1(v) are considered or slopes will be greater than 10 feet in vertical height, the Geotechnical Engineer should review the project grading plan and provide additional guidance regarding stable slope configuration and drainage design. Additional geotechnical exploration, testing and evaluation may be required.

Given this 2(h):1(v) inclination, there is a modest risk that displacement and/or movement could occur in the event of strong seismic ground shaking. For the native soils, highly weathered lahar and compacted fill conditions anticipated, we expect this movement to be relatively shallow, requiring limited cleanup and dressing to restore the slopes to their original condition. If this risk is unacceptable, the slopes should be flattened to 3(h):1(v).

Where fills will be constructed on ground that slopes at an inclination of 6(h):1(v) or steeper, a two foot deep toe key should be excavated into firm, competent soil/weathered rock. The keyway should be at least four feet wide at the bottom or a width equal to ½ the vertical slope height, whichever is greater, with the bottom inclined down and back into the slope at two percent. As filling progresses, benches should also be cut into firm, competent soil/lahar. Each bench should consist of a level terrace at least four feet wide with the rise to the next bench held to three feet or less.

It is difficult to construct fill on the specified slopes without leaving a loose, poorly-compacted soil zone on the slope face. To reduce sloughing and erosion, the fill slopes should be slightly over-built, then cut back to firm, well-compacted soils prior to applying vegetative cover. If slopes cannot be over-built and cut back, the finished soil slopes should be compacted to reduce, as much as practical, the thickness of the loose surficial veneer. The compaction may be done by making several coverages from top to bottom of the slopes with a track-mounted bulldozer, front-end loader, or sheeps foot compactor.

Paved interceptor drains should be provided along the tops of slopes where the tributary area flowing toward the slope has a drainage path greater than 40 feet, measured horizontally. The interceptor drains should be sloped to a suitable drainage device and disposed off-site well below the toe of the slope. Drop inlets and drainage pipes should not be installed near the crests of slopes because leakage can result in maintenance problems or possible slope failure. The slopes should be inspected periodically for erosion, and if detected, repaired immediately. Interceptor drains should be cleaned before the start of each rainy season, and if necessary, after each rainstorm. To reduce erosion and gulling, all disturbed areas should be planted with erosion-resistant vegetation suited to the area. As an alternative, jute netting or geotextile erosion control mats can be installed per the manufacturer's recommendations.

Utility Trench Backfill

Utility trench backfill should be mechanically compacted as engineered fill in accordance with the following recommendations. Bedding of utilities and initial backfill around and over the pipe should conform to the manufacturer's recommendations for the pipe materials selected and applicable sections of the governing agency standards. If open-graded, crushed rock is used as bedding or initial backfill, an approved geotextile filter fabric should be used to separate the crushed rock from finer-grained soils. The intent of geotextile filter fabric is to prevent soil from migrating into the crushed rock (piping), which could result in trench settlement.

As discussed in the *Conclusions*, controlling and diverting seepage and stormwater runoff away from the proposed improvements will be a critical element to development of the site. During or following wet weather, infiltrating storm runoff will likely create a temporary perched water condition and seepage above the hard lahar. If uncontrolled, the seepage could migrate beneath or into structures and beneath or through pavement aggregates, leading to moisture issues and instability. Gravel filled utility trenches and pavement subgrades can often be utilized to intercept and collect seepage, runoff and landscape irrigation, however, trenches should include a passive dewatering system that diverts the collected water into a sump or to storm drain manholes or drop inlets. An example of a passive system would include a perforated drainpipe enclosed in Caltrans Class 2 permeable rock and/or clean gravel and

geotextile filter fabric is often placed at a depth of five to eight feet in the storm drain trenches. If a storm drain system is not planned throughout the development, it will be necessary to install drainage ditches or gravel filled trenches (French drains) that intercept the subsurface water and safely divert it away from the proposed improvements. Once a grading and utility plan has been developed, the Geotechnical Engineer should review the plans and provide additional guidance as to the location and details for the drainage system.

In building pad areas, utility trenches, i.e., sewer laterals, yard drains, water services, etc. should slope down and away from structures. Furthermore, low-permeable materials, i.e., silt, clay or an approved controlled low strength material (CLSM), should be used as backfill for utility trenches located within the building footprints and extending at least five feet horizontally beyond perimeter foundations to reduce water transmission beneath the buildings.

Utility trench backfill should be placed in maximum 12 inch-thick lifts (loosely placed thickness), thoroughly moisture conditioned to at least the optimum moisture content, and mechanically compacted to at least 90 percent relative compaction. Within the upper six inches of pavement subgrade soils, compaction should be increased to at least 95 percent relative compaction at no less than the optimum moisture content. The lift thickness will be dependent of the type of compaction equipment used.

Underground utility trenches that are aligned nearly parallel with shallow foundations should be at least three feet from the outer edge of foundations, wherever possible. As a general rule, trenches should not encroach into the zone extending outward at 1(h):1(v) inclination below the bottom of shallow foundations. Additionally, trenches parallel to shallow foundations should not remain open longer than 72 hours. The intent of these recommendations is to prevent loss of both lateral and vertical support of shallow foundations, resulting in possible settlement.

Foundation Design

The proposed one- and two-story residential structures may be supported upon continuous and/or isolated spread foundations extending at least 12 inches below lowest adjacent soil grade. Lowest adjacent soil grade is defined as the grade upon which the capillary break material is placed or exterior soil grade, whichever is lower. Continuous foundations supporting one- and two-story structures should maintain a minimum width of 12 inches; while isolated spread foundations should be at least 24-inches in plan dimension. Foundations should be continuous around the perimeter of the building to reduce moisture variations beneath the structures.

Foundations bearing on undisturbed or compacted native soils, engineered fill, or a combination of those materials may be sized for maximum allowable "net" soil bearing pressure of 2,500 pounds per square foot (psf) for dead plus live load. Foundations bearing on sound lahar rock, as verified by the Geotechnical Engineer, may be sized for a maximum allowable "net" soil bearing pressure of 6,000 psf for dead plus live load. A one-third increase in the allowable bearing pressures may be applied when considering short-term loading due to wind or seismic forces. The weight of the foundation concrete extending below lowest adjacent soil grade may be disregarded in sizing computations.

Total settlement of an individual foundation will vary depending on the plan dimensions of the foundation and the actual load supported. Based on the foundation criteria discussed above and the assumed foundation loads, foundations are anticipated to experience a maximum total static settlement on the order of about ½-inch or less, and differential settlement on the order of about ½-inch for 50 lineal feet or the shortest distance of the structure, whichever is less.

All foundations should be adequately reinforced to provide structural continuity, mitigate cracking and permit spanning of local soil irregularities. The structural engineer should determine final foundation reinforcing requirements.

Resistance to lateral foundation displacement may be computed using an allowable friction factor of 0.40, which may be multiplied by the effective vertical load on each foundation. Additional lateral resistance may be computed using an allowable passive earth pressure equivalent to a fluid pressure of 300 psf per foot of depth, acting against the vertical projection of the foundation. These two modes of resistance should not be added together unless the frictional component is reduced by 50 percent since full mobilization of the passive resistance requires some horizontal movement, effectively reducing the frictional resistance.

Where excavations into the lahar are not reasonably feasible and the foundations cannot be embedded, foundation resistance to lateral and uplift forces may be achieved by rock tiedown anchors (such as grouting steel dowels) into the lahar. There are several approaches and anchor products available that would be suitable for this project. If dowels are used, a common approach would be to drill two to four inch diameter holes using air percussion to a depth of at least three feet; blowing out the hole to remove as much rock dust as possible; filling the hole with a non-shrink grout (such as Embeco 636) or an approved high strength epoxy; and then installing the dowel (such as a No. 8, grade 60 reinforcing bar).

The uplift capacity of the anchor is typically assumed to be equivalent to the effective weight of bedrock within a cone or wedge defined by a 1(h):1(v) projection up from the outside edge and mid-depth of the grouted dowel. A bedrock effective unit weight of 125 pounds per cubic foot

and a minimum factor of safety of 2 may be used for estimating uplift. For anchors with overlapping cones, the effective weight of bedrock within the overall area of the overlapping cones should be used for determining uplift. The overlapping of the zones of influence between adjacent anchors results in anchor uplift capacity less than that for a single anchor.

The actual anchor design and approach should be determined by the Contractor in coordination with the Structural Engineer. Additional rock cores or geophysical testing may be required to determine the final depth of the anchors and the design criteria. An uplift load test should be performed on some (typically 5 to 10 percent) of the completed anchors to verify the design capacity. The Geotechnical Engineer should review the final anchor design and a representative should observe the load test and anchor installation.

All foundation excavations should be observed by the Geotechnical Engineer's representative prior to placement of reinforcement and concrete to verify firm bearing materials are exposed and the proximity of anchors to natural rock discontinuities, such as fractures.

Interior Floor Slabs

Interior concrete slab-on-grade floors should be supported by the soil subgrade prepared in accordance with the recommendations contained in the *Subgrade Preparation* and *Engineered Fill* sections.

The interior concrete slabs should be at least four inches thick, however, the project structural or civil engineer should determine final floor slab thickness, reinforcement and joint spacing. Temporary loads exerted during construction from vehicle traffic, cranes, forklifts, other construction equipment, storage of palletized construction materials, etc. should be considered in the design of the thickness and reinforcement of the interior concrete slabs-on-grade.

Moisture Penetration Resistance

It is likely that floor slab subgrade soils will become very moist or wet at some time during the life of the structures. This is a certainty when slabs are constructed during the wet season or when constantly wet ground or poor drainage conditions exist adjacent to structures. For this reason, it should be assumed that interior slabs with moisture-sensitive floor coverings or coatings will require protection against moisture or moisture vapor penetration through the slabs.

Interior floor slabs for the planned buildings should, as a minimum, be underlain by a layer of free-draining crushed rock/gravel, serving as a deterrent to migration of capillary moisture. The

crushed rock/gravel layer should be between four- and six-inches-thick and graded such that 100 percent passes a one-inch sieve and less than five percent passes a No. 4 sieve. Additional moisture protection may be provided by placing a vapor retarder membrane (at least 10-mils thick) directly over the crushed rock/gravel. The water vapor retarder membrane should meet or exceed the minimum specifications as outlined in ASTM E1745 and be installed in strict conformance with the manufacturer's recommendations. For portions of the interior floor slabs that are designated to support vehicular traffic, we recommend placing the vapor retarder membrane directly over compacted aggregate base.

Floor slab construction practice over the past 30 years or more has included placement of a thin layer of dry sand or pea gravel over the vapor retarder membrane. The intent of the sand/pea gravel is to aid in the proper curing of the slab concrete. However, during the wet seasons moisture can become trapped in the sand or pea gravel, which can lead to excessive moisture vapor emissions from floor slabs. As a consequence, we consider use of the sand/pea gravel layer as optional. The concrete curing benefits should be weighed against efforts to reduce slab moisture vapor transmission.

It is emphasized that the crushed rock/grave and the vapor retarder membrane suggested above provides only a limited, first line of defense against soil-related moisture issues and will not "moisture proof" the slab. Nor do these measures provide an assurance that slab moisture transmission levels will tolerable levels to prevent damage to floor coverings or other building components. If increased protection against moisture vapor penetration is desired, a concrete moisture protection specialist should be consulted. The design team should consider all available measures for slab moisture protection. It is commonly accepted that maintaining the lowest practical water-cement ratio in the slab concrete is one of the most effective ways to reduce future moisture vapor penetration of the completed slabs.

Exterior Flatwork

The final subgrade for exterior concrete flatwork (i.e., sidewalks, patios, etc.) should be prepared and constructed in accordance with recommendation provided in the *Subgrade Preparation* and *Engineered Fill* sections. Exterior flatwork should be underlain by at least four inches of aggregate base compacted to at least 95 percent relative compaction to provide stability during slab construction and to protect the soils from disturbance during construction.

Exterior flatwork concrete should be at least four inches thick. Consideration should be given to thickening the edges of the slabs at least twice the slab thickness where wheel traffic is expected over the slabs. Expansion joints should be provided to allow for minor vertical movement of the flatwork. Exterior flatwork should be constructed independent of other

structural elements by the placement of a layer of felt material between the flatwork and the structural element. The slab designer should determine the final thickness, strength and joint spacing of exterior slab-on-grade concrete. The slab designer should also determine if slab reinforcement for crack control is required and determine final slab reinforcing requirements.

Practices recommended by the Portland Cement Association (PCA) for proper placement, curing, joint depth and spacing, construction, and placement of concrete should be followed during exterior concrete flatwork construction.

Pavement Design

The subgrade soils and weathered bedrock in pavement areas should be prepared in accordance with the recommendations contained in the *Subgrade Preparation* and *Engineered Fill* sections.

Based on laboratory testing, an R-value of 25 was used for design of pavements supported on the near-surface soil and/or engineered fill. An R-value of 50 was used for pavements supported on the hard lahar rock. The pavement sections presented in Table 3 have been calculated using traffic indices assumed to be appropriate for the project. The procedures used for pavement design are in general conformance with Chapters 600 to 670 of the *California Highway Design Manual* (Caltrans, 2019). The project civil engineer should determine the appropriate traffic index and pavement section based on anticipated traffic conditions. If needed, we can provide alternative pavement sections for different traffic indices.

Table 3

Traffic Index (TI)	Typical Street Classifications	Number of Residential Units Served (20-yr. Design)	Type A Asphalt Concrete (inches)	R-value = 25 Class 2 Aggregate Base (inches)	R-value = 50 Class 2 Aggregate Base (inches)
4.5	Average Residential	≤ 24	2½	6	4
			2½*	6	4
5.0	Residential Collectors	25 – 40	2½	8	4
			3*	7	4
5.5		41- 90	2½	9	5
			3½*	7	4
6.0	Collectors and Minor Arterials	91 – 180	3	11	6
			3½*	9	4
6.5		181 – 300	3	12	6
			4*	10	4
7		301 – 500	3	13	7
			4*	11	5
7.5	Local Industrial and Arterials	501 – 700	3½	14	7
			4½*	12	5
8.0		701 - 900	4	15	8
			5*	12	5

Notes: * = *Asphalt concrete thickness contains the Caltrans safety factor.*

All pavement materials and construction methods of structural pavement sections should conform to the applicable provisions of the *Caltrans Standard Specifications*, latest edition. All aggregate base should be compacted to at least 95 relative compaction.

Efficient drainage of all surface water to avoid infiltration and saturation of the supporting aggregate base and subgrade soils is important to pavement performance. Weep holes could be provided at drainage inlets, located at the subgrade-aggregate base interface, to allow accumulated water to drain from beneath the pavements.

Consideration should be given to using full-depth curbs between landscaped areas and pavements to serve as a cut-off for water that could migrate into the pavement base materials or subgrade soils.

Retaining Walls

All retaining walls or below grade walls for the buildings should be designed to resist the lateral soil pressures of the retained soils. Retaining walls that are fixed/restrained at the top should be capable of resisting an “at-rest” lateral soil pressure equal to an equivalent fluid pressure of 60 psf per foot of the wall height (fully drained conditions). Retaining walls that will be allowed to slightly rotate about their base (unrestrained at the top or sides) should be capable of resisting an "active" lateral soil pressure equal to an equivalent fluid pressure of 40 psf per foot of wall height (fully drained conditions). For retaining walls with backfill sloped at a gradient of up to 2(h):1(v), add 20 and 15 psf per foot of the wall height to the at-rest or active equivalent fluid pressures provided above, respectively.

Based on recent research (Lew, et al. 2010), the seismic increment of earth pressure may be neglected if the maximum peak ground acceleration at the site is 0.4 g or less. Our analysis indicates the maximum peak ground acceleration at the site will be about 0.38g; therefore, the seismic increment of lateral earth pressure may be neglected, and retaining walls may be designed using the lateral earth pressures presented above.

If structural elements, i.e., foundations, roadways, etc., encroach the 1(h):1(v) projection from the bottom of retaining walls, the retaining walls should account for surcharge loads resulting from those structural elements. Additionally, any below-grade retaining walls should also account for surcharge loads resulting from construction equipment, vehicles, palletized materials, etc. that encroach the 1(h):1(v) projection from the bottom of the below-grade retaining walls. Surcharge loading under the circumstances described above should be evaluated by the retaining wall designer on a case-by-case basis and be included in their design of the walls. The retaining wall designer should evaluate the surcharge load distribution, magnitude of the surcharge resultant force to be applied on the walls, and the location of where the resultant force should be applied on the walls. Surcharge loading on the retaining walls will depend on the specific surcharge load type (e.g. point load, distributed load, etc.) and distance away from the retaining walls.

Retaining wall or below grade walls should be fully drained to prevent the build-up of hydrostatic pressures behind the wall. Retaining walls should be provided with a drainage blanket of Class 2 permeable material, Caltrans Standard Specification, Section 68-2.02F(3), at least one-foot wide extending from the base of wall to within one foot of the top of the wall. The top foot above the drainage layer should consist of compacted on-site or imported engineered fill materials, unless covered by a concrete slab or pavement. Weep holes or perforated rigid pipe, as appropriate, should be provided at the base of the wall to collect accumulated water. Drainpipes, if used, should slope to discharge at no less than a one percent fall to suitable

drainage facilities. Open-graded ½- to ¾-inch crushed rock may be used in lieu of the Class 2 permeable material provided the rock and drain pipe are completely enveloped in an approved non-woven, geotextile filter fabric. Alternatively, approved geotextile drainage composites, such as MiraDRAIN®, may be used in lieu of the drain rock layer. If used, geocomposite drain panels should be installed in accordance with the manufacturer's recommendations.

If efflorescence (discoloration of the wall face) or moisture/water penetration of the retaining walls is not acceptable, moisture/water-proofing measures should be applied to the back face of the walls. A moisture/water-proofing specialist should be consulted to determine specific protection measures against moisture/water penetration through the walls.

Structural backfill materials for retaining walls within a 1(h):1(v) projection from the bottom of the walls (other than the drainage layer) should consist of on-site or imported, compactable granular material that does not contain significant quantities of rubbish, rubble, organics and rock over four inches in size. Clay, pea gravel and/or crushed rock should not be used for structural wall backfill. Structural wall backfill should be placed in lifts not exceeding 12 inches in compacted thickness, moisture conditioned to at least the optimum moisture content, and should be mechanically compacted to at least 90 percent relative compaction.

Foundations for support of retaining or below grade walls should be designed using the appropriate foundation design parameters provided in the *Spread Foundations* section included in this report.

Site Drainage

Final site grading should be accomplished to provide positive drainage of surface water away from the buildings and prevent ponding of water adjacent to foundations, slabs or pavements. The subgrade adjacent to the buildings should be sloped away from the building at a minimum two percent gradient for at least five feet, where possible. All roof drains should be connected to non-perforated rigid pipes, which in-turn are connected to available drainage features that convey water away from the buildings or discharging the drainage onto paved or hard surfaces that slope away from the buildings. Landscape berms, if planned, should not be constructed in such a manner as to promote drainage toward the buildings.

Drought Considerations

The State of California can experience extended periods of severe drought conditions. The ability for landowners to use irrigation as a means for maintaining landscape vegetation and soil moisture can be inhibited for unpredictable periods of time. For this reason, landscape and

hardscape systems for this development should be carefully planned to prevent the desiccation of soils under and near foundations and slabs. Trees with invasive shallow root systems should be avoided. No trees or large shrubs that could remove soil moisture during dry periods should be planted within five feet of any foundation or slab. Fallow ground adjacent to foundations must be avoided.

Geotechnical Engineering Construction Observation Services

Wallace-Kuhl & Associates be retained to review the final plans and specifications to verify that the intent of our recommendations has been implemented in those documents.

Site preparation should be accomplished in accordance with the recommendations of this report. Geotechnical testing and observation during construction is considered a continuation of our geotechnical engineering investigation. Wallace-Kuhl & Associates should be retained to provide testing and observation services during site clearing, preparation, earthwork, and foundation construction at the project site to verify compliance with this geotechnical report and the project plans and specifications, and to provide consultation as required during construction. These services are beyond the scope of work authorized for this study; however, we can submit a proposal to provide these services upon request.

In the event that Wallace-Kuhl & Associates is not retained to provide geotechnical engineering observation and testing services during construction, the Geotechnical Engineer retained to provide these services should indicate in writing that they agree with the recommendations of this report, or prepare supplemental recommendations as necessary. A final report by the Geotechnical Engineer providing construction testing services should be prepared upon completion of the project.

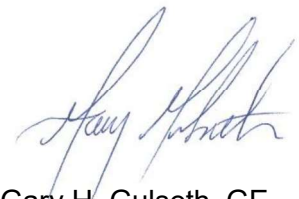
LIMITATIONS

Our recommendations are based upon the information provided regarding the proposed project, combined with our analysis of site conditions revealed by the previous field explorations and associated laboratory testing programs. We have used engineering judgment based upon the information provided and the data generated from our study. This report has been prepared in substantial compliance with generally accepted geotechnical engineering practices that exist in the area of the project at the time the report was prepared. No warranty, either express or implied, is provided.

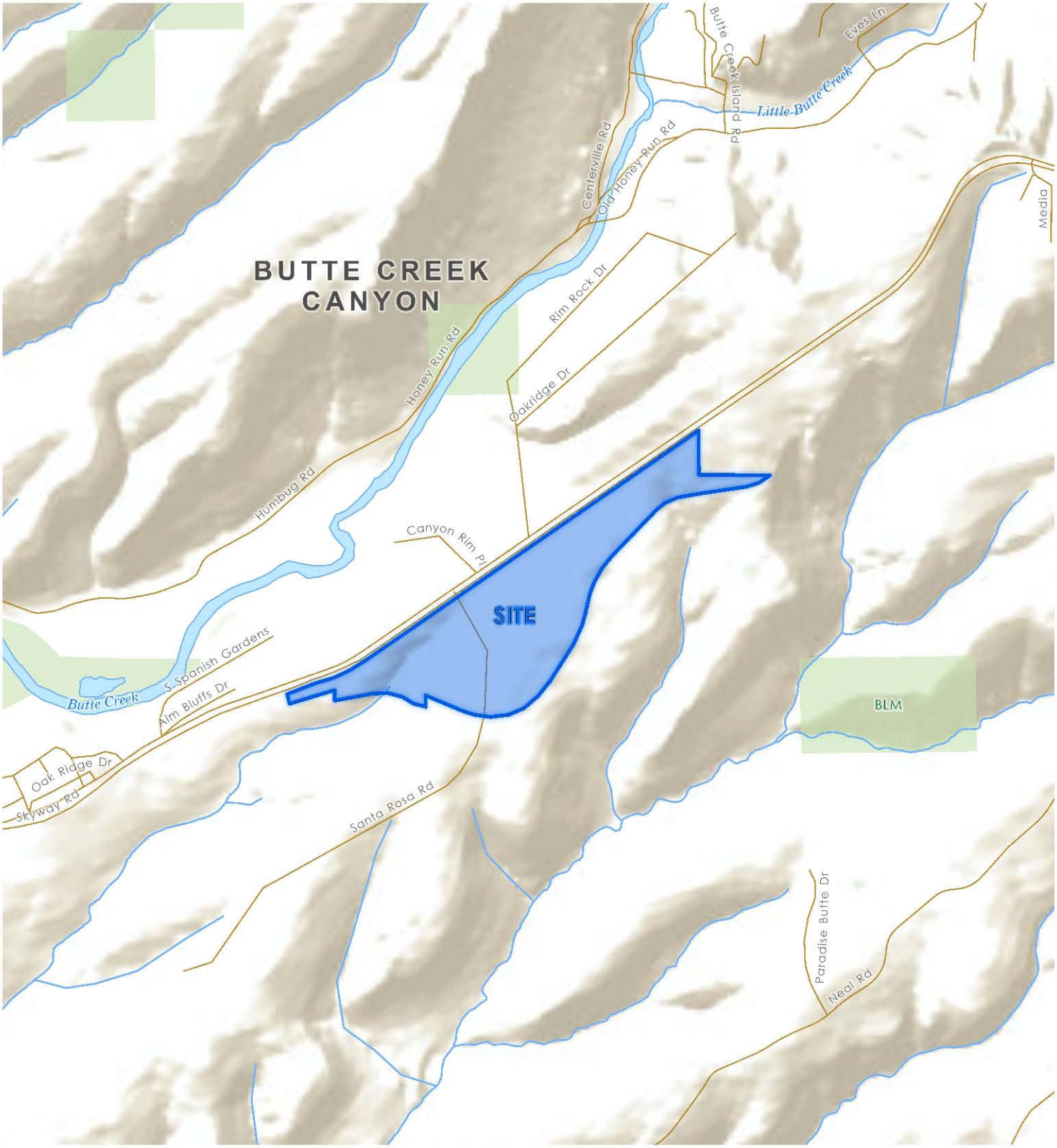
If the proposed construction is modified or re-sited; or, if it is found during construction that subsurface conditions differ from those we encountered at the previous exploration locations, we should be afforded the opportunity to review the new information or changed conditions to determine if our conclusions and recommendations must be modified.

We emphasize that this report is applicable only to the proposed construction and the investigated site, and should not be utilized for construction on any other site. The conclusions and recommendations of this report are considered valid for a period of two years. If design is not completed and construction has not started within two years of the date of this report, the report must be reviewed and updated, if necessary.

Wallace - Kuhl & Associates



Gary H. Gulseth, GE
Senior Engineer



Spatial Data provided by Esri, NOAA, and USGS.
Projection: NAD 1983 2011 StatePlane California II FIPS 0402 Ft US

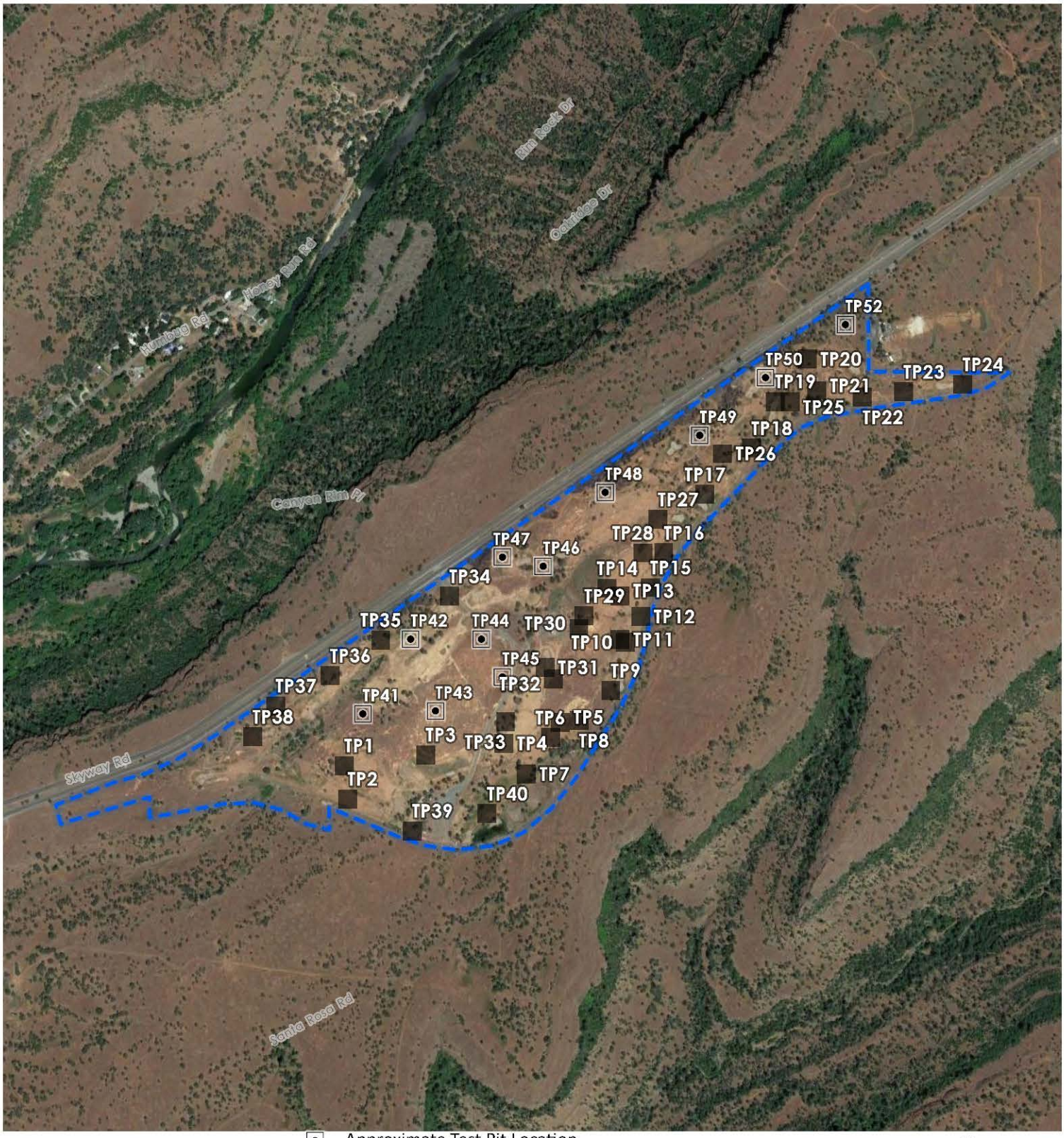
WallaceKuhl & ASSOCIATES

VICINITY MAP

TUSCAN RIDGE SUBDIVISION

Paradise, California

FIGURE	1
DRAWN BY	RWO
CHECKED BY	KRL
PROJECT MGR	GHG
DATE	04/2021
WKA NO.	12206.07



Approximate Test Pit Location

Previous Test Pit Location (WKA No. 12206.03, 03/19)

Approximate Site Boundary

N

0 500 1,000

Feet

Aerial imagery provided by Esri.
Projection: NAD 1983 2011 StatePlane California II FIPS 0402 Ft US

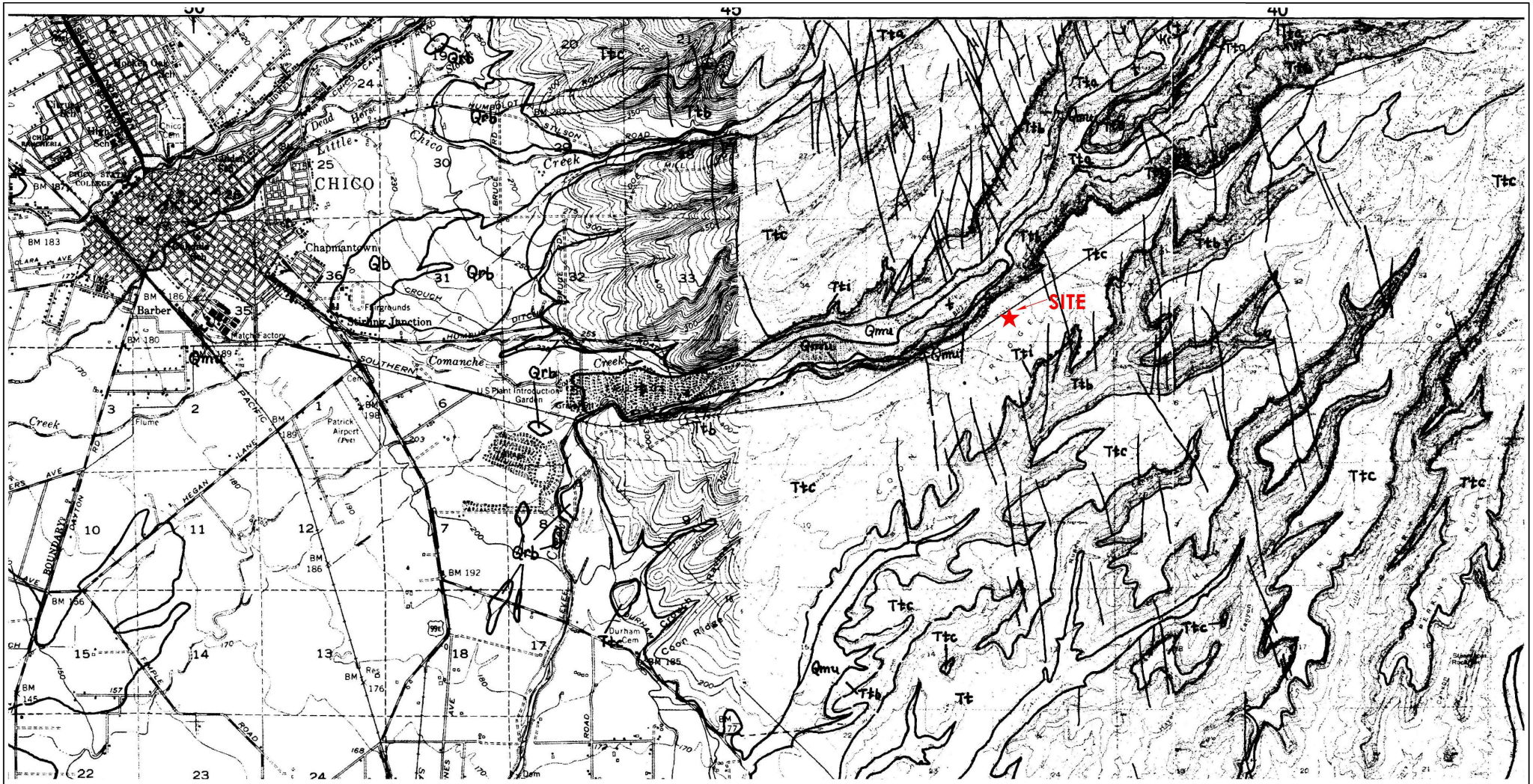
WallaceKuhl & ASSOCIATES

SITE PLAN

TUSCAN RIDGE SUBDIVISION

Paradise, California

FIGURE	2
DRAWN BY	RWO
CHECKED BY	KRL
PROJECT MGR	GHG
DATE	04/2021
WKA NO.	12206.07



Geologic Map adapted from the Geologic Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierran Foothills, California by Helley and Harwood, dated 1985.
Projection: NAD 1983 2011 StatePlane California II FIPS 0402 Ft US

Ttc - Tuscan Formation, unit C
Ttb - Tuscan Formation, Unit B
Tta - Tuscan Formation, Unit A
Tti - Tuscan Formation, Tuff

Qmv - Alluvium, Modesto Formation
Qb - Alluvium, Basin Deposits
Qrb - Alluvium, Red Bluff Formation

N

0 2,000 4,000
Feet

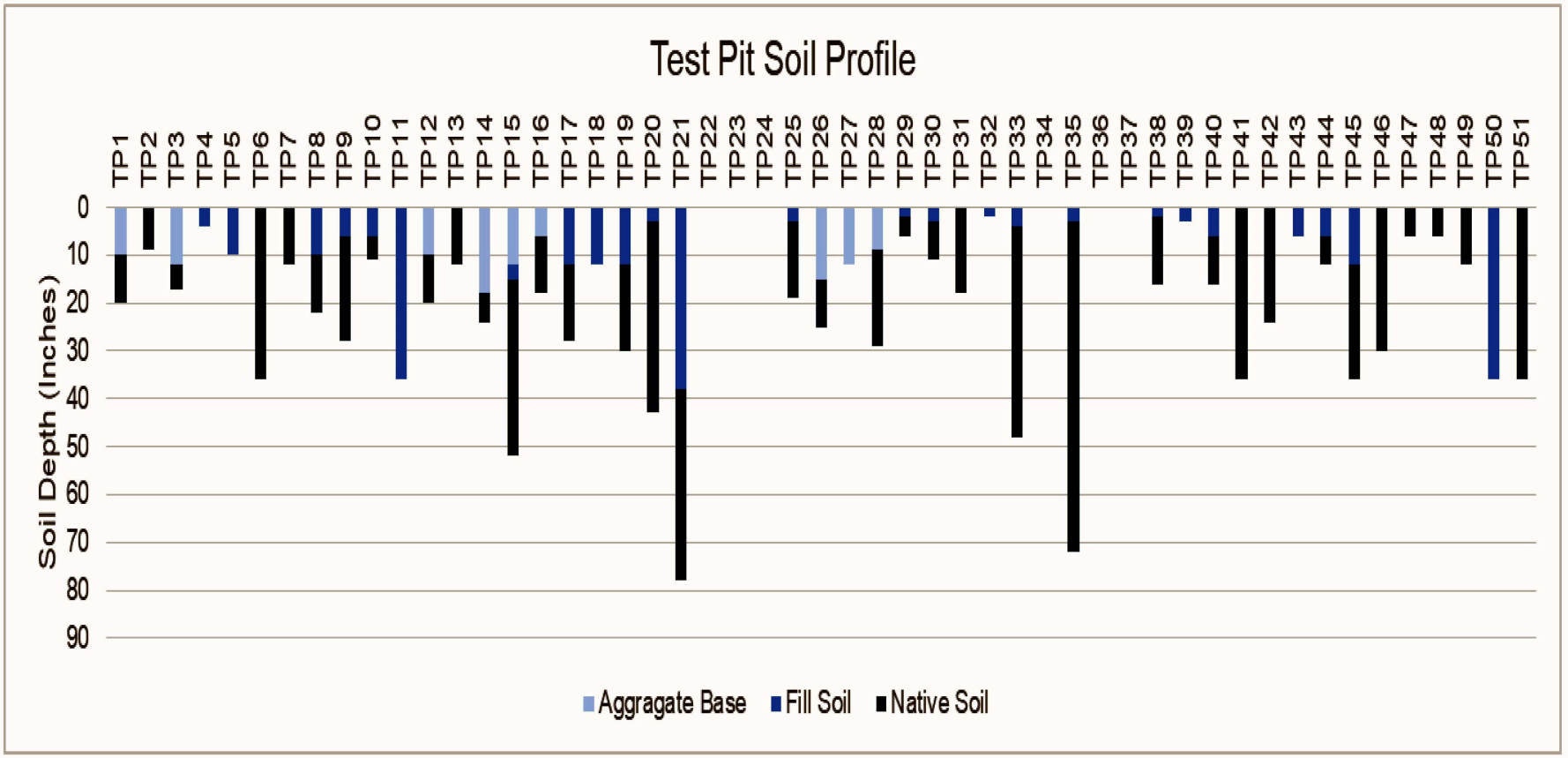
WallaceKuhl & ASSOCIATES
A Universal Engineering Sciences Company

GEOLOGIC MAP

TUSCAN RIDGE SUBDIVISION

Paradise, California

FIGURE	3
DRAWN BY	RWO
CHECKED BY	KRL
PROJECT MGR	GHG
DATE	04/2021
WKA NO.	12206.07



WallaceKuhl & ASSOCIATES — A Universal Engineering Sciences Company	**TEST PIT SOIL PROFILES** TUSCAN RIDGE SUBDIVISION Paradise, California	FIGURE 4 DRAWN BY RWO CHECKED BY KRL PROJECT MGR GHG DATE 04/2021 WKA NO. 12206.07

Project: Tuscan Ridge Subdivision
Project Location: Paradise, California
WKA Number: 12206.07

LOG OF TEST PIT TP41

Sheet 1 of 1

Date(s) Drilled	3/17/21	Logged By	KRL	Checked By	GHG
Drilling Method	Excavator	Drilling Contractor	NexGen	Total Depth of Drill Hole	3.0 feet
Drill Rig Type	Kubota KX040-4	Diameter(s) of Hole, inches	24	Approx. Surface Elevation, ft MSL	
Groundwater Depth [Elevation], feet	Not Encountered	Sampling Method(s)	N/A	Drill Hole Backfill	Soil Cuttings
Remarks				Driving Method and Drop	

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Reddish brown, moist, medium plastic fines, clayey GRAVEL with sand and scattered gravel up to 18 inches in diameter (GC)						
					TP41 @ 2'-3'		14		GR
			Practical refusal at 3 feet below existing ground surface in Lahar of Tuscan Formation. Groundwater was not encountered.						

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Wallace Kuhl & ASSOCIATES

FIGURE 5

Project: Tuscan Ridge Subdivision
Project Location: Paradise, California
WKA Number: 12206.07

LOG OF TEST PIT TP42

Sheet 1 of 1

Date(s) Drilled	**3/17/21**	Logged By	**KRL**	Checked By	**GHG**
Drilling Method	**Excavator**	Drilling Contractor	**NexGen**	Total Depth of Drill Hole	**2.0 feet**
Drill Rig Type	**Kubota KX040-4**	Diameter(s) of Hole, inches	**24**	Approx. Surface Elevation, ft MSL	
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**N/A**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE DATA: SAMPLE NUMBER	SAMPLE DATA: NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	TEST DATA: DRY UNIT WEIGHT, pcf	TEST DATA: ADDITIONAL TESTS
			Reddish brown, moist, low plasticity fines, sandy GRAVEL (GP)		TP42 @ 0'-2'				
			Practical refusal at 2 feet below existing ground surface in Lahar of Tuscan Formation. Groundwater was not encountered.						

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Wallace Kuhl & ASSOCIATES

FIGURE 6

Project: Tuscan Ridge Subdivision
Project Location: Paradise, California
WKA Number: 12206.07

LOG OF TEST PIT TP43

Sheet 1 of 1

Date(s) Drilled	**3/17/21**	Logged By	**KRL**	Checked By	**GHG**
Drilling Method	**Excavator**	Drilling Contractor	**NexGen**	Total Depth of Drill Hole	**0.5 feet**
Drill Rig Type	**Kubota KX040-4**	Diameter(s) of Hole, inches	**24**	Approx. Surface Elevation, ft MSL	
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**N/A**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
				SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			FILL: reddish brown to gray, moist, clayey SAND with gravel up to 2 inches in diameter (SC)		TP 43 @ 0'-0.5'				GR
			Practical refusal at 0.5 feet below existing ground surface in Lahar of Tuscan Formation. Groundwater was not encountered.						

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Wallace Kuhl & ASSOCIATES

FIGURE 7

Project: Tuscan Ridge Subdivision
Project Location: Paradise, California
WKA Number: 12206.07

LOG OF TEST PIT TP44

Sheet 1 of 1

Date(s) Drilled	**3/17/21**	Logged By	**KRL**	Checked By	**GHG**
Drilling Method	**Excavator**	Drilling Contractor	**NexGen**	Total Depth of Drill Hole	**1.0 feet**
Drill Rig Type	**Kubota KX040-4**	Diameter(s) of Hole, inches	**24**	Approx. Surface Elevation, ft MSL	
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**N/A**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			FILL: Yellowish brown, moist, silty fine to medium grained SAND (SM)		TP44 @ 0'-0.5'		11		
			Reddish brown, moist, low plasticity, silty GRAVEL with sand; fine grained gravel up to 0.75 inch (GM)		TP44 @ 0.5'-1'				
			Practical refusal at 1 foot below existing ground surface in Lahar of Tuscan Formation. Groundwater was not encountered.						

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Wallace Kuhl & ASSOCIATES

FIGURE 8

Project: Tuscan Ridge Subdivision
Project Location: Paradise, California
WKA Number: 12206.07

LOG OF TEST PIT TP45

Sheet 1 of 1

Date(s) Drilled	3/17/21	Logged By	KRL	Checked By	GHG
Drilling Method	Excavator	Drilling Contractor	NexGen	Total Depth of Drill Hole	3.0 feet
Drill Rig Type	Kubota KX040-4	Diameter(s) of Hole, inches	24	Approx. Surface Elevation, ft MSL	
Groundwater Depth [Elevation], feet	Not Encountered	Sampling Method(s)	N/A	Drill Hole Backfill	Soil Cuttings
Remarks				Driving Method and Drop	

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			FILL: gray, moist, low plasticity, sandy lean CLAY with scattered gravel (CL)		TP45 @ 0'-1'				RV PI GR
			Reddish brown, moist, low plasticity, sandy GRAVEL; fine to coarse grained gravel up to 2 inches (GM)		TP45 @ 1'-2'				
			Practical refusal at 3 feet below existing ground surface in Lahar of Tuscan Formation. Groundwater was not encountered.						

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Wallace Kuhl & ASSOCIATES

FIGURE 9

Project: Tuscan Ridge Subdivision
Project Location: Paradise, California
WKA Number: 12206.07

LOG OF TEST PIT TP46

Sheet 1 of 1

Date(s) Drilled	**3/17/21**	Logged By	**KRL**	Checked By	**GHG**
Drilling Method	**Excavator**	Drilling Contractor	**NexGen**	Total Depth of Drill Hole	**2.5 feet**
Drill Rig Type	**Kubota KX040-4**	Diameter(s) of Hole, inches	**24**	Approx. Surface Elevation, ft MSL	
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**N/A**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE DATA: SAMPLE NUMBER	SAMPLE DATA: NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	TEST DATA: DRY UNIT WEIGHT, pcf	TEST DATA: ADDITIONAL TESTS
			Reddish brown, moist, clayey GRAVEL; fine to coarse grained gravel up to 2 inches (GC)						
					TP46 @ 1'-2'				RV
			Practical refusal at 2.5 feet below existing ground surface in Lahar of Tuscan Formation. Groundwater was not encountered.						

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Wallace Kuhl & ASSOCIATES

FIGURE 10

Project: Tuscan Ridge Subdivision
Project Location: Paradise, California
WKA Number: 12206.07

LOG OF TEST PIT TP47

Sheet 1 of 1

Date(s) Drilled	**3/17/21**	Logged By	**KRL**	Checked By	**GHG**
Drilling Method	**Excavator**	Drilling Contractor	**NexGen**	Total Depth of Drill Hole	**0.5 feet**
Drill Rig Type	**Kubota KX040-4**	Diameter(s) of Hole, inches	**24**	Approx. Surface Elevation, ft MSL	
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**N/A**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE DATA: SAMPLE NUMBER	SAMPLE DATA: NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	TEST DATA: DRY UNIT WEIGHT, pcf	TEST DATA: ADDITIONAL TESTS
			Reddish brown, wet, clayey GRAVEL with sand; fine to coarse grained gravel up to 2 inches (GC)		TP47 @ 0'-0.5'		18		
			Practical refusal at 0.5 feet below existing ground surface in Lahar of Tuscan Formation. Groundwater was not encountered.						

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Wallace Kuhl & ASSOCIATES

FIGURE 11

Project: Tuscan Ridge Subdivision
Project Location: Paradise, California
WKA Number: 12206.07

LOG OF TEST PIT TP48

Sheet 1 of 1

Date(s) Drilled	**3/17/21**	Logged By	**KRL**	Checked By	**GHG**
Drilling Method	**Excavator**	Drilling Contractor	**NexGen**	Total Depth of Drill Hole	**0.5 feet**
Drill Rig Type	**Kubota KX040-4**	Diameter(s) of Hole, inches	**24**	Approx. Surface Elevation, ft MSL	
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**N/A**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Reddish brown, moist, low plasticity, sandy GRAVEL; fine gravel (GP)		TP48 @ 0'-0.5'		21		
			Practical refusal at 0.5 feet below existing ground surface in Lahar of Tuscan Formation. Groundwater was not encountered.						

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Wallace Kuhl & ASSOCIATES

FIGURE 12

Project: Tuscan Ridge Subdivision
Project Location: Paradise, California
WKA Number: 12206.07

LOG OF TEST PIT TP49

Sheet 1 of 1

Date(s) Drilled	**3/17/21**	Logged By	**KRL**	Checked By	**GHG**
Drilling Method	**Excavator**	Drilling Contractor	**NexGen**	Total Depth of Drill Hole	**1.0 feet**
Drill Rig Type	**Kubota KX040-4**	Diameter(s) of Hole, inches	**24**	Approx. Surface Elevation, ft MSL	
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**N/A**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Reddish brown, moist, low plasticity, clayey SAND with gravel (SC)		TP49 @ 0'-1'		16		GR
			Practical refusal at 1 foot below existing ground surface in Lahar of Tuscan Formation. Groundwater was not encountered.						

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Wallace Kuhl & ASSOCIATES

FIGURE 13

Project: Tuscan Ridge Subdivision
Project Location: Paradise, California
WKA Number: 12206.07

LOG OF TEST PIT TP50

Sheet 1 of 1

Date(s) Drilled	3/17/21	Logged By	KRL	Checked By	GHG
Drilling Method	Excavator	Drilling Contractor	NexGen	Total Depth of Drill Hole	3.0 feet
Drill Rig Type	Kubota KX040-4	Diameter(s) of Hole, inches	24	Approx. Surface Elevation, ft MSL	
Groundwater Depth [Elevation], feet	Not Encountered	Sampling Method(s)	N/A	Drill Hole Backfill	Soil Cuttings
Remarks				Driving Method and Drop	

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE DATA: SAMPLE NUMBER	SAMPLE DATA: NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	TEST DATA: DRY UNIT WEIGHT, pcf	TEST DATA: ADDITIONAL TESTS
			Fill: Reddish brown, moist, clayey GRAVEL with cobbles (GC); 4 foot piece of Larhar						
					TP50 @ 2'-3'				RV EI
			Practical refusal at 3 feet below existing ground surface in Lahar of Tuscan Formation. Groundwater was not encountered.						

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Wallace Kuhl & ASSOCIATES

FIGURE 14

Project: Tuscan Ridge Subdivision
Project Location: Paradise, California
WKA Number: 12206.07

LOG OF TEST PIT TP51

Sheet 1 of 1

Date(s) Drilled	3/17/21	Logged By	KRL	Checked By	GHG
Drilling Method	Excavator	Drilling Contractor	NexGen	Total Depth of Drill Hole	3.0 feet
Drill Rig Type	Kubota KX040-4	Diameter(s) of Hole, inches	24	Approx. Surface Elevation, ft MSL	
Groundwater Depth [Elevation], feet	Not Encountered	Sampling Method(s)	N/A	Drill Hole Backfill	Soil Cuttings
Remarks				Driving Method and Drop	

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Reddish brown, moist, poorly graded GRAVEL with clay and scattered cobbles ranging from 4 to 12 inches in diameter (GP-GC)		TP51 @ 0'-3'				GR
			Practical refusal at 3 feet below existing ground surface in Lahar of Tuscan Formation. Groundwater was not encountered.						

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Wallace Kuhl & ASSOCIATES

FIGURE 15

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487)

MAJOR DIVISIONS		USCS[4]	CODE	CHARACTERISTICS
COARSE GRAINED SOILS (More than 50% of soil > no. 200 sieve size)	GRAVELS[1] (More than 50% of coarse fraction > no. 4 sieve size)	GW		Well-graded gravels or gravel - sand mixtures, trace or no fines
		GP		Poorly graded gravels or gravel - sand mixtures, trace or no fines
		GM		Silty gravels, gravel - sand - silt mixtures, containing little to some fines[2]
		GC		Clayey gravels, gravel - sand - clay mixtures, containing little to some fines[2]
	SANDS[1] (50% or more of coarse fraction < no. 4 sieve size)	SW		Well-graded sands or sand - gravel mixtures, trace or no fines
		SP		Poorly graded sands or sand - gravel mixtures, trace or no fines
		SM		Silty sands, sand - gravel - silt mixtures, containing little to some fines[2]
		SC		Clayey sands, sand - gravel - clay mixtures, containing little to some fines[2]
FINE GRAINED SOILS (50% or more of soil < no. 200 sieve size)	SILTS & CLAYS LL < 50	ML		Inorganic silts, gravely silts, and sandy silts that are non-plastic or with low plasticity
		CL		Inorganic lean clays, gravelly lean clays, sandy lean clays of low to medium plasticity[3]
		OL		Organic silts, organic lean clays, and organic silty clays
	SILTS & CLAYS LL ≥ 50	MH		Inorganic elastic silts, gravelly elastic silts, and sandy elastic silts
		CH		Inorganic fat clays, gravelly fat clays, sandy fat clays of medium to high plasticity
		OH		Organic fat clays, gravelly fat clays, sandy fat clays of medium to high plasticity
HIGHLY ORGANIC SOILS		PT		Peat
ROCK		RX		Rocks, weathered to fresh
FILL		FILL		Artificially placed fill material

OTHER SYMBOLS

= Drive Sample: 2-1/2" O.D. Modified California sampler

= Drive Sampler: no recovery

= SPT Sampler

= Initial Water Level

= Final Water Level

— — — = Estimated or gradational material change line

——— = Observed material change line

Laboratory Tests

CR = Corrosion
PI = Plasticity Index
EI = Expansion Index
UCC = Unconfined Compression Test (TSF)
TR = Triaxial Compression Test
GR = Gradational Analysis (Sieve/Hydro)
FC = Wash (Fines Content)
PP = Pocket Penetrometer Test (TSF)
PID = Photo Ionization Detector Test (PPM)
RV = Resistance ("R") Value

REF = Refusal (>50 blows in 6 inches)

GRAIN SIZE CLASSIFICATION

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS (b)	Above 12"	Above 300
COBBLES (c)	12" to 3"	300 to 75
GRAVEL (g)	3" to No. 4	75 to 4.75
coarse	3" to 3/4"	75 to 19
fine	3/4" to No. 4	19 to 4.75
SAND	No. 4 to No. 200	4.75 to 0.075
coarse	No. 4 to No. 10	4.75 to 2.00
medium	No. 10 to No. 40	2.00 to 0.425
fine	No. 40 to No. 200	0.425 to 0.075
SILT & CLAY	Below No. 200	Below 0.075

Trace - Less than 5 percent
Few - 5 to 10 percent
Little - 15 to 25 percent
Some - 35 to 45 percent
Mostly - 50 to 100 percent

* Percents as given in ASTM D2488

NOTES:

1. Coarse grained soils containing 5% to 12% fines, use dual classification symbol (ex. SP-SM).
2. If fines classify as CL-ML (4<PI<7), use dual symbol (ex. SC-SM).
3. Silty Clays, use dual symbol (CL-ML).
4. Borderline soils with uncertain classification list both classifications (ex. CL/ML).

WallaceKuhl & ASSOCIATES

UNIFIED SOIL CLASSIFICATION SYSTEM

TUSCAN RIDGE SUBDIVISION

Paradise, California

FIGURE	16
DRAWN BY	RWO
CHECKED BY	KRL
PROJECT MGR	GHG
DATE	04/2021
WKA NO.	12206.07

APPENDIX A
General Information, Field Exploration and Laboratory Testing

APPENDIX A

A. GENERAL INFORMATION

The geotechnical engineering study for the Tuscan Ridge Subdivision, located between Chico and Paradise, California, was authorized by Mr. Scott Bates on March 15, 2021. Authorization was for a study as described in our proposal dated February 19, 2021, sent to our client the Reeder Sutherland, Inc. in Roseville, California; telephone (530) 401-3670.

B. FIELD EXPLORATION

The subsurface soil conditions at the project site were initially explored on March 15, 2019, as part of an environmental study by excavating 40 test pits using a track mounted excavator to depths ranging from a few inches to about 6½ feet below the existing ground surface (bgs). Eleven additional test pits were excavated as part of this current study on March 17, 2021, to a maximum depth of about 3 feet bgs. The test pit locations are shown in Figure 2. The test pits were excavated using a Kubota KX040-4 equipped with a 24 inch bucket provided by the client. Practical refusal was encountered at the each test pit in hard lahar (mudstone). Disturbed bulk samples were collected during the current field explorations and taken to our laboratory for additional soil classification and selection of samples for testing.

The Logs of Test Pits containing descriptions of the soils encountered in each of the test pits excavated for this study are presented in Figures 5 through 15. A Legend explaining the Unified Soil Classification System (ASTM D2487) and the symbols used on the logs is contained in Figure 16. A graph showing a summary of the findings for all the test pits is presented as Figure 4.

C. LABORATORY TESTING

Selected undisturbed samples of the soils were tested to determine the natural moisture content (ASTM D2216) of the soils. The results of these tests are included in the test pit logs at the depth each sample was obtained.

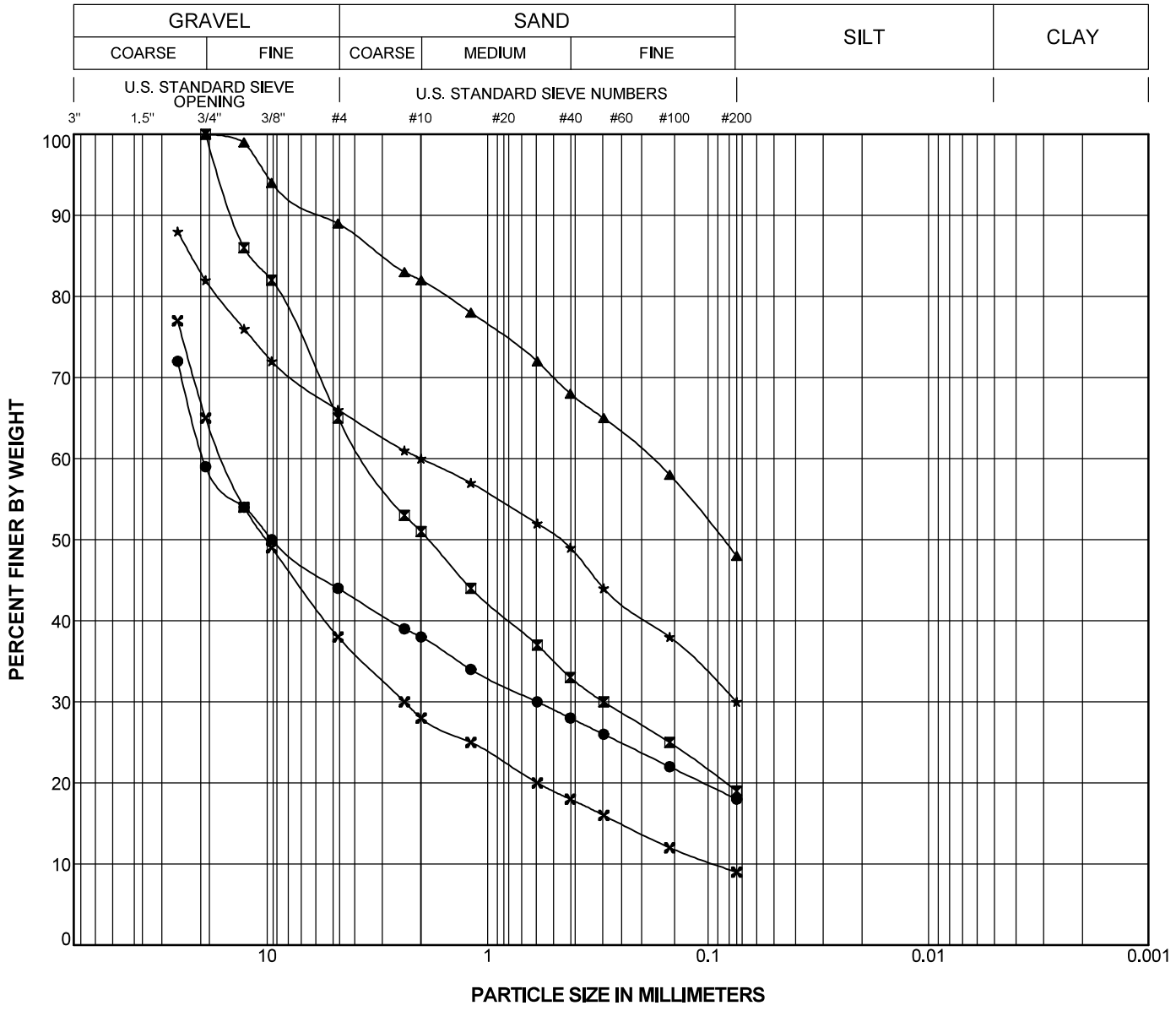
Five soil samples were tested to determine the Particle Size Distribution (ASTM C136 and D7928) of the soil. The results of the test is presented in Figure A1.

One soil sample collected from test pit TP45 was tested to determine the liquid limit, plastic limit and plasticity index of the soil using the Atterberg Limits test (ASTM D4318). The result of the test is presented in Figure A2.

One bulk sample of the near-surface fine-grained (plastic) soil collected at test pit TP50 was tested to estimate the expansion potential of the soil using the Expansion Index test (ASTM D4829) with result presented in Figure A3.

Three bulk samples of anticipated pavement subgrade soil were collected at test pits TP45, TP46 and TP50 and subjected to Resistance-value ("R-value") testing in accordance with California Test 301. The results of the R-value tests, which were used in the pavement design, are presented in Figures A4 and A5.

Two selected soil samples of near-surface soil was submitted to Sunland Analytical of Rancho Cordova, California, to determine the soil pH and minimum resistivity (California Test 643), Chloride concentration (California Test 422m), and Sulfate concentration (California Test 417, ASTM D516m). The results of these tests are presented in Figures A6 through A9.



Test Pit Number	Sample Depth	USCS	Depth (feet)	Symbol	LL	PI	Classification
TP41	2'-3'	GC	2'-3'	●			Clayey GRAVEL with sand and cobbles
TP43	0'-0.5'	SC	0'-0.5'	⊠			FILL: clayey SAND with gravel
TP45	1'-2'	CL	1'-2'	▲	35	12	Sandy lean CLAY with scattered gravel
TP49	0'-1'	SC	1'-2'	★			Clayey SAND with gravel
TP51	0'-3'	GP-GC	0'-3'	✖			Poorly graded GRAVEL with clay

PARTICLE SIZE DISTRIBUTION

Project: Tuscan Ridge Subdivision
WKA No. 12206.07

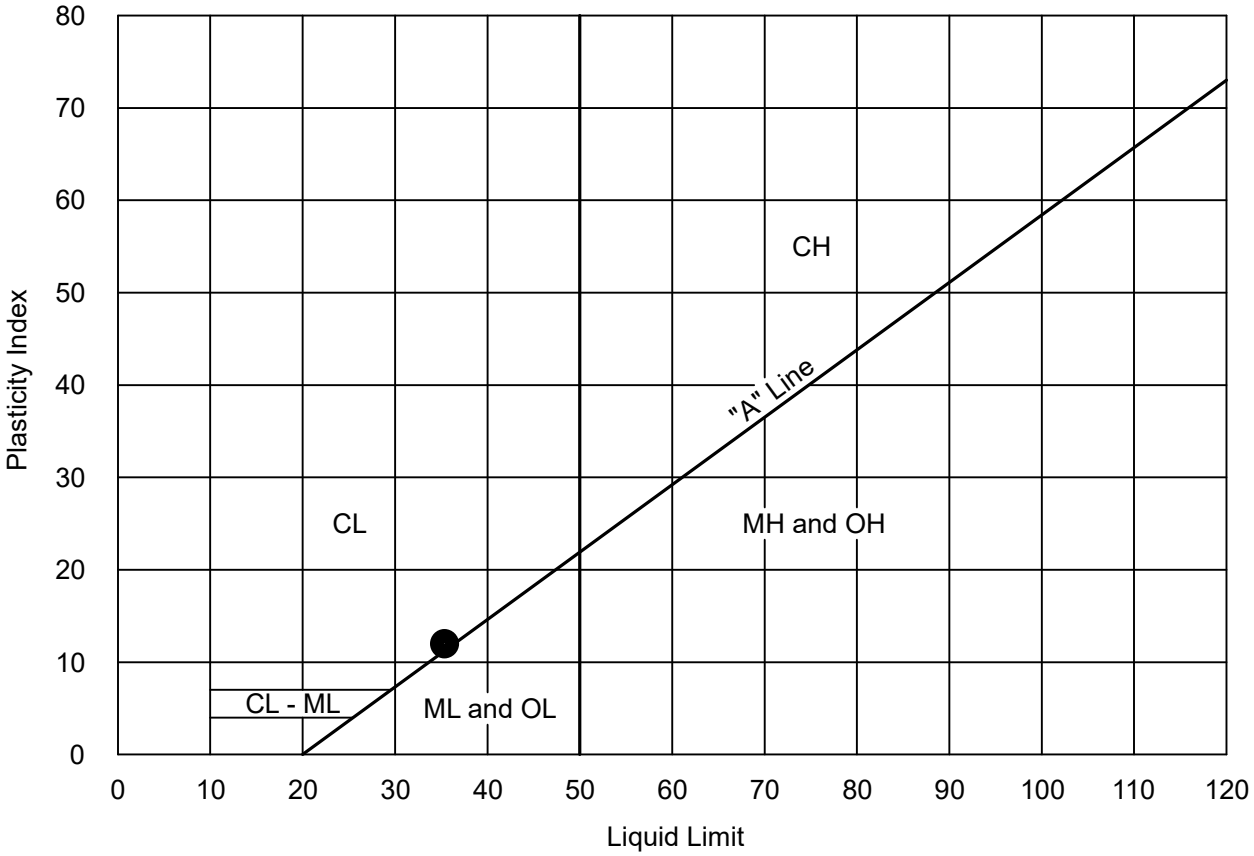
FIGURE A1

Wallace Kuhl & ASSOCIATES

GRAIN SIZE 12206.07 - TUSCAN RIDGE SUBDIVISION.GPJ WKA.GDT 4/26/21 10:15 AM

ATTERBERG LIMITS

ASTM D4318



KEY SYMBOL	LOCATION	SAMPLE DEPTH	NATURAL WATER CONTENT (%)	ATTERBERG LIMITS		PASSING No. 200 SIEVE (%)	UNIFIED SOIL CLASSIFI-CATION SYMBOL
				LIQUID LIMIT (%)	PLASTICITY INDEX (%)		
●	TP45	1.0'-2.0'	---	35	12	---	CL

WallaceKuhl & Associates — A Universal Engineering Sciences Company

ATTERBERG LIMITS

TUSCAN RIDGE SUBDIVISION

Paradise, California

FIGURE	A2
DRAWN BY	RWO
CHECKED BY	KRL
PROJECT MGR	GHG
DATE	04/2021

WKA NO. 12206.07

EXPANSION INDEX TEST RESULTS

ASTM D4829

MATERIAL DESCRIPTION: Reddish brown, clayey GRAVEL with cobbles

LOCATION: TP50

Sample Depth	Pre-Test Moisture (%)	Post-Test Moisture (%)	Dry Density (pcf)	Expansion Index
2' - 3'	13.2	28.5	97	**14**

CLASSIFICATION OF EXPANSIVE SOIL *

EXPANSION INDEX	POTENTIAL EXPANSION
0 - 20	**Very Low**
21 - 50	Low
51 - 90	Medium
91 - 130	High
Above 130	Very High

* From ASTM D4829, Table 1

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EXPANSION INDEX

TUSCAN RIDGE SUBDIVISION

Paradise, California

FIGURE	A3
DRAWN BY	RWO
CHECKED BY	KRL
PROJECT MGR	GHG
DATE	04/2021

WKA NO. 12206.07

RESISTANCE VALUE TEST RESULTS

(California Test 301)

MATERIAL DESCRIPTION: Fill:Gray, sandy lean CLAY with gravel

LOCATION: TP45 (1' - 2')

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion (dial, inches x 1000)	Expansion (psf)	R Value
1	112	15.5	208	2	9	12
2	116	14.5	286	4	17	22
3	118	13.6	431	12	52	36

R-Value at 300 psi exudation pressure = 24

MATERIAL DESCRIPTION: Reddish brown, clayey GRAVEL

LOCATION: TP46 (1' - 2')

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion (dial, inches x 1000)	Expansion (psf)	R Value
1	117	14.9	344	2	9	29
2	115	15.7	205	0	0	17
3	118	14.4	505	10	43	37

R-Value at 300 psi exudation pressure = 26

RESISTANCE VALUE TEST RESULTS

(California Test 301)

MATERIAL DESCRIPTION: Reddish brown, sandy cobbles

LOCATION: TP50 (2' - 3')

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion (dial, inches x 1000)	Expansion (psf)	R Value
1	118	12.5	494	14	61	74
2	116	13.3	330	5	22	47
3	114	14.2	234	1	4	21

R-Value at 300 psi exudation pressure = 40

WallaceKuhl & Associates — A Universal Engineering Sciences Company

RESISTANCE VALUE TEST RESULTS

TUSCAN RIDGE SUBDIVISION

Paradise, California

FIGURE	A5
DRAWN BY	RWO
CHECKED BY	KRL
PROJECT MGR	GHG
DATE	04/2021
WKA NO.	12206.07

Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 03/24/2021
Date Submitted 03/19/2021

To: Kylie Lim
Wallace-Kuhl & Assoc.
3050 Industrial Blvd
West Sacramento, CA 95691

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 12206.07 Site ID : TP 43 0-1/2.
Thank you for your business.

* For future reference to this analysis please use SUN # 84333-175813.

EVALUATION FOR SOIL CORROSION

Soil pH	7.14	
Minimum Resistivity	1.21 ohm-cm (x1000)	
Chloride	23.5 ppm	00.00235 %
Sulfate	118.3 ppm	00.01183 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422m

WallaceKuhl & ASSOCIATES

CORROSION TEST RESULTS

TUSCAN RIDGE SUBDIVISION

Paradise, California

FIGURE	A6
DRAWN BY	RWO
CHECKED BY	KRL
PROJECT MGR	GHG
DATE	04/2021
WKA NO.	12206.07

Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 03/24/2021
Date Submitted 03/19/2021

To: Kylie Lim
Wallace-Kuhl & Assoc.
3050 Industrial Blvd
West Sacramento, CA 95691

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 12206.07 Site ID : TP 43 0-1/2.
Thank you for your business.

* For future reference to this analysis please use SUN # 84333-175814.

Extractable Sulfate in Water

Type of TEST	Result	Units
Sulfate-SO4	108.8	mg/kg

METHODS
ASTM D-516m from sat.paste extract-reported based on dry wt.

WallaceKuhl & ASSOCIATES	**CORROSION TEST RESULTS** TUSCAN RIDGE SUBDIVISION Paradise, California	FIGURE A7 DRAWN BY RWO CHECKED BY KRL PROJECT MGR GHG DATE 04/2021 WKA NO. 12206.07

Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 03/24/2021
Date Submitted 03/19/2021

To: Kylie Lim
Wallace-Kuhl & Assoc.
3050 Industrial Blvd
West Sacramento, CA 95691

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 12206.07 Site ID : TP 51 @ 0-3.
Thank you for your business.

* For future reference to this analysis please use SUN # 84333-175815.

EVALUATION FOR SOIL CORROSION

Soil pH	6.18	
Minimum Resistivity	4.56 ohm-cm (x1000)	
Chloride	4.0 ppm	00.00040 %
Sulfate	4.9 ppm	00.00049 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422m

WallaceKuhl & ASSOCIATES

CORROSION TEST RESULTS

TUSCAN RIDGE SUBDIVISION

Paradise, California

FIGURE	A8
DRAWN BY	RWO
CHECKED BY	KRL
PROJECT MGR	GHG
DATE	04/2021
WKA NO.	12206.07

Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 03/24/2021
Date Submitted 03/19/2021

To: Kylie Lim
Wallace-Kuhl & Assoc.
3050 Industrial Blvd
West Sacramento, CA 95691

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 12206.07 Site ID : TP 51 @ 0-3.
Thank you for your business.

* For future reference to this analysis please use SUN # 84333-175816.

Extractable Sulfate in Water

Type of TEST	Result	Units
Sulfate-SO4	5.0	mg/kg

METHODS
ASTM D-516m from sat.paste extract-reported based on dry wt.

WallaceKuhl & ASSOCIATES

CORROSION TEST RESULTS

TUSCAN RIDGE SUBDIVISION

Paradise, California

FIGURE	A9
DRAWN BY	RWO
CHECKED BY	KRL
PROJECT MGR	GHG
DATE	04/2021
WKA NO.	12206.07

APPENDIX F

Phase I Environmental Site Assessment

TUSCAN RIDGE PROPERTY

Paradise, California

WKA No. 12206.04

April 21, 2020

Prepared for:

Mr. Scott Bates

Tuscan Ridge Associates, LLC

1420 East Roseville Parkway, Suite 140

Box 247

Roseville, California 95661

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3050 Industrial Boulevard
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3422 West Hammer Lane, Suite D
Stockton, CA 95219
209 234.7722 phone
209 234 7727 fax

Phase I Environmental Site Assessment

TUSCAN RIDGE PROPERTY

Paradise, California

WKA No. 12206.04

April 21, 2020

Wallace-Kuhl & Associates (WKA), on behalf of the Tuscan Ridge Associates, LLC, prepared this Phase I Environmental Site Assessment for the Tuscan Ridge Property located in Paradise, California. We declare that, to the best of our professional knowledge and belief, the report preparer and reviewer meet the definition of ***Environmental Professional*** as defined in §312.10 of 40 CFR 312 and have the specific qualifications based on education, training, and experience to assess a ***property*** of the nature, history, and setting of the subject ***property***. We have developed and performed the all appropriate inquiries in general conformance with the standards and practices set forth in 40 CFR Part 312. Resumes of the key staff who prepared this report are included in Appendix A.

WALLACE-KUHL & ASSOCIATES

PROFESSIONAL GEOLOGIST
KURT M. BALASEK
No. 6152
CERTIFIED HYDROGEOLOGIST
No. 298
STATE OF CALIFORNIA

Nancy M. Malaret
Project Environmental Scientist

Kurt Balasek, P.G., C.HG.
Senior Hydrogeologist

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A Resumes
B ASTM E 1527-13 User Questionnaire and Helpful Documents Checklist
C EDR® Radius Map Report Executive Summary
D Preliminary Screen for Vapor Encroachment Conditions Matrix
E Site Visit Letters

Attached CD contains: EDR® Reports: (Radius Map Report, Aerial Photographic Decade Package, Historical Topographic Maps, Sanborn Map Search), and Phase I ESA, Tuscan Ridge Property (WKA No. 12206.04 dated April 21, 2020).

EXECUTIVE SUMMARY

The purpose of this Phase I Environmental Site Assessment (ESA) was to assess the Tuscan Ridge Property (herein referred to as Site) for evidence of Recognized Environmental Conditions (RECs) resulting from current and/or former Site activities. The Site is located in Paradise, California (Figures 1, 2, 3, and 4) and is comprised of 175 acres of land that was formerly developed with a golf course and has been setup with a basecamp for the emergency response efforts for the Camp Fire. The Site is identified by two Butte County Assessor's Parcel Numbers (APNs): 040-520-100 and -103 (Figure 3). The following presents a list of observations and findings identified during the preparation of this report:

- The historical land use research dating back to the late 1800s revealed that the Site was vacant land from at least 1891 to at least 1998. Railroad tracks were present on the southern portion of the Site by 1941. The Site was developed with a golf course, with three structures on the southeastern portion, by 2006. In December 2018, the Site was graded and aggregate base was spread across the majority for the development of an emergency basecamp for Pacific Gas & Electric (PG&E) and other contractors responding to areas impacted by the Camp Fire.
- During a visit to the property on January 2, 2019, WKA observed a mobile fueling area on the central portion of the Site. WKA observed stained soils in the vicinity of mobile fuel trucks. Subsequent site inspections were conducted on February 15, 2019, and April 9, 2020. Site inspection reports for the subsequent visits describe that the mobile fuel area was re-graded by February 15, 2019, and that PG&E had reportedly excavated diesel impacted soil to bedrock and disposed of it off-site.
- During a visit to the property on January 18, 2019, WKA observed two aboveground storage tanks (ASTs) on the southeastern portion of the Site. WKA was not provided additional information regarding the ASTs.
- During a visit to the property on April 9, 2020, WKA observed that the Site was no longer being used as a basecamp. The two ASTs observed in January 2019 remained on the property. WKA observed that the majority of the Site's surface had been graded with gravel. WKA observed two lined ponds on the southern portion of the Site. WKA also observed a series of green, PVC pipes protruding vertically from the ground on the southwest portion of the Site. The pipes are associated with a new septic system that has been installed at the Site.

- Given the age of development on the Site, it is unlikely that asbestos containing building materials and lead-based paints were used in the construction and/or maintenance of the Site buildings.
- Given the documentation reviewed concerning the agency listings for neighboring facilities, none of the facilities reviewed is likely to have a negative impact on the Site.
- Based on the completion of the vapor encroachment condition (VEC) screening matrix, WKA concludes a VEC can be ruled out because a VEC does not or is not likely to exist.

WKA has performed this ESA in conformance with the scope and limitations of ASTM Standard Practice E 1527-13 for the Tuscan Ridge Property.

This assessment has revealed no RECs in connection with the Site except the following:

- On-site concerns were noted from the presence of railroad tracks along the southern property boundary by at least 1941.
- On-site concerns were noted from the two ASTs located on the southeastern portion of the Site.

1.0 INTRODUCTION

1.1 Purpose

The purpose of this Phase I Environmental Site Assessment (ESA) was to evaluate the Tuscan Ridge Property (herein referred to as Site) for evidence of potential Recognized Environmental Conditions (RECs) resulting from current and/or former site activities as defined by the American Society of Testing and Materials (ASTM) Standard E 1527-13 (ASTM, 2013).

According to the ASTM, "this practice is intended to permit a ***user*** to satisfy one of the requirements to qualify for the ***innocent landowner***, ***contiguous property owner***, or ***bona fide prospective purchaser*** limitations under CERCLA [Comprehensive Environmental Response, Compensation and Liability Act] liability (hereinafter, the "***landowner liability protections***," or "***LLPs***"): that is, the practice that constitutes "***all appropriate inquiry*** into the previous ownership and uses of the ***property*** consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B)."

This ESA has been performed in general conformance with the ASTM Standard E 1527-13 and the scope and limitations defined in Wallace-Kuhl & Associates (WKA) proposal, 3PR18254, dated December 20, 2018.

1.2 Scope of Services

WKA has completed this ESA for the Site shown on Figures 1 through 4. Mr. Scott Bates with Tuscan Ridge Associates, LLC authorized WKA to proceed with this assessment on January 7, 2019, through a signed WKA Environmental Site Assessment Consulting Agreement.

The scope of this assessment included the following:

- Conduct a site reconnaissance for visual evidence of surface contamination and potential sources of subsurface contamination;
- Conduct a visual inspection of the adjoining properties for evidence of RECs;
- Conduct interviews with the following, as available:
  - Key site manager,
  - Major occupants,

  - Past and present owners, operators,
  - Government and/or agency personnel, and,
  - Inquiries conducted at abandoned sites may include interviews with owners or occupants of neighboring or nearby properties;
- Conduct a records review, which included the following:
  - Physical setting documents to determine regional geology, general soil information, and local and regional groundwater conditions,
  - Historical information, including but not limited to, Sanborn maps, topographic maps, aerial photographs, ownership records, building department records, local street directories, zoning and land use records, and prior assessments, as available,
  - Environmental records, including federal, state, tribal, and county regulatory agency lists that will help identify RECs on the Site and the adjoining properties, and,
  - Based on the outcome of the database search, review of specific regulatory agency files for identified contaminated facilities in order to evaluate whether the listed facilities are hazardous materials threats to the Site;
- Conduct a preliminary screen for vapor encroachment conditions on the Site per ASTM E2600-15;
- Review of the completed ***ASTM E 1527-13 User Questionnaire*** (***Questionnaire***) regarding Recorded Environmental Liens, activity and use limitations (AULs), relationship of the purchase price to the fair market value of the Site, and any specialized knowledge of the Site;
- Review of environmental liens and Activity and Use Limitations (AULs) reports, as provided; and
- Prepare a final report of the results of the ESA.

1.3 Special Terms and Conditions

No special terms or conditions to the WKA Environmental Site Assessment Consulting Agreement or the WKA scope of services were requested or performed during the preparation of this report. Tuscan Ridge Associates, LLC did not authorize WKA to conduct a search for environmental liens and AULs.

1.4 User Provided Information

WKA provided Tuscan Ridge Associates, LLC a copy of the User Questionnaire and the Helpful Documents checklist. Mr. E.M. West, Tuscan Ridge Associates, LLC, completed and returned the documents to WKA. Discussion regarding his responses is provided in the following section. A copy of the completed questionnaire is included in Appendix B.

In summary, Mr. West was not aware of any records of environmental liens or AULs currently recorded against the Site. Mr. West stated he does not possess specialized knowledge or experience related to the Site. Mr. West stated that he is not aware of any obvious indicators that point to the presence or likely presence of contamination at the Site.

Mr. West was not aware of existing “Helpful Documents” as defined in Section 10.8.1 of the ASTM Standard as noted on the “Helpful Documents Checklist” included in Appendix B.

2.0 SITE DESCRIPTION

2.1 Site and Vicinity General Characteristics

The Site is located at 3100 Skyway in Paradise, California (Figures 1 and 2). The Site is comprised of two Butte County Assessor's Parcel Numbers (APNs): 040-520-100 and -103, totaling 175 acres of land that was formerly developed with a golf course and has been setup with a basecamp for the emergency response efforts for the Camp Fire (Figure 3). Surrounding land use consisted of a gun range and vacant land (Figure 4).

The Site was developed with three structures by 2006. Given the age of the existing development on the Site, it is unlikely that asbestos containing building materials and lead-based paints were used in the construction and/or maintenance of the Site building.

2.2 Site Reconnaissance

A visual site reconnaissance for the Phase I ESA was conducted by WKA on January 2 and 18, 2019. As tenants vacated the Site, WKA conducted additional site visits on February 15, 2019, and April 9, 2020. Copies of letters regarding the subsequent site visits are provided in Appendix E. Figures 5a through 5d provide color photographs of the Site taken during the site visits.

On January 2, 2019, the Site had been developed with an emergency basecamp for PG&E and subcontractors that were responding to the vicinity after the Camp Fire. Multiple sleeper trailers, recreational vehicles, and temporary office buildings were parked on the southern portion of the Site. WKA observed several pallets of 55-gallon drums labeled as "used grease" in the vicinity of a tent being used as a mobile kitchen. The pallet and drums were covered by a blue tarp. WKA observed two, empty 55-gallon drums and two, empty 20-gallon empty drums that were pre-labeled to indicate that hazardous materials should be disposed in them. WKA observed a large parking areas to the north of the trailers and buildings. The central portion of the Site was being held materials used for repairs in areas destroyed by the Camp Fire. WKA observed a mobile fueling station on the central portion of the Site. Two fuel trucks were parked in a designated area. WKA observed tarps beneath the fuel trucks; however, significant staining was noted around the tarps. WKA observed an empty 55-gallon drum labeled as "oily debris" in the vicinity of the fuel trucks. Subsequent site inspections are recorded for February 15, 2019, and April 9, 2020. These site inspection reports show that the mobile fuel area was re-graded by February 15, 2019 and that PG&E had reportedly excavated diesel impacted soil to bedrock and disposed of it off-site. (Personal Communication Scott Bates, 2019) WKA observed a truck wash on the west-central portion of the Site. WKA observed a lined area filled with water

beneath the truck wash. WKA observed light towers with generators stationed throughout the Site. The majority of light towers had a small containment pan beneath them.

On January 18, 2019, WKA returned to the Site. WKA noted that the basecamp operations had decreased since the previous visit. WKA observed two aboveground storage tanks on the southeastern portion of the Site near a pond.

On April 9, 2020, WKA returned the Site. In April 2020, the Site was no longer being used as a basecamp. WKA observed the majority of the Site's surface had been graded with gravel. WKA observed two lined ponds on the southern portion of the Site. WKA observed green, PVC pipes protruding vertically from the ground on the southwestern portion of the Site, associated with a new septic system. The two aboveground storage tanks that were previously observed on the Site remained. WKA observed the storage of miscellaneous equipment and parts on the northwestern portion of the Site associated with trenching activities that were conducted with infrastructure development. A metal-sided, Quonset-type hut is located on the eastern portion. The Quonset-type hut was vacant during the April 2020 visit.

2.2.1 Municipal Infrastructure and Utilities

Electricity was provided by on-site generators in 2019; however, a Pacific Gas & Electric line has been installed at the Site and will now provide electricity. Natural gas is provided by Amerigas. Sanitary waste is discharged to a large set of septic tanks then dispersed to a lined aerobic leach field system then pumped into two lined waste water ponds for evaporation. . Potable water is provided by the Tuscan Ridge Golf Club public water system. Two aboveground fuel storage tanks are located on the southeastern portion of the Site.

2.3 Adjoining Properties

The Site is bounded to the north by Skyway followed by vacant land. The Paradise Rod and Gun Club and vacant land are located to the east of the Site. Vacant land is located to the south and west of the Site.

3.0 INTERVIEWS

Interviews with various persons familiar with the site vicinity, including representatives of public agencies, were conducted for the purpose of identifying past and present uses, which may have contributed to RECs on the Site. Results of those interviews are discussed in the following sections.

3.1 Owner or Key Site Manager

Mr. E.M. West, Tuscan Ridge Associates, LLC, completed a questionnaire regarding the Site. According to Mr. West, Tuscan Ridge Associates, LLC, has owned the Site since November 2005. He stated that the Site has been used for grazing and a golf course. Mr. West indicated that a clubhouse was constructed on the Site as part of the golf course. He said that the Site is currently being used as a PG&E basecamp for fire restoration efforts. According to Mr. West, approximately 500 cubic yards of soil from a CalTrans project that was located at Highway 32 and Highway 99 was placed on the Site in approximately 2006. The soil was spread just east of the maintenance yard. Mr. West indicated that there is one septic tank on the Site. He stated that potable water is provided by the Tuscan Ridge Golf Club Public Water System. Mr. West is not aware of any environmental liens that have been recorded for the Site.

In April 2020, Mr. West provided updated information for the Site. He stated that wastewater storage ponds were constructed on the Site in 2019. He stated that underground storage tank containing waste water were installed as part of a wastewater treatment plant. Mr. West did not indicate any other significant changes to the Site.

3.2 Occupants (Multi-family or Major)

No occupants were interviewed during the preparation of the Phase I ESA.

3.3 Past and Present Owners, Operators, and/or Occupants

No information regarding past owners was received by WKA during completion of this report.

3.4 State and/or Local Government Officials

WKA searched the State Water Resources Control Board (SWRCB) GeoTracker website and the Department of Toxic Substances Control (DTSC) EnviroStor website for facilities in the vicinity of the Site. No additional facilities were located.

3.5 Abandoned Properties

As referenced in 40 CFR Part 312, in the case of inquiries conducted at "abandoned properties," as defined in §312.23(d), "where there is evidence of potential unauthorized uses of the Site or evidence of uncontrolled access to the Site, the environmental professional's inquiry must include interviewing one or more (as necessary) owners or occupants of neighboring or nearby properties from which it appears possible to have observed uses of, or releases at, such abandoned properties…" No evidence of potential unauthorized uses, or evidence of uncontrolled access to the Site was observed. The Site is not considered an abandoned property and therefore, WKA did not interview owners or occupants of neighboring properties.

4.0 RECORDS REVIEW

The purpose of the records review is to obtain and review information concerning the current and historical use of the Site and adjoining properties that would help identify the presence of RECs in connection with the Site. The records review included review and discussion of the following, as available:

- Physical Setting Source(s);
- Historical Use Information; and,
- Environmental Record Sources.

4.1 Physical Setting Source(s)

The Site is depicted on the 2012 United States Geological Survey (USGS) 7.5 Minute topographic map of the *Hamlin Canyon, California Quadrangle* as undeveloped land. The Site is located within Sections 1 and 2, Township 21 North, Range 2 East and Sections 35 and 36, Township 22 N Range 2 E, Mount Diablo Base and Meridian, at an elevation between +640 and 920 feet relative to mean sea level (msl).

4.1.1 Regional and Local Geology

The Site is located on the boundary between the Great Valley and Sierra Nevada geomorphic provinces.

The Great Valley of California geomorphic province, a 500-mile, northwest-trending structural trough, is generally constrained to the west by the Coast Ranges and to the east by the foothills of the Sierra Nevada Range (Norris and Webb, 1990). The Great Valley consists of two valleys lying end-to-end, with the Sacramento Valley to the north and the San Joaquin Valley to the south.

The Sacramento and San Joaquin Valleys have been filled to their present elevations with thick sequences of sediment derived from both marine and terrestrial sources. The sedimentary deposits range in thickness from relatively thin deposits along the eastern valley edge to more than 25,000 feet in the south central portion of the Great Valley (Norris and Webb, 1990). The sedimentary geologic formations of the Great Valley province vary in age from Jurassic to Quaternary, with the older deposits being primarily marine in origin. Younger sediments are continentally derived and were typically deposited in lacustrine, fluvial, and alluvial environments with their primary source being the Sierra Nevada Range.

The Sierra Nevada geomorphic province is a 40- to 50-mile wide dipping fault block consisting of a series of uplifted Mesozoic granitic batholiths overlain by metamorphic and volcanic units that is 450 miles long. Elevations in the range extend from 400 feet in the western foothills up to 14,000 feet on its eastern edge where extensional block faulting of the basin and range province has produced high peaks and dramatic relief. Steep, rocky faces and glacier carved valleys feed high-energy streams descending to rolling foothills, where plutonic and metamorphosed rock abut flat-lying alluvial sediments of the province's western boundary with the Great Valley. (Norris and Webb, 1990).The Sierran block extends west beneath the Cenozoic alluvium of the Great Valley to presumably contact the Eastern Franciscan Formation of the Coast Ranges.

The complex structure of the Sierra Nevada is reflective of its equally complex geologic history. Faulting in the western Sierra Nevada mountains trends North-northwest.

The 1992 USGS *Geologic Map of the Chico Quadrangle, California*, shows the Site to be underlain by the Tuscan Formation. The Tuscan Formation consists of a series of layers deposited by streams and mudflows between two and four million years ago. The mudflows spread out over the area, burying older rock, filling low areas, and gradually building a flat subdued landscape. The Tuscan Formation is characterized by near horizontal layers within the formation and four-million-year-old volcanic ash horizon at the bottom of the formation. The Tuscan Formation is of Pliocene age and comprises volcanic mudflows, tuff, breccia, sandstone, and ash deposits.

4.1.2 Soil Survey

The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) has created a web-based service for accessing soil information. According to the NRCS Web Soil Survey (WSS) the majority of the near-surface soils on the Site consist of Doemill-Jokerst , 3 to 8 percent slopes; Doemill-Jokerst-Ultic Haploxeralfs, thermic complex, 3 to 8 percent slopes; and, Jokerst-Doemill-Typic Haploxeralfs , 8 to 15 percent slopes (USDA, 2019). A copy of the soil report is included on the attached CD.

4.1.3 Regional and Local Groundwater

The Site is located to the east of the California Department of Water Resources (DWR) defined Sacramento Valley Groundwater Basin of the Sacramento River Hydrologic Region. WKA searched data on the DWR website and found no DWR monitored groundwater wells within one-half mile of the Site (DWR, 2019).

WKA also searched the State Water Resources Control Board's (SWRCB) GeoTracker website for quarterly groundwater monitoring reports completed for facilities in the immediate vicinity of the Site. No facilities are located within one-half mile of the Site (SWRCB, 2019).

4.2 Historical Use Information

WKA reviewed historical information to develop a history of the previous uses of the Site and surrounding area, in order to evaluate the Site and adjoining properties for evidence of RECs. Standard historical sources reviewed during the preparation of this report included the following, as available:

- Sanborn® Maps;
- Topographic Maps;
- Oil and Gas Well Maps;
- Aerial Photographs;
- Ownership Records;
- Building Department Records;
- Local Street Directories;
- Zoning and Land Use Records;
- Other Historical Sources; and,
- Prior Assessments.

Discussion of these historical sources is provided in the following sections.

4.2.1 Sanborn® Maps

Sanborn® Maps with coverage of the Site were obtained through Environmental Data Resources, Inc. (EDR®). EDR® is a national commercial provider of environmental database information. Sanborn® Maps are detailed drawings of site development, and were typically used by fire insurance companies to determine site fire insurability. According to EDR®, Sanborn® Map coverage of the Site is not available (EDR®, 2019a).

4.2.2 Topographic Maps

Historical USGS topographic maps with coverage of the Site and outlying land areas were reviewed. Topographic maps with coverage of the Site dated 1891, 1893, 1895, 1912, 1942, 1944, 1951, 1969, and 2012 were available for review (EDR®, 2019b). Copies of the topographic maps compiled by EDR® with coverage of the Site are included on the CD attached to the back cover of this report. Table 1 notes the changes in the vicinity of the Site.

Table 1		
Year	**Scale**	**Observations**
1891	1:125,000	Site: Vacant land. North: Vacant land. East: Vacant land. South: Vacant land. West: Vacant land.
1893	1:125,000	No significant changes noted for the Site or the vicinity.
1895	1:125,000	No significant changes noted for the Site or the vicinity.
1912	1:31,680	The Site and vicinity were not surveyed on the map.
1942	1: 62,500	Site: A ravine is depicted on the southwestern portion. Railroad tracks are depicted on the southern portion of the Site. North: No significant changes noted. East: No significant changes noted. South: A trail road is depicted. West: No significant changes noted.
1944	1: 62,500	No significant changes noted for the Site or the vicinity.
1951	1:24,000	Site: No significant changes noted. North: The existing road, Skyway, is depicted. East: No significant changes noted. South: No significant changes noted. West: No significant changes noted.
1969	1:24,000	No significant changes noted for the Site or the vicinity.
2012	1:24,000	No significant changes noted for the Site or the vicinity.

4.2.3 Oil and Gas Well Maps

Review of California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) website showed that the Site is not located in a designated natural gas field. No DOGGR wells are located on or within at least one mile of the Site (DOGGR, 2019).

4.2.4 Aerial Photographs

Historical aerial photographs of the Site and general vicinity were compiled by EDR®. Photographs covering the years 1941, 1947, 1951, 1969, 1984, 1998, 2012, and 2016 were

available for review (EDR®, 2019c). In addition, WKA reviewed aerial imagery from December 2018 on Google Earth. Table 2 notes the changes on the property and in the vicinity.

Table 2

Year	Scale	Observations
January 1941	1" = 1,000'	Site: Primarily grass-covered land. Railroad tracks are visible along the southern property boundary. North: Grass-covered land. East: Grass-covered land and railroad tracks. South: Grass-covered land. West: Grass-covered land and railroad tracks.
January 1947	1" = 1,000'	No significant changes noted for the Site or the vicinity.
January 1951	1" = 1,000'	Site: No significant changes noted. North: A road is visible in the location of the existing Skyway. East: No significant changes noted. South: No significant changes noted. West: No significant changes noted.
August 1969	1" = 1,000'	No significant changes noted for the Site or the vicinity.
June 1984	1" = 1,000'	Site: No significant changes noted. North: Additional driving lanes have been added to Skyway. East: No significant changes noted. South: No significant changes noted. West: No significant changes noted.
January 1988	1" = 1,000'	No significant changes noted for the Site or the vicinity.
August 1998	1" = 1,000'	No significant changes noted for the Site or the vicinity.
2006	1" = 1,000'	Site: The Site has been developed with a golf course. Three structures are visible on the southeastern portion of the Site. North: No significant changes noted. East: Structures associated with the Paradise Rod and Gun Club are visible. South: No significant changes noted. West: No significant changes noted.
2009	1" = 1,000'	No significant changes noted for the Site or the vicinity.
2012	1" = 1,000'	No significant changes noted for the Site or the vicinity.
2016	1" = 1,000'	No significant changes noted for the Site or the vicinity.

Table 2		
Year	**Scale**	**Observations**
2018	NA	Site: Large areas have been graded and aggregate base has been spread. The beginning stages of the PG&E basecamp are visible throughout the property. North: No significant changes noted. East: No significant changes noted. South: No significant changes noted. West: No significant changes noted.

4.2.5 Ownership Records

Ownership information was obtained through ParcelQuest®, an on-line distributor of "Assessor-Direct property information throughout the State of California." The ownership entity for the Site was listed as "Tuscan Ridge Associates LLC" (ParcelQuest®, 2019).

4.2.6 Building Department Records

Due to the recent Camp Fire, the City of Paradise Building Department has limited services. WKA was unable to review building permits for the Site.

4.2.7 Local Street Directories

Local street directories with coverage of the Site and adjoining properties were obtained from EDR® (EDR®, 2019d). These documents contain business listings based on street number identifiers. The Site address of 3100 Skyway was not listed in city directories reviewed. A copy of the EDR® City Directory (EDR®, 2019d) is provided on the CD attached to the back cover of this report.

4.2.8 Zoning and Land Use Records

The Site use is listed as recreational (ParcelQuest, 2019).

The Site is located within an area of minimal flood hazard, as designated by the Federal Emergency Management Agency (FEMA). The floodplain map is provided on the CD attached to the back cover of this report.

WKA reviewed data provided on the National Pipeline Mapping System. No petroleum or natural gas pipelines were located within one-half mile of the Site (NPMS, 2019).

4.2.9 Other Historical Sources

Review of additional historical sources was not warranted in order for the Environmental Professional to make a determination as to evidence of potential RECs on the Site.

4.2.10 Prior Assessments

WKA was not provided previous assessments prior to the completion of this report.

4.3 Environmental Record Sources

4.3.1 Regulatory Agency Databases

EDR® was contacted to provide a summary of facilities listed on regulatory agency databases (EDR®, 2020). Table 3 summarizes the researched ASTM required *Standard Environmental Record Sources*, as well as several *Additional Environmental Record Sources*, as defined in Sections 8.2.1 and 8.2.2 of the ASTM Standard. For additional reference, the Executive Summary of the EDR® report is included in Appendix C. A copy of the entire EDR® report is included on the CD attached to the back cover of this report.

Table 3

	EDR Listed Database	*ASTM E 1527-13 Search Distance*	No. of Facilities Listed (within Search Radius)
Federal			
Federal NPL Site List	*NPL*	1-mile	0
Federal Delisted NPL Site List	*Delisted NPL*	1/2-mile	0
Federal CERCLIS List	*CERCLIS*	1/2-mile	0
Federal CERCLIS NFRAP Site List	*CERCLIS NFRAP*	1/2-mile	0
Federal RCRA CORRACTS Facilities List	*CORRACTS*	1-mile	0
Federal RCRA Generators List:			
Small Quantity and Large Quantity Generators	*RCRA SQG*	Site & adjoining	0
	RCRA LQG		0
Landfills and Solid Waste Management Units	*RCRA TSDF*	1/2-mile	0
Federal Institutional Control / Engineering Control Registries	*US ENG Controls*	Site only	0
	US INST Controls		0
Federal ERNS List	*ERNS*	Site only	0
State			
State-equivalent NPL (Hist. Cal-Sites)	*Hist. Cal-Sites*	1-mile	0
State-equivalent CERCLIS	*RESPONSE*	1/2-mile	0

Table 3			
	EDR Listed Database	*ASTM E 1527-13 Search Distance*	No. of Facilities Listed (within Search Radius)
State Landfill and/or Solid Waste Disposal Site	*SWF/LF (SWIS)*	1/2-mile	0
	WMUDS/SWAT		0
State Leaking Underground Storage Tanks	*LUST- Reg 5 Geotracker*	1/2-mile	0
Tribal Leaking Underground Storage Tanks	*Indian LUST*	1/2-mile	0
State Registered Underground Storage Tanks	*UST*	Site & adjoining	0
Tribal Registered Underground Storage Tanks	*Indian UST*	Site & adjoining	0
State Registered Aboveground Storage Tanks	*AST*	Site & adjoining	0
State Institutional Control Registries	*DEED*	Site only	0
State Voluntary Cleanup Sites	*VCP*	1/2-mile	0
State Brownfield Sites	*US Brownfields*	1/2-mile	0
Additional Environmental Record Sources			
Hazardous Waste & Substances Sites List	*CORTESE*	1/2-mile	0
DTSC EnviroStor (includes Cal-Sites)	*EnviroStor*	1-mile	0
SLIC	*SLIC - Reg 5*	1/2-mile	0
Cleaner Facilities	*Drycleaners*	1/4-mile	0
HAZNET	*HAZNET*	1/4-mile	1
Local - County			
Certified Unified Program Agency	*CUPA Listing*	1/2-mile	1

Information reviewed concerning the Site is detailed below.

The Tuscan Ridge Golf Club, 3100 Skyway, was located at the Site. The Tuscan Ridge Golf Club is listed on the Department of Toxic Substances Control (DTSC) Haznet, the California Air Resources Board's Emission Inventory Data, the Certified Unified Program Agency (CUPA), the California Environmental Reporting System, the National Pollution Discharge Elimination System, the California Integrated Water Quality System, and the Facility Index System. The DTSC Haznet database is a list of all facilities that have submitted manifests for the disposal of hazardous waste at a landfill. A listing on either database is not considered to be indicative of a release of a hazardous material or petroleum product at a property. According to the EDR Radius Report, a manifest was submitted to DTSC for the disposal of unspecified organic liquid mixture in 2006. The remaining databases do not indicate that a release of hazardous materials or petroleum products have occurred at the Site. Based on the information reviewed, this facility has not impacted the Site.

4.3.2 Preliminary Screen for Vapor Encroachment Conditions

WKA conducted a preliminary screening for VEC beneath the Site using the Tier 1 vapor encroachment screening evaluation[1]. The Tier I screening included performing a ***Search Distance Test*** to identify if there are any known or suspect contaminated properties surrounding or upgradient of the Site within specific search radii, and a ***Chemicals of Concern (COC) Test*** (for those known or suspect contaminated properties identified within the ***Search Distance Test***) to evaluate whether or not COC are likely to be present. The Vapor Encroachment Screening Matrix is included in Appendix D.

Based on the completion of the VEC-screening matrix, a VEC can be ruled out because a VEC does not or is not likely to exist.

4.3.3 Environmental Lien Search

Tuscan Ridge Associates, LLC did not authorize WKA to conduct a search for environmental liens and AULs.

[1] The Preliminary Screen for Vapor Encroachment Conditions was based on the guidelines presented in the ASTM ***E 2600-15 Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions***

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Data Gaps

The time intervals between the Standard Historical Sources (i.e., topographic maps, aerial photographs, other historical sources) exceeded the ASTM minimum five-year period. However, the use of the Site appears unchanged within the time gaps, and therefore, research of the Site use during the time gaps is not required by the ASTM Standard (Refer to ***Section 8.3.2.1 – Intervals*** of the ASTM E 1527-13 standard).

It is the opinion of WKA that no significant data gaps were identified during the preparation of this report that affects the ability of the Environmental Professional to identify RECs on the Site.

5.2 Conclusions

- The historical land use research dating back to the late 1800s revealed that the Site was vacant land from at least 1891 to at least 1998. Railroad tracks were present on the southern portion of the Site by 1941. The Site was developed with a golf course, with three structures on the southeastern portion, by 2006. In December 2018, the Site was graded and aggregate base was spread across the majority for the development of an emergency basecamp for Pacific Gas & Electric (PG&E) and other contractors responding to areas impacted by the Camp Fire.
- During a visit to the property on January 2, 2019, WKA observed a mobile fueling area on the central portion of the Site. WKA observed stained soils in the vicinity of mobile fuel trucks. Subsequent site inspections were conducted on February 15, 2019, and April 9, 2020. Site inspection reports for the subsequent visits describe that the mobile fuel area was re-graded by February 15, 2019, and that PG&E had reportedly excavated diesel impacted soil to bedrock and disposed of it off-site.
- During a visit to the property on January 18, 2019, WKA observed two aboveground storage tanks (ASTs) on the southeastern portion of the Site. WKA was not provided additional information regarding the ASTs.
- During a visit to the property on April 9, 2020, WKA observed that the Site was no longer being used as a basecamp. The two ASTs observed in January 2019 remained on the property. WKA observed that the majority of the Site's surface had been graded with gravel. WKA observed two lined ponds on the southern portion of the Site. WKA also observed a series of green, PVC pipes protruding vertically from the ground on the southwest portion of the Site. The pipes are associated with a new septic system that has been installed at the Site.

- Given the age of development on the Site, it is unlikely that asbestos containing building materials and lead-based paints were used in the construction and/or maintenance of the Site buildings.
- Given the documentation reviewed concerning the agency listings for neighboring facilities, none of the facilities reviewed is likely to have a negative impact on the Site.
- Based on the completion of the vapor encroachment condition (VEC) screening matrix, WKA concludes a VEC can be ruled out because a VEC does not or is not likely to exist.

WKA has performed this ESA in conformance with the scope and limitations of ASTM Standard Practice E 1527-13 for the Tuscan Ridge Property.
We have performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E 1527-13 for the Tuscan Ridge Property. Any exceptions to, or deletions from, this practice are described in Section 5.4 of this report. This assessment has revealed no evidence of RECs in connection with the Site except the following:

- On-site concerns were noted from the presence of railroad tracks along the southern property boundary by at least 1941.
- On-site concerns were noted from the two ASTs located on the southeastern portion of the Site.

A full copy of this ESA report, in a .pdf format, is included on the attached CD.

5.3 Recommendations

Based on the conclusions presented and the documentation contained herein, WKA makes the following recommendations:

- WKA recommends collection of shallow soil samples along the former rail alignment for analysis of CAM 17 metals, Organochlorine pesticides, total petroleum hydrocarbons, PAH's
- WKA recommends collection of two shallow soil samples in the area of the above ground fuel storage tanks to assess the effectiveness of the secondary containment. These samples should be analyzed for Total Petroleum Hydrocarbons, BTEX, and Fuel oxygenates.
- WKA was notified PG&E verbally during the Site walk about the stained soil in the vicinity of the mobile fueling area. In a subsequent visit to the Site on February 15, 2019, WKA noted that PG&E had withdrawn from the Site and had reportedly excavated the area where the mobile fueling operation had been and disposed of any impacted soil

off site. WKA recommends contacting PG&E environmental services to request documentation of stained soil removal activities.

5.4 Exceptions and/or Deletions

No exceptions or deletions from the ASTM E 1527-13 standard were made during the performance of this ESA.

5.5 Additional Services

Non-scope considerations, such as assessment for naturally occurring asbestos (NOA), wetlands evaluation, indoor air quality, laboratory testing of the soils and groundwater beneath the Site for environmental contaminants (such as agricultural-related pesticides, termiticides, polychlorinated biphenyls [PCBs], or arsenic and lead), and assessments for asbestos containing materials and lead-based paint were not included or requested as part of this ESA. Additionally, this ESA included conducting a Tier 1 vapor encroachment screening in accordance with the ASTM *E 2600-15 Vapor Encroachment Screening on Property Involved in Real Estate Transactions*.

6.0 LIMITATIONS

The statements and conclusions in this report are based upon the scope of work described above and on observations made only on the date of the field reconnaissance, January 2 and 18, 2019. Work was performed using a degree of skill consistent with that of competent environmental consulting firms performing similar work in the area. Information regarding the Site that is ***publicly available*** and ***practically reviewable,*** as described in the ASTM standard, was obtained. Additional research or receipt of information regarding the Site that was not disclosed or available to WKA during this assessment may result in revision of the conclusions. The conclusions in this report should be reevaluated if site conditions change. No recommendation is made as to the suitability of the Site for any purpose. The results of this assessment do not preclude the possibility that materials currently or in the future defined as hazardous are present on the Site, nor do the results of this work guarantee the potability of groundwater beneath the Site. This report is applicable only to the investigated Site and should not be used for any other property. No warranty is expressed or implied.

This report is viable for one year from the publication date of the report provided the following components are updated within 180 days of the date of purchase or (for transactions not involving an acquisition) the date of the intended transaction:

- Interviews with current owners/occupants and/or in order to identify changes in Site conditions or uses since the publication date of this report
- Searches for recorded environmental cleanup liens
- Visual inspection of the Site and of adjoining properties with emphasis on changes in conditions or uses since the publication date of this report
- A current review of federal, state, tribal and county databases
- The declaration by the environmental professional responsible for the assessment.

Environmental Site Assessments completed more than one year prior to the date of purchase must be reviewed and updated in order for the ***Environmental Site Assessment*** to be considered valid per Section 4.6 (***Continued Viability of Environmental Site Assessment***), and Sections 4.7 and 8.4 (***Prior Assessment Usage***) of the ASTM E 1527-13 Standard.

NMM:KMB:mr
H:/dept3/12206.04 - Phase I ESA Tuscan Ridge Property

7.0 REFERENCES

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-2019b. ***The EDR Historical Topographic Map Report, Tuscan Ridge Property, 3100 Skyway, Chico, California, Inquiry Number 5530325.4***, Shelton, Connecticut, (January 9, 2019).

-2019c. ***The EDR Aerial Photo Decade Package Report Tuscan Ridge Property, 3100 Skyway, Chico, California, Inquiry Number 5530325.5***, Shelton, Connecticut, (January 11, 2019).

-2019d. ***The EDR City Directory Abstract Tuscan Ridge Property, 3100 Skyway, Chico, Inquiry Number 5530325.6***, Shelton, Connecticut, (January 10, 2019).

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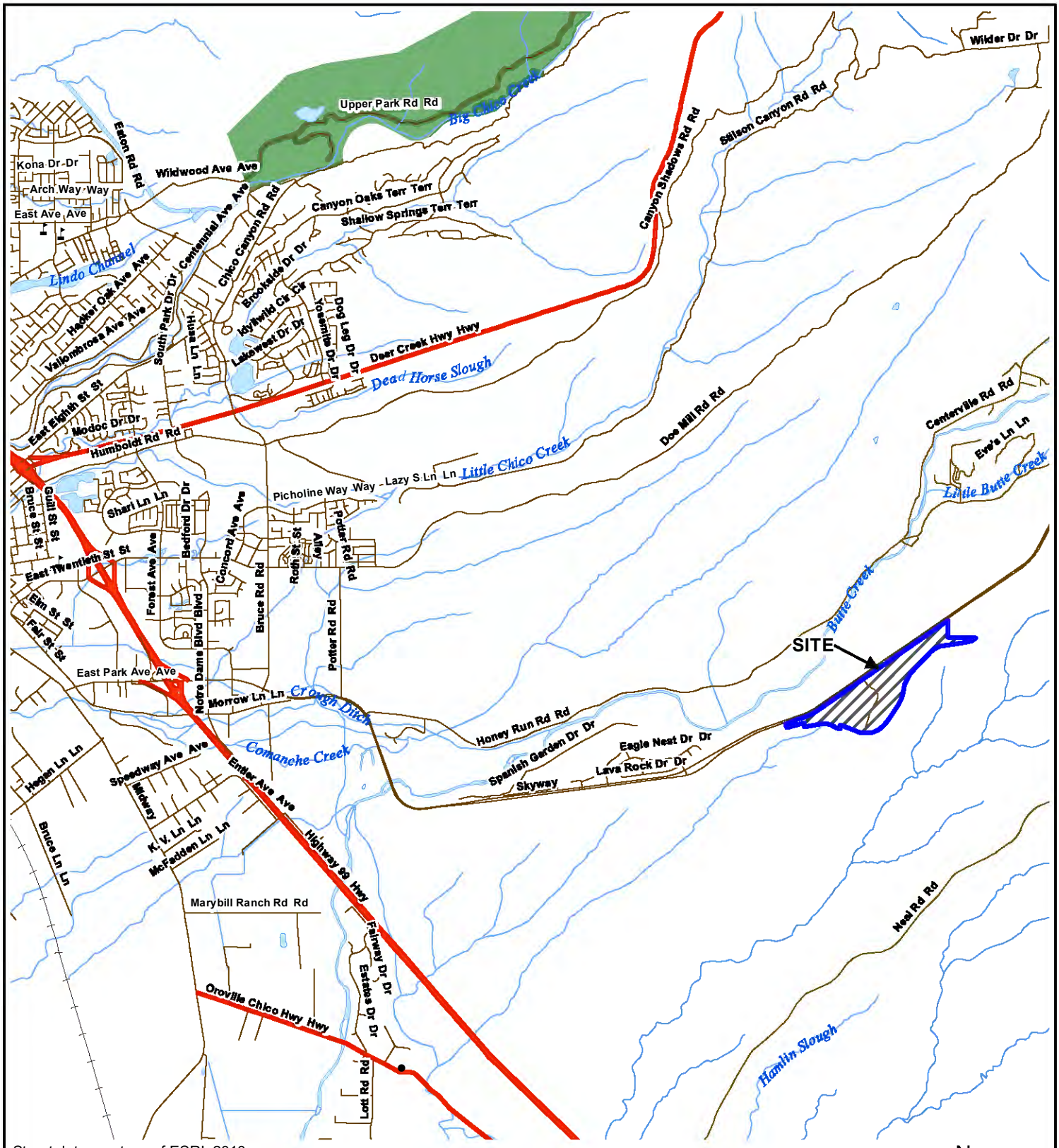
FIGURES



Street data courtesy of ESRI, 2010.
Hydrography courtesy of the U.S. Geological Survey acquired from the GIS Data Depot, December, 2007.
Projection: NAD 83, California State Plane, Zone II

N

0 2,500 5,000
Feet

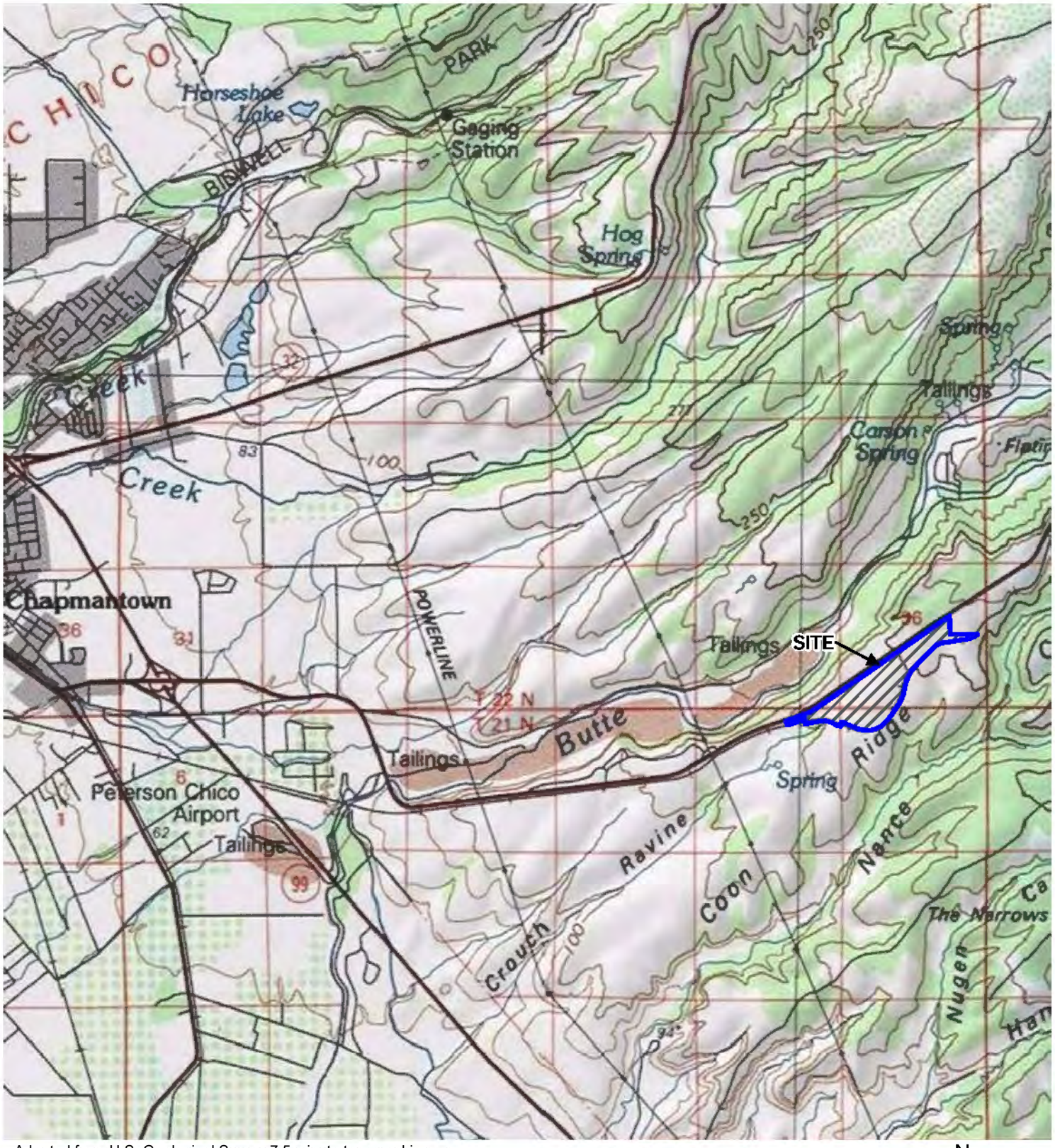
WallaceKuhl & ASSOCIATES

VICINITY MAP

TUSCAN RIDGE PROPERTY

Paradise, California

FIGURE	1
DRAWN BY	RWO
CHECKED BY	NMM
PROJECT MGR	KMB
DATE	04/2020
WKA NO.	12206.04



Adapted from U.S. Geological Survey 7.5 minute topographic map
of the Chicos quadrangle, California, 2013
Provided By The California Geospatial Information Library, 2007
Projection: California State Plane, Zone II

N

0 2,500 5,000
Feet

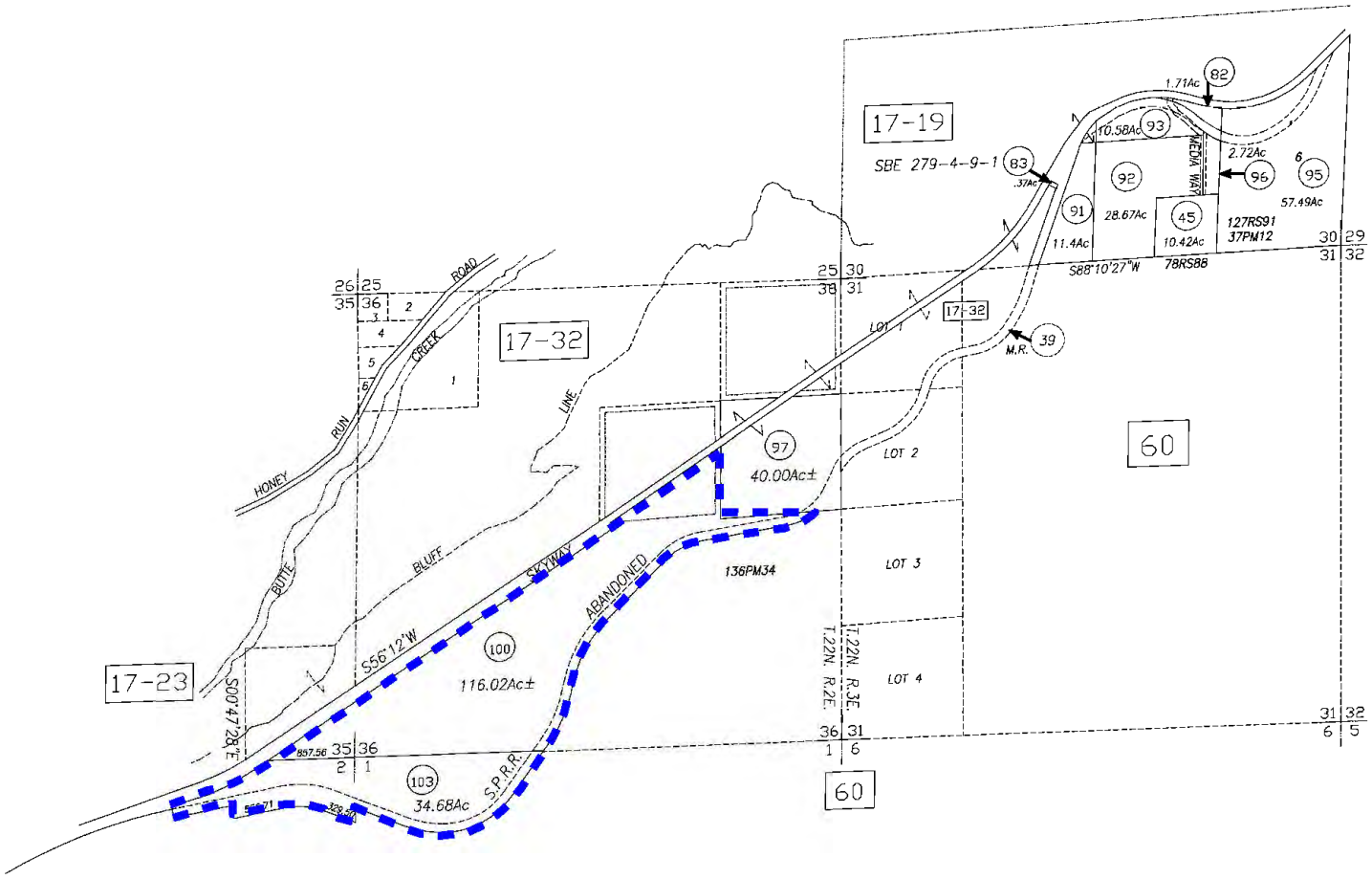
WallaceKuhl & ASSOCIATES

TOPOGRAPHIC MAP

TUSCAN RIDGE PROPERTY

Paradise, California

FIGURE	2
DRAWN BY	RWO
CHECKED BY	NMM
PROJECT MGR	KMB
DATE	04/2020
WKA NO.	12206.04



Parcel Map provided by the County of Butte
Assessor's Map Book 40, Page 52.
Projection: California State Plane, Zone II

Legend

Approximate Site Boundary

N

0 1,000 2,000
Feet

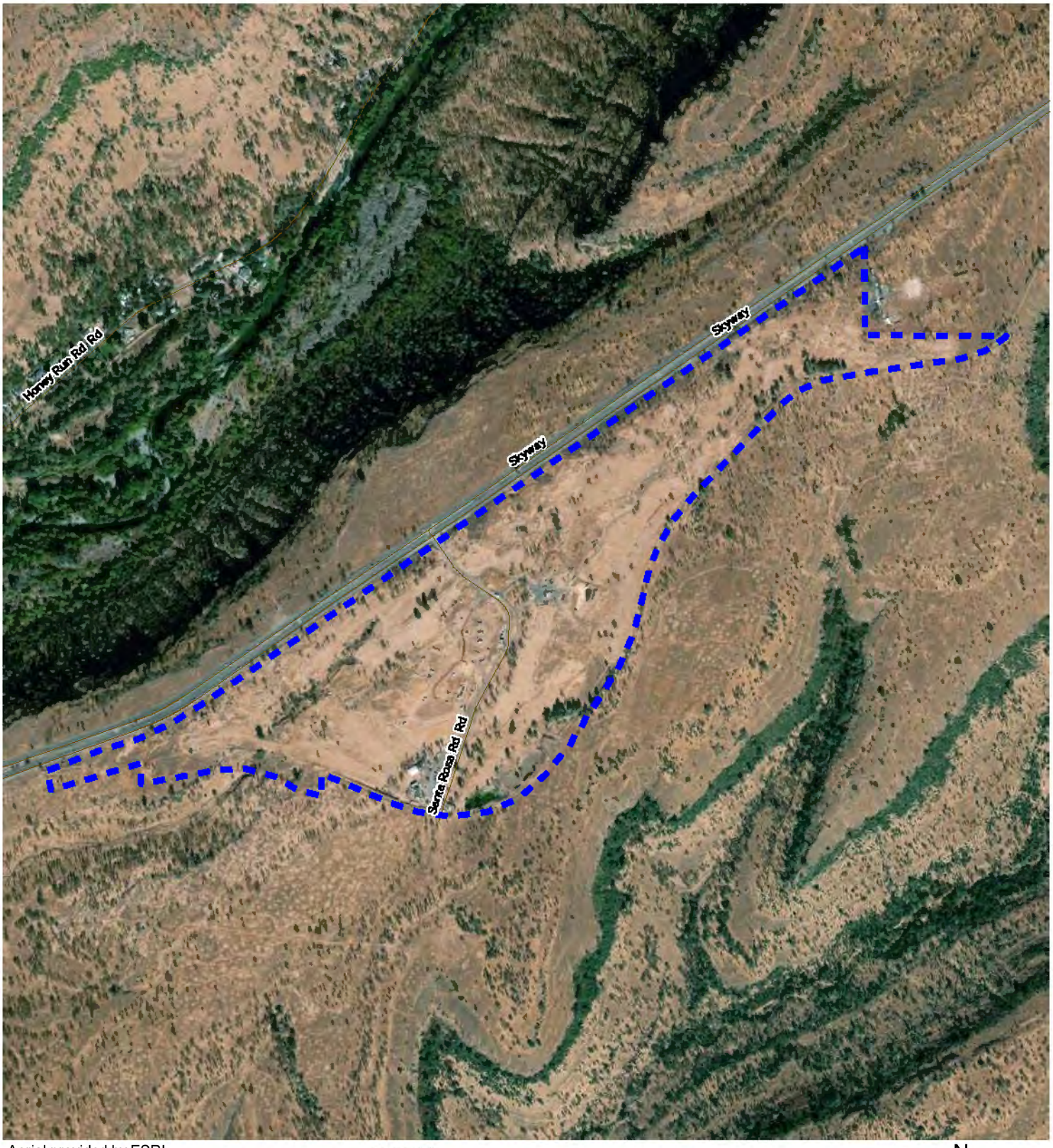
WallaceKuhl & Associates

PARCEL MAP

TUSCAN RIDGE PROPERTY

Paradise, California

FIGURE	3
DRAWN BY	RWO
CHECKED BY	NMM
PROJECT MGR	KMB
DATE	04/2020
WKA NO.	12206.04



Aerial provided by ESRI.
Projection: California State Plane, Zone II

Legend

Approximate Site Boundary

N

0 500 1,000
Feet

WallaceKuhl & ASSOCIATES

AERIAL SITE MAP

TUSCAN RIDGE PROPERTY

Paradise, California

FIGURE	4
DRAWN BY	RWO
CHECKED BY	NMM
PROJECT MGR	KMB
DATE	04/2020
WKA NO.	12206.04

Looking at sleeper trailers on the southern portion of the Site.

Looking at one of the tents on the southern portion of the Site.

Looking at an office trailer on the southern portion of the Site.

Looking at 55-gallon drums on pallets covered by a blue tarp.

Wallace Kuhl & Associates

COLOR PHOTOGRAPHS

TUSCAN RIDGE PROPERTY

Chico, California

FIGURE	5a
DRAWN BY	NMM
CHECKED BY	KMB
PROJECT MGR	KMB
DATE	1/19

WKA NO. 12206.04

Looking at drums prepared to receive hazardous waste.

Looking southwest at parking areas on the central portion of the Site.

Looking north at the mobile fueling area on the central portion of the Site.

Looking at stained soils in the vicinity of mobile fueling area.

Wallace Kuhl & Associates

COLOR PHOTOGRAPHS

TUSCAN RIDGE PROPERTY

Chico, California

FIGURE	5b
DRAWN BY	NMM
CHECKED BY	KMB
PROJECT MGR	KMB
DATE	1/19
WKA NO. 12206.04	

Looking at the truck wash on the west-central portion of the Site.

Looking at a typical light tower with secondary containment.

Looking at the two aboveground storage tanks on the southeastern portion of the Site.

Looking at the well located on the southeastern portion of the Site.

Wallace Kuhl & Associates

COLOR PHOTOGRAPHS

TUSCAN RIDGE PROPERTY

Chico, California

FIGURE	5c
DRAWN BY	NMM
CHECKED BY	KMB
PROJECT MGR	KMB
DATE	1/19
WKA NO. 12206.04	

Looking at the lined ponds on the northern portion of the Site.

Looking at PVC pipes protruding vertically from the ground associated with a new septic system.

Looking at the storage of trenching equipment.

Looking at a Quonset-type hut.

Wallace Kuhl & Associates

COLOR PHOTOGRAPHS

TUSCAN RIDGE PROPERTY

Chico, California

FIGURE	5d
DRAWN BY	NMM
CHECKED BY	KMB
PROJECT MGR	KMB
DATE	4/20

WKA NO. 12206.04

APPENDIX A
RESUMES

KURT M. BALASEK

SENIOR HYDROGEOLOGIST/DIRECTOR OF ENVIRONMENTAL SERVICES

Mr. Balasek has provided a leadership role in hydrogeologic and environmental consulting in the Western US. since 1989. His experience includes, residential and commercial land development, litigation support, permitting, regulatory compliance and technical team building. Mr. Balasek and his team have conducted a wide range of impacted soil and groundwater investigations, mine location and reclamation activities, water resource evaluations and conjunctive use studies. Mr. Balasek has supported municipal efforts to redevelop blighted neighborhoods using private and federal funding and has prepared successful grant applications for EPA Brownfield funding. Mr. Balasek has facilitated public stakeholder processes, organized public comments and used the information gathered from these efforts to prioritize neighborhood and regional site investigations and remedial activities.

Mr. Balasek specializes in unique approaches to problem solving and leverages nearly 30 years of regulatory relationships to assist clients facing enforcement actions. Mr. Balasek has saved his clients hundreds of thousands of dollars in reduced fines, monitoring requirements or realized project efficiencies.

SELECTED PROJECT EXPERIENCE

Stockton Worknet, Stockton, CA: Project was conducted for the City of Stockton Redevelopment Agency and involved delineation, removal and disposal for hydrocarbon and lead-contaminated soil discovered during a construction project. The project also involved a component of public outreach because a children's museum was located immediately adjacent to the site.

Hayden Hill Mine, Lassen, CA: Project consisted of third party review of mine closure plan for Lassen County. Provided technical assistance to Lassen County Planning Commission to facilitate permanent closure of large open pit mine.

Willow Creek, Folsom, CA: Project involved site investigation and subsequent removal of petroleum hydrocarbon-contaminated soil to facilitate private development of commercial property. Under my direction, I facilitated the investigation, excavation and coordination of closure petitions.

City of West Sacramento, West Sacramento, CA: Multiple Projects. These projects involved initial site evaluation of several hundred individual sites for the redevelopment of West Sacramento. Subsequent work involved site investigation and remediation of several sites under U.S. EPA Grants. Provided technical assistance to City staff and collaborated with them to best utilize the public funds and coordinate public outreach. Provided emergency consultation related to peroxide release at city water treatment plant and provides on-going management and monitoring of groundwater pump and treat system at the Port of Sacramento

Rominger Property, Winters, CA (on-going): This project involves detailed site investigation, hydrogeologic analysis and evaluation, and the selection of appropriate remediation technologies for a large plume of (MTBE) contamination on an Ag-industrial site. Project involvement included client and regulatory interaction.

HIGHER EDUCATION:

University of California, Santa Barbara
BA, Geological Sciences (1986)
California State University, Chico
MS, Hydrogeology/Hydrology (1990)

PROFESSIONAL REGISTRATIONS:

Professional Geologist No. 6162, CA
Certified Hydrogeologist No. 299, CA
Qualified Storm Water Developer
California Engineering Contractor A-Haz, C-57,

NANCY M. MALARET

PROJECT ENVIRONMENTAL SCIENTIST

Ms. Malaret has been employed in the environmental field since 2003. She graduated from University of California, Davis with a degree in Hydrologic Science.

Ms. Malaret worked for the Florida Department of Health for four years. She assisted with the coordination of sampling potable water wells throughout the state of Florida. Ms. Malaret used GIS mapping techniques to identify private potable wells located near commercial and industrial facilities that may have contaminated the groundwater. She coordinated the sampling of the wells and the analysis of water samples collected. She worked with the Florida Department of Environmental Protection to place filters on the private wells with contaminated water. Ms. Malaret also worked with the Health Assessment Team at the Florida Department of Health. She conducted human health risk assessments based on groundwater and soil data collected during contamination assessments of industrial facilities. Ms. Malaret used the Agency for Toxic Substances and Disease Registry's Public Health Assessment Guidelines to evaluate resident's risk of illness from exposure to contaminated groundwater and surface soils. Ms. Malaret used Risk Assistant software to determine dose estimates and compared the results with toxicological studies. Ms. Malaret's human health risk assessments focused on sites with Volatile Organic Compounds, Semi-volatile Organic Compounds, and metals contamination.

Ms. Malaret has six years of experience in due diligence. Her Phase I Environmental Site Assessment experience includes wooded, rural, and urban properties. Her investigations have involved multiple parcel sites with extensive history, large-scale residential subdivisions, office buildings, gasoline stations, dry cleaners, and heavy equipment manufacturing and repair facilities. Ms. Malaret has conducted multiple corridor assessments along roadways being prepared for expansion or improvements. She also conducted a Hazardous, Toxic, and Radioactive Waste Assessment for the United States Army Corps of Engineers on a 20-mile stretch of the St. Johns River in Jacksonville, Florida. Ms. Malaret conducted soil and groundwater sampling associated with Phase II Environmental Site Assessments. Ms. Malaret coordinated long-term groundwater sampling events for sites with residual petroleum contamination.

Ms. Malaret has worked with communities impacted by contamination, local, state, and federal government agencies, banks and developers.

Moody Property, Vacaville, CA: Ms. Malaret managed the Phase I Environmental Site Assessment of a 38.5-acre property of undeveloped land located in Vacaville to support the redevelopment of the property into a residential development.

Woodmere Property, Folsom, CA: Ms. Malaret managed the Phase I Environmental Site Assessment of a 2.5-acre property developed with an office building. Historical research of the property included evaluating former mining operations at the site.

Mercantile Property, Rancho Cordova, CA: Ms. Malaret managed the Phase I Environmental Site Assessment of a 4.1-acre property developed with a commercial building. Evaluation of regulatory facilities within the site vicinity included the former Aerojet Facility.

HIGHER EDUCATION:

University of California, Davis
Bachelor of Science, Hydrologic Science (1999)

APPENDIX B

ASTM E 1527-13 User Questionnaire
and Helpful Documents Checklist

HELPFUL DOCUMENTS
3100 SKYWAY PROPERTY

Are you aware of any of the below-listed reports, as they relate specifically to the property?

X Yes ___ No (if yes, please check all that apply):

- ☐ Environmental Site Assessment reports (Phase I ESA, Asbestos sampling reports, etc.)
- ☐ Environmental Compliance Audit reports
- ☐ Geotechnical Reports
- ☑ Environmental permits (for example, solid waste disposal permits, hazardous waste disposal permits, wastewater permits, NPDES permits, underground injection permits)
- ☑ Registrations for underground or above ground storage tanks
- ☐ Registrations for underground injection systems
- ☐ Material Safety Data Sheets
- ☐ Community Right-to-Know plan
- ☐ Safety Plan
- ☐ Reports regarding Hydrogeologic conditions on the property or surrounding area
- ☐ Notices or other correspondence from any government agency relating to past or current violations of environmental laws with respect to the property or relating to environmental liens encumbering the property
- ☐ Hazardous waste generator notices, or reports
- ☐ Environmental Impact Reports (draft and/or final)
- ☐ Risk assessments
- ☐ Recorded AULs

If any of the above listed documents are available, will copies be provided to WKA for review?

✓ Yes ___ No See attached Monitoring Report for WWTP.

Completed by E.M. West

Date: 4/14/2020

Title: Member, Tuscan Ridge Associates, LLC

Signature: E.M. West

E 1527-13 USER QUESTIONNAIRE
3100 SKYWAY PROPERTY

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "*Brownfields Amendments*"), the *user*[2] must provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that "*all appropriate inquiry*" is not complete.

(1.) Have you performed a search for environmental cleanup liens and AULs, as described under *User Obligations* in the attached proposal, for the *property*?

No

(2.) Are you aware of any environmental cleanup liens against the *property* that are filed or recorded under federal, tribal, state or local law?

No

(3.) Are you aware of any AULs, such as *engineering controls*, land use restrictions or *institutional controls* that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?

No

(4.) As the *user* of the report, do you have any specialized knowledge or experience related to the *property* or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

Yes

(5.) Does the purchase price being paid for this *property* reasonably reflect the fair market value of the *property*? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present on the *property*?

Not Subject to Purchase/Sale currently.

(6.) Are you aware of commonly known or reasonably ascertainable information about the *property* that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as user,

(a.) Do you know the past uses of the *property*? Yes If so, what were they? Grazing, Golf Course, Storage Camp

(b.) What, if any, specific chemicals are present or once were present at the *property*?

unknown

---

[2] User, as defined in the ASTM Standard is "the party seeking to use Practice E 1527 to complete an environmental site assessment of the property. A user may include, without limitation, a potential purchaser of property, a potential tenant of property, an owner of property, a lender, or a property manager. The user has specific obligations for completing a successful application of this practice as outline in Section 6 [of the ASTM Standard]."

E 1527-13 USER QUESTIONNAIRE (cont.)
3100 SKYWAY PROPERTY

Questions 6 continued:

(c.) What, if any, spills or other chemical releases have taken place at the *property*?

Unknown

(d.) What, if any, environmental cleanups have taken place at the *property*?

None

(7.) As the *user* of this ESA, based on your knowledge and experience related to the *property* are there any obvious indicators that point to the presence or likely presence of contamination at the *property*?

No

COMPLETION:

I have completed this User Questionnaire to the best of my knowledge and provided all information to the environmental professional as of the following date:

Completed by: E.M. West

Date: 4/14/2020

Title: Member, Tuscan Ridge Associates, LLC

Signature: [signature]

Phone Number: 530-520-4529

Relationship to the Site (i.e., owner, lender, property manager): Owner

APPENDIX C

EDR® Radius Map Report Executive Summary

Tuscan Ridge Property
3100 Skyway
Chico, CA 95928

Inquiry Number: 6037845.2s
April 10, 2020

The EDR Radius Map™ Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	9
Orphan Summary	42
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

GeoCheck - Not Requested

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

3100 SKYWAY
CHICO, CA 95928

COORDINATES

Latitude (North):	39.7151100 - 39° 42' 54.39"
Longitude (West):	121.7056340 - 121° 42' 20.28"
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	610949.1
UTM Y (Meters):	4396729.5
Elevation:	805 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5603320 HAMLIN CANYON, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140725
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
3100 SKYWAY
CHICO, CA 95928

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	TUSCAN RIDGE BASE CA	3100 SKYWAY ROAD	CHMIRS, CIWQS		TP
A2	TUSCAN RIDGE GOLF CL	HWY 99 AND SKYWAY	ENF, NPDES, CIWQS, CERS		TP
A3	PACIFIC GAS AND ELEC	3100 SKYWAY	RCRA NonGen / NLR		TP
A4	PACIFIC GAS AND ELEC	3100 SKYWAY	HWTS		TP
A5	TUSCAN RIDGE WORKERS	3100 SKYWAY	NPDES, CIWQS, CERS		TP
A6	TUSCAN RIDGE BASE CA	3100 SKYWAY	CERS		TP
A7	TUSCAN RIDGE GOLF CL	HWY 99 AND SKYWAY	FINDS		TP
A8	TUSCAN RIDGE GOLF CL	3100 SKYWAY	HAZNET, HWTS		TP
A9	PACIFIC GAS AND ELEC	3100 SKYWAY	FINDS, ECHO		TP
A10	TUSCAN RIDGE GOLF CO	3100 SKYWAY	CUPA Listings, EMI		TP
A11	TUSCAN RIDGE GOLF CL	5 MI E OF HWY 99 ON	WDS		TP
A12	TUSCAN RIDGE GOLF CO	3100 SKYWAY	FINDS		TP
B13	CAMP FIRE EMERGENCY	SKYWAY ROAD	NPDES, CERS	Lower	1 ft.
B14	ACCELERATED WILDFIRE	SANTA ROSA ROAD	CIWQS	Lower	1 ft.
B15	CAMP FIRE EMERGENCY	SKYWAY ROAD	CIWQS	Lower	1 ft.

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 9 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
TUSCAN RIDGE BASE CA 3100 SKYWAY ROAD PARADISE, CA 95969	CHMIRS OES Incident Number: 18-5298 CIWQS	N/A
TUSCAN RIDGE GOLF CL HWY 99 AND SKYWAY CHICO, CA 95928	ENF Status: Historical Status: Active Facility Id: 266763 NPDES CIWQS CERS	N/A
PACIFIC GAS AND ELEC 3100 SKYWAY PARADISE, CA 95969	RCRA NonGen / NLR EPA ID:: CAC002982200	CAC002982200
PACIFIC GAS AND ELEC 3100 SKYWAY PARADISE, CA 95969	HWTS	N/A
TUSCAN RIDGE WORKERS 3100 SKYWAY CHICO, CA 95928	NPDES Facility Status: Active CIWQS CERS	N/A
TUSCAN RIDGE BASE CA 3100 SKYWAY PARADISE, CA 95969	CERS	N/A
TUSCAN RIDGE GOLF CL HWY 99 AND SKYWAY CHICO, CA 95926	FINDS Registry ID:: 110065319480	N/A
TUSCAN RIDGE GOLF CL 3100 SKYWAY PARADISE, CA 95969	HAZNET GEPAID: CAL000303395 HWTS	N/A
PACIFIC GAS AND ELEC 3100 SKYWAY PARADISE, CA 95969	FINDS Registry ID:: 110070405823 ECHO	N/A

EXECUTIVE SUMMARY

Registry ID: 110070405823

TUSCAN RIDGE GOLF CO 3100 SKYWAY PARADISE, CA 95969	CUPA Listings Database: CUPA BUTTE, Date of Government Version: 04/21/2017 Facility ID: FA0003476 EMI Facility Id: 255	N/A
TUSCAN RIDGE GOLF CL 5 MI E OF HWY 99 ON CHICO, CA 95927	WDS Facility Status: A Facility Id: 5A041052001	N/A
TUSCAN RIDGE GOLF CO 3100 SKYWAY PARADISE, CA 95969	FINDS Registry ID:: 110065844572	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

EXECUTIVE SUMMARY

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG---------- RCRA - Large Quantity Generators
RCRA-SQG---------- RCRA - Small Quantity Generators
RCRA-VSQG---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS---------- Land Use Control Information System
US ENG CONTROLS---------- Engineering Controls Sites List
US INST CONTROLS---------- Institutional Controls Sites List

Federal ERNS list

ERNS---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST---------- Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST---------- Leaking Underground Storage Tanks on Indian Land
CPS-SLIC---------- Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST---------- Underground Storage Tank Listing
UST---------- Active UST Facilities
AST---------- Aboveground Petroleum Storage Tank Facilities
INDIAN UST---------- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP---------- Voluntary Cleanup Priority Listing
VCP---------- Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS---------- Considered Brownfieds Sites Listing

EXECUTIVE SUMMARY

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ..... Waste Management Unit Database
SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
ODI ..... Open Dump Inventory
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register
HIST Cal-Sites ..... Historical Calsites Database
SCH ..... School Property Evaluation Program
CDL ..... Clandestine Drug Labs
CERS HAZ WASTE ..... CERS HAZ WASTE
Toxic Pits ..... Toxic Pits Cleanup Act Sites
US CDL ..... National Clandestine Laboratory Register
PFAS ..... PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST ..... SWEEPS UST Listing
HIST UST ..... Hazardous Substance Storage Container Database
CA FID UST ..... Facility Inventory Database
CERS TANKS ..... California Environmental Reporting System (CERS) Tanks

Local Land Records

LIENS ..... Environmental Liens Listing
LIENS 2 ..... CERCLA Lien Information
DEED ..... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
LDS ..... Land Disposal Sites Listing
MCS ..... Military Cleanup Sites Listing
SPILLS 90 ..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS ..... Formerly Used Defense Sites
DOD ..... Department of Defense Sites
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information

EXECUTIVE SUMMARY

EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
DRYCLEANERS	Cleaner Facilities
Financial Assurance	Financial Assurance Information Listing
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)

EXECUTIVE SUMMARY

WELL STIM PROJ..... Well Stimulation Project (GEOTRACKER)
MINES MRDS..... Mineral Resources Data System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP..... EDR Proprietary Manufactured Gas Plants
EDR Hist Auto..... EDR Exclusive Historical Auto Stations
EDR Hist Cleaner..... EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF..... Recovered Government Archive Solid Waste Facilities List
RGA LUST..... Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

NPDES: A listing of NPDES permits, including stormwater.

A review of the NPDES list, as provided by EDR, and dated 11/11/2019 has revealed that there is 1 NPDES site within approximately 0.001 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CAMP FIRE EMERGENCY Facility Status: Active	***SKYWAY ROAD***	***0 - 1/8 (0.000 mi.)***	***B13***	***38***

EXECUTIVE SUMMARY

CIWQS: The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

A review of the CIWQS list, as provided by EDR, and dated 12/03/2019 has revealed that there are 2 CIWQS sites within approximately 0.001 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
ACCELERATED WILDFIRE	SANTA ROSA ROAD	0 - 1/8 (0.000 mi.)	B14	40
CAMP FIRE EMERGENCY	SKYWAY ROAD	0 - 1/8 (0.000 mi.)	B15	41

CERS: The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

A review of the CERS list, as provided by EDR, and dated 01/21/2020 has revealed that there is 1 CERS site within approximately 0.001 miles of the target property.

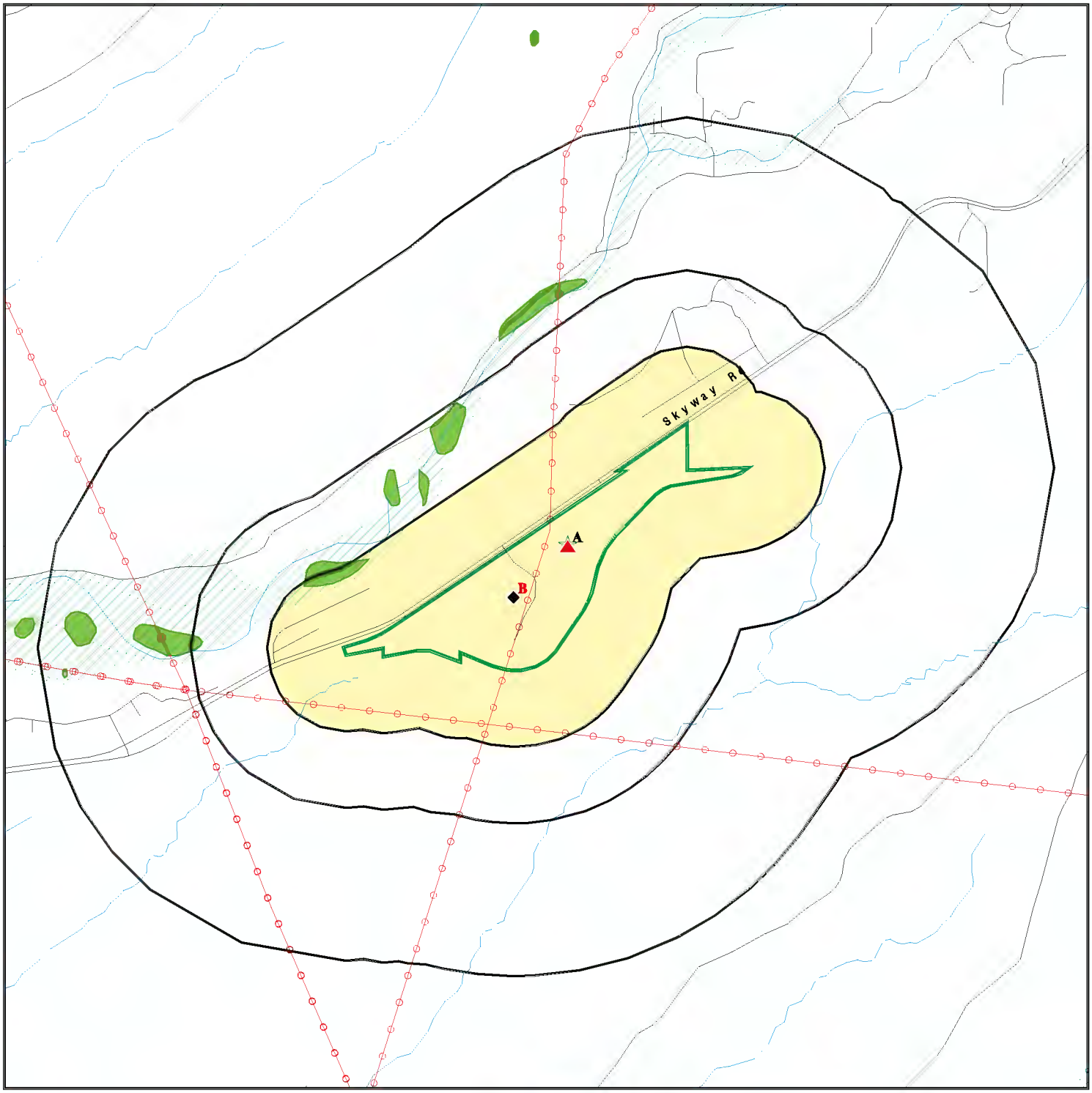
Lower Elevation	Address	Direction / Distance	Map ID	Page
CAMP FIRE EMERGENCY	***SKYWAY ROAD***	***0 - 1/8 (0.000 mi.)***	***B13***	***38***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
	CDL

OVERVIEW MAP - 6037845.2S



Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
National Priority List Sites
Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA
Power transmission lines
Special Flood Hazard Area (1%)
0.2% Annual Chance Flood Hazard
National Wetland Inventory
State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Tuscan Ridge Property	CLIENT: Wallace - Kuhl & Associates
ADDRESS: 3100 Skyway Chico CA 95928	CONTACT: Nancy Malaret
LAT/LONG: 39.71511 / 121.705634	INQUIRY #: 6037845.2s DATE: April 10, 2020 3:48 pm

DETAIL MAP - 6037845.2S

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/8 1/4 1/2 Miles

- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Tuscan Ridge Property	CLIENT: Wallace - Kuhl & Associates
ADDRESS: 3100 Skyway Chico CA 95928	CONTACT: Nancy Malaret
LAT/LONG: 39.71511 / 121.705634	INQUIRY #: 6037845.2s DATE: April 10, 2020 3:50 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001	1	0	NR	NR	NR	NR	1
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250	1	0	0	NR	NR	NR	1
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001	3	0	NR	NR	NR	NR	3
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001	1	0	NR	NR	NR	NR	1
UXO	1.000		0	0	0	0	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250	1	0	0	NR	NR	NR	1

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001	1	0	NR	NR	NR	NR	1
ENF	0.001	1	0	NR	NR	NR	NR	1
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001	1	0	NR	NR	NR	NR	1
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001	2	1	NR	NR	NR	NR	3
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001	1	0	NR	NR	NR	NR	1
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001	3	2	NR	NR	NR	NR	5
CERS	0.001	3	1	NR	NR	NR	NR	4
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
HWTS	TP	2	NR	NR	NR	NR	NR	2
MINES MRDS	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		21	4	0	0	0	0	25

APPENDIX D

Preliminary Screen for Vapor Encroachment Conditions Matrix

Screen for Vapor Encroachment Conditions Matrix
TUSCAN RIDGE PROPERTY
WKA No. 12206.04

Phase I ESA Screen for Vapor Encroachment Conditions (VEC) matrix includes a (1) **Search Radius Test,** (2) **Chemicals of Concern Test (COC),** and (3) a **Critical Distance Test**[1].

(1) Search Radius Test: Are there any known or suspect contaminated sites in the primary area of concern within the corresponding search radii? (if yes, see attached Table A).

Yes (No) If No, then screening for a VEC is complete and no VEC *currently* exists, go to #4. If Yes, then:

(2) **Chemicals of Concern**[2] **Test**: Are COC likely to be present within the area of concern for those known or suspect contaminated sites identified based on the Search Distance Test?

Yes No If No, then screening for a VEC is complete and no VEC *currently* exists, go to #4. If Yes, then:

If Yes, check all COC that apply on attached Table B.

(3) Critical Distance Test: A plume test to determine whether or not COC in the contaminated plume(s) may be within the critical distance.

(3a) Is information related to the contaminated(s) plume available (i.e. isoconcentration maps, site drawings, etc.)?
Yes No

(3b) If ***No***, then screening for a VEC is complete and no VEC *currently* exists, go to #4. If ***Yes***, then:

(3c) Is the site less than 100 feet to the nearest edge of a contaminated [non-petroleum hydrocarbon] plume(s)?
Yes No

(3d) Is the site less than 30 feet to the nearest edge of a dissolved petroleum hydrocarbon plume(s)?
Yes No

If the distance from the nearest edge of a contaminated plume to the nearest existing or planned structure on the site is less than 100 feet for non-petroleum hydrocarbon COC, or less than 30 feet for dissolved petroleum hydrocarbons, then it is presumed that a VEC *currently* exists beneath the site. If the distance from the nearest edge of the contaminated plume is greater than or equal to 100 feet for non-petroleum hydrocarbons, or 30 feet for dissolved petroleum hydrocarbon chemicals of concern, then it is presumed unlikely that a VEC *currently* exists beneath the site.

(4) Is it likely that a VEC *currently* exists beneath the site?
Yes (No) If *Yes,* then recommend performing a full scope VEC assessment according to ASTM E 2600-15.

[1] Based on guidance presented in the ASTM E 2600-15 Standard.
[2] Chemical(s) of concern (COC): See attached table for typical chemicals of concern (as presented in Appendix X6.1 of the ASTM E 2600-15 Standard).

APPENDIX E

Site Visit Letters

Wallace Kuhl & Associates

Corporate Office
3050 Industrial Boulevard
West Sacramento, CA 95691
916.372.1434 phone
916.372.2565 fax

Stockton Office
3422 West Hammer Lane, Suite D
Stockton, CA 95219
209.234.7722 phone
209.234.7727 fax

February 26, 2019

Mr. Scott Bates
Tuscan Ridge Associates, LLC
1420 E. Roseville Parkway
Suite 140, Box 247
Roseville, California 95661

Site Inspection Report February 15, 2019
3100 SKYWAY PROPERTY
Paradise, California
WKA Project Number 12206.02

Dear Mr. Bates:

At your request, Wallace-Kuhl & Associates conducted a February 15, 2019 site visit of your 175-acre Tuscan Ridge property located at 3100 Skyway between Paradise and Chico, California. The property has been leased by PG&E, initially for vegetation management, then an emergency response base camp and equipment storage related to the Camp Fire in Butte County. WKA conducted an initial site inspection related to a Phase I Environmental Site Assessment on January 2, 2019. During this initial site inspection, the property was crowded with PG&E and subcontractor equipment including sleeping trailers, dinning and recreation tents and hundreds of vehicles. WKA was told that the property had previously contained a golf course and noted a golf-related maintenance area with older mowing and grounds keeping equipment, a club house, storage building and golf cart charging station. Beyond the golf-related equipment, WKA noted the following features or activities apparently linked to PG&E or subcontractors:
:

- Secondary containment for incidental fuel spills under mobile equipment.
- Stained soils in the vicinity of the mobile fueling operation located on the eastern 1/3 of the property. PG&E personnel were verbally notified of the stained soil and petroleum odors in soil, during inspection. The location of the fueling area was delineated by WKA personnel using a high precision GPS.
- Evidence of stormwater-related erosion at the western or lower end of the property
- Covered and uncovered soil stockpiles of unknown origin
- Large quantities of imported aggregate base rock

On February 15, 2019, WKA completed a second site inspection at the request of Scott Bates.

Mr. Bates indicated that PG&E had vacated the site and he wished to confirm the condition of the property. An aerial image of the property following the February 15, 2019 site visit is included as Figure 1.

During this second inspection, WKA noted that the site was nearly vacant of PG&E equipment and personnel, but large quantities of aggregate base rock remained on the property. The only significant activity at the time of the inspection were several pieces of heavy equipment working on the southern portion of the property moving piles of wood mulch.

WKA noted the following:

- Two stockpiles of soil, one covered and one uncovered remained on site
- Two covered piles of waste asphalt remained in the central portion of the site
- Significant erosion had taken place in the gravel parking areas
- Erosion had breached stormwater BMP's at several location and gravel was noted in a small drainage
- Gravel in former fueling area appears to have been disturbed
- Disturbed surface area west of clubhouse was covered with mulch or straw
- Two or three mobile light standards remained on site
- A mulching operation was ongoing along the southern property boundary

Two piles of soil, approximately 50 cubic yards each were noted west of the main property entrance. One pile was covered, one was not covered. Both piles are shown on Figure 2b. These piles should be removed from the property or the landowner should be provided with documentation explaining the source. If the source of the material is not determined, the soil piles should be sampled in accordance with the California Department of Toxics Substances Control October 2001 Information Advisory, Clean Imported Fill to assure that it does not contain contaminants of potential concern.

Two small piles of one to two cubic yards of what appeared to be asphalt were noted in the central portion of the property. Each was covered with plastic sheeting. These piles should be removed from the property. A photograph of one pile can be seen in figure 2b and one can be seen in figure 2c.

Significant erosion was noted during both site inspections. PG&E personnel were notified of the erosion during the first site inspection and subsequently provided access to the storm water pollution prevention plan (SWPPP). Significant additional erosion

was noted during the second inspection. Photographs of this erosion along the northwest portion of the property are presented in figure 2a. Significant quantities of gravel had been carried by runoff, down slopes adjacent to the small drainage immediately south of Skyway. Gravel from the site was noted in the stream channel and several areas were noted where erosion control features (Best Management Practices (BMPs)) had failed. Gravel should be removed from slopes and BMPs should be reestablished until such time as the SWPPP Notice of Termination has been finalized. This erosion represents significant off-site impacts and may expose the landowner to a notice of violation. The erosion should be controlled immediately and repaired as soon as weather allows.

WKA noted that gravel in the vicinity of the former mobile on-site fueling operation appears to have been disturbed. Not evidence of soil staining was evident during the second inspection and not petroleum odor was noted. The visual evidence, and lack of olfactory indicators, suggests that efforts were made by PG&E or their subcontractor, to clean up the previously recorded stained soil. WKA recommends that documentation related to the cleanup be obtained from PG&E to ensure that the stained soil was properly removed and disposed. If no documentation can be located, samples should be collected in this area to ensure, at a minimum, that the soil was removed.

WKA noted an area west of the clubhouse the had been significantly disturbed by vehicle traffic. These areas are damaged but were appropriately covered with mulch and straw to protect from further erosion. Figure 2c.

The remaining observations included the presence of two or three mobile light standards which should be removed, and the on-going mulching operations along the south side of the property. Figure 2c. Areas where ongoing mulching operations continue are exposed to precipitation and runoff. Once these operation cease, the disturbed areas should be protected with vegetation or mulch to reduce runoff.

Generally, the large parking lot areas covered with gravel appeared to have sustained significant erosion. The erosional trenches cut across these areas now pose a risk to vehicle traffic since several are in excess of 10-inches deep.

In Summary, the two soil stockpiles should be removed if no documentation can be provided about the source area and if the landowner approves leaving them on site.

Similarly, the two asphalt piles should be removed along with the plastic sheeting covering each pile.

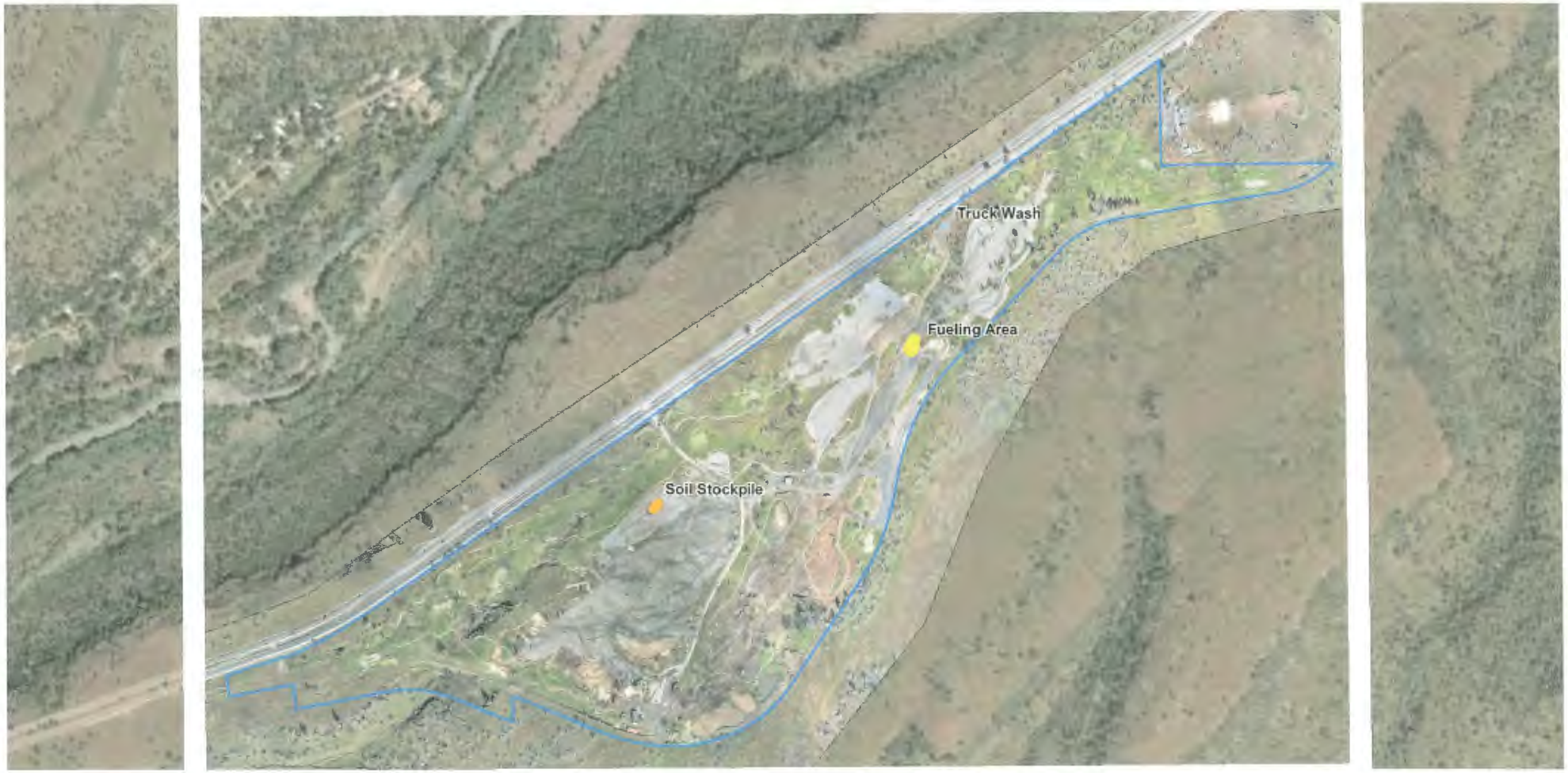
Documentation for removal and confirmation sampling beneath the former fueling operation area should be provided. If no information is available, soil sampling should be conducted to ensure that petroleum impacted soil noted on January 2, 2019 was properly removed and disposed.

Finally, the most significant issue noted during the second site inspection was the failure of the storm water BMPs to contain on-site materials. This failure should be reported and addressed to ensure the landowner is not subject to notices of violation. In addition, the storm water BMPs should be maintained until a notice of termination is appropriately secured for the permit.

If you have questions or comments on the above site inspection report, please do not hesitate to contact me.

Wallace-Kuhl & Associates

Kurt Balasek, P.G., C.HG.
Senior Hydrogeologist



N

0 300 600
Feet

WallaceKuhl & ASSOCIATES

Site Map

TUSCAN RIDGE

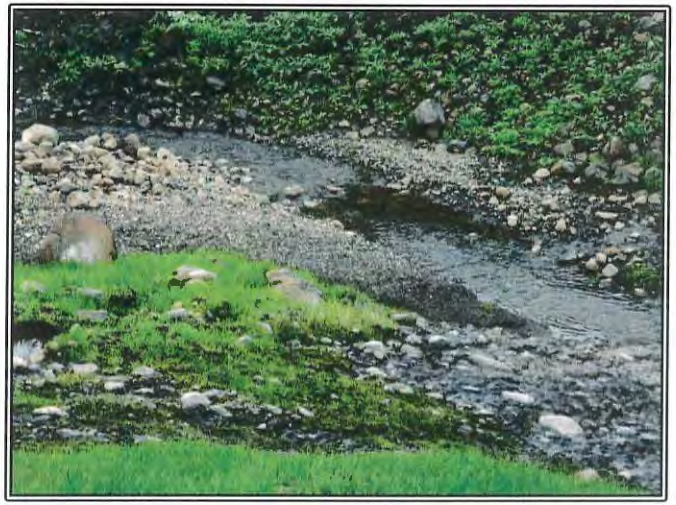
Chico, California

FIGURE	1
DRAWN BY	JWR
CHECKED BY	KMB
PROJECT MGR	KMB
DATE	02/19
WKA NO. 12206.01	

Northwest property showing erosion features.

Northwest property showing erosion features.

Northwest property showing stormwater BMPs.



Northwest property small drainage with gravel washed into stream from PG&E pads.

Wallace Kuhl & Associates

COLOR PHOTOGRAPHS

TUSCAN RIDGE

Paradise, California

FIGURE	2a
DRAWN BY	KMB
CHECKED BY	KMB
PROJECT MGR	KMB
DATE	2/19

WKA NO. 12206.02

Uncovered soil pile west of main entrance.

Covered soil pile west of main entrance.

Covered pile of waste asphalt.

Approximaate area of former mobile fueling operation.

WallaceKuhl

COLOR PHOTOGRAPHS

TUSCAN RIDGE

Paradise, California

FIGURE	2b
DRAWN BY	KMB
CHECKED BY	KMB
PROJECT MGR	KMB
DATE	2/19
WKA NO. 12206.02	

Disturbed area west of clubhouse with mulch cover.

Mulch pile east of clubhouse building.

Multching Operations on day of inspection southeastern property.

Second covered pile of waste asphalt central portion of property.

WallaceKuhl

COLOR PHOTOGRAPHS

TUSCAN RIDGE

Paradise, California

FIGURE	2c
DRAWN BY	KMB
CHECKED BY	KMB
PROJECT MGR	KMB
DATE	2/19

WKA NO. 12206.02

Wallace Kuhl & Associates

Corporate Office
3050 Industrial Boulevard
West Sacramento, CA 95691
916.372.1434 phone
916.372.2565 fax

Stockton Office
3422 West Hammer Lane, Suite D
Stockton, CA 95219
209 234.7722 phone
209 234 7727 fax

April 15, 2020

Mr. Scott Bates
Tuscan Ridge Associates, LLC
1420 E. Roseville Parkway
Suite 140, Box 247
Roseville, California 95661

Site Inspection Report II (April 9, 2020)
3100 SKYWAY PROPERTY
Paradise, California
WKA Project Number 12206.04

Dear Mr. Bates:

At your request, Wallace-Kuhl & Associates conducted an April 9, 2020 site visit of your 175-acre Tuscan Ridge property located at 3100 Skyway between Paradise and Chico, California (Figure 1). The property had been leased by ECC Constructors, LLC, for base camp operations related cleanup of the Camp Fire in Butte County. Since the summer of 2018, the Site has been the focus of much activity. This activity includes:

PG&E Vegetation Management Camp, Summer 2018 to November 2018
PG&E Emergency Response Operations, November 7, 2018 to February 15, 2019
Base Camp Utility Installations, February 2019 to April 2019
Camp Fire Debris Removal Base Camp April 2019 to March 2020

WKA conducted an initial site inspection related to a Phase I Environmental Site Assessment on January 2, 2019. During this initial site inspection, the property was crowded with PG&E and subcontractor equipment including sleeping trailers, dinning and recreation tents and hundreds of vehicles. WKA was told that the property had previously contained a golf course and noted a golf-related maintenance area with older mowing and grounds keeping equipment, a club house, storage building and golf cart charging station. Beyond the golf-related equipment, WKA noted the following features or activities apparently linked to PG&E or subcontractors:
:

- Secondary containment for incidental fuel spills under mobile equipment.
- Stained soils in the vicinity of the mobile fueling operation located on the eastern 1/3 of the property. PG&E personnel were verbally notified of the stained soil and petroleum

odors in soil, during inspection. The location of the fueling area was delineated by WKA personnel using a high precision GPS.

- Evidence of stormwater-related erosion at the western or lower end of the property
- Covered and uncovered soil stockpiles of unknown origin
- Large quantities of imported aggregate base rock

On February 15, 2019, WKA completed a second site inspection at the request of Scott Bates. Mr. Bates indicated that PG&E had vacated the site and he wished to confirm the condition of the property.

During this second inspection, WKA noted that the site was nearly vacant of PG&E equipment and personnel, but large quantities of aggregate base rock remained on the property. The only significant activity at the time of the inspection were several pieces of heavy equipment working on the southern portion of the property moving piles of wood mulch.

Details of WKA observations during the February 15, 2019 Site Inspection can be found in the February 26, 2019 WKA Site Inspection Report but included observations of Site activities and descriptions of significant soil/gravel erosion and failure of the storm water best management practices (BMPs).

Follow the February departure of PG&E, planning and excavation activities were conducted to construct two waste water detention ponds and a large septic and specialized leach field system in preparation for the debris removal base camp related to the Camp Fire.

Base camp construction began on April 14, 2019. Base camp operations consisted of equipment storage, housing, dining and recreational activities as well as cleanup logistics. By late March of 2020, the base camp operations ceased on the property.

On April 9, 2020, WKA conducted a post-base camp Site inspection. On the day of our inspection, the Site was covered with significant amounts of imported crushed rock and aggregate base material that had been used to construct pads for various roads, parking areas and temporary structures (Figure 2a).

A permanent Quonset hut-type structure was noted on a concrete pad on the eastern 1/3 of the property. The structure appeared new but was empty. Other structures on the property included the former golf club house, maintenance building and former golf cart storage canopy.

The two waste water ponds were noted near the southern property line and appeared to be approximately 4.5 acres. The ponds were lined and surrounded by chain-link fence. WKA also noted a line of green vent pipes located west of the former golf club house (Figure 2b). These vent pipes are apparently part of the leach field bioactive system installed for base camp operations.

Other notable observations included the presence of two large trenching machines and a small maintenance area (Figures 2a and 2b). The maintenance area contained two empty 55-gallon drums labeled hydraulic fluid and one poly-cube approximately four-feet on each side and encased in a steel cage for transport. The cube was approximately 1/3 full of dark fluid but did not appear to be leaking. Other items in the maintenance area included welding tables, rock bits and other replacement parts for the trenching machines.

Several square concrete pads, approximately five feet on a site were noted in the central portion of the property (Figure 2b). The pads each had numerous conduits (presumably electrical) protruding from them. Each of the conduits was capped with a plastic plug.

WKA did not observe areas of stained soil, distressed vegetation or other indications of contamination and did not observe the mulch piles that were previously documented on the site.

If you have questions or comments on the above site inspection report, please do not hesitate to contact me.

Wallace-Kuhl & Associates

PROFESSIONAL GEOLOGIST
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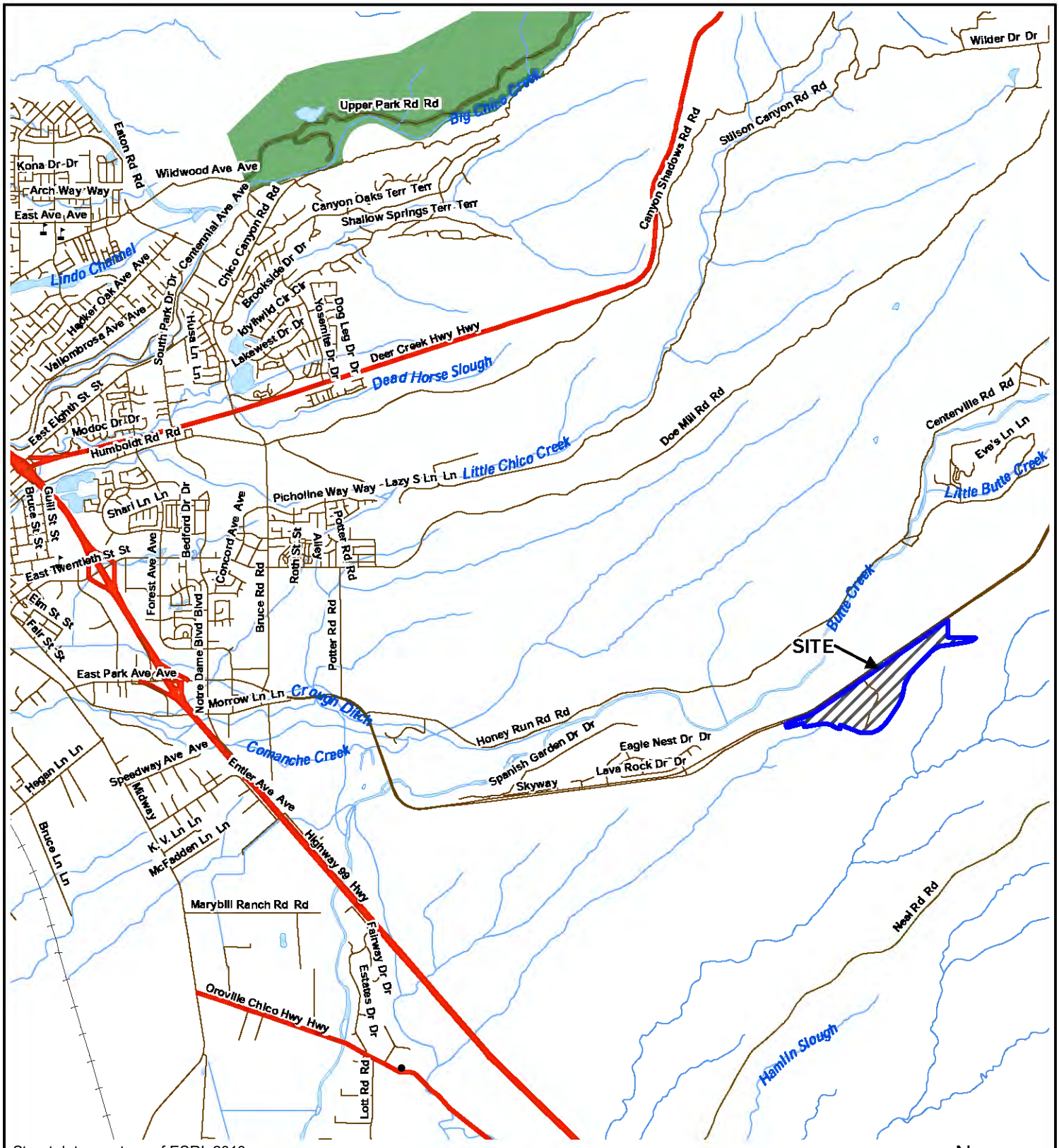

Street data courtesy of ESRI, 2010.
Hydrography courtesy of the U.S. Geological Survey acquired from the GIS Data Depot, December, 2007.
Projection: NAD 83, California State Plane, Zone II

N

0 2,500 5,000
Feet

WallaceKuhl & ASSOCIATES

VICINITY MAP

TUSCAN RIDGE PROPERTY

Paradise, California

FIGURE	1
DRAWN BY	RWO
CHECKED BY	NMM
PROJECT MGR	KMB
DATE	04/2020
WKA NO.	12206.04

Looking west from east end of Site

Quonset Hut-Type Permanent Structure.

Trenching Machine Maintenance Area.

Waste Water Ponds Looking West.

Wallace Kuhl

COLOR PHOTOGRAPHS

TUSCAN RIDGE PROPERTY

Chico, California

FIGURE	2a
DRAWN BY	KMB
CHECKED BY	KMB
PROJECT MGR	
DATE	4/2020

WKA NO. 12206.04

Electrical Pads Looking West.

Trenching Machines

Above-Ground Storage Tanks in Secondary Containment

Septic Biosystem Vent Pipes

WallaceKuhl

COLOR PHOTOGRAPHS

TUSCAN RIDGE PROPERTY

Chico, California

FIGURE	2b
DRAWN BY	KMB
CHECKED BY	KMB
PROJECT MGR	KMB
DATE	4/2020

WKA NO. 12206.04

APPENDIX G

Drainage Report

Hydrology & Hydraulic Analysis
Tuscan Ridge Planned Development

February 7, 2023
Drainage Plan Revised December 2023

Prepared for:
Tuscan Ridge Associates, LLC

Prepared By:
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Project No. 9799.02

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Note: The Drainge Plan included in this Drainage Report was revised in December 2023 to account for changes to the project's Land Use Plan (updated December 2023) and Vesting Tentative Map (updated December 15, 2023); however, the analysis contained in this Drainage Report remains unchanged.

1.0 INTRODUCTION

Tuscan Ridge Associates, LLC (Applicant) is proposing a planned development on the approximately 163-acre (Note: Butte County records indicate 172 acres; however, a recent boundary survey yielded 163 acres) property located on the southeast side of Skyway between Chico and Paradise, California and identified by Assessor's Parcel Numbers (APNs) 040-520-104 through -111 (Site), to facilitate the construction of 165 single-family residential units, commercial development, landscaped areas, passive recreation areas, and open space (Project).

The Site, which was previously occupied by the Tuscan Ridge Golf Club, is located approximately 3 miles west of the Town of Paradise, ½ mile east of the Bluffs subdivision, and 4 miles east of the City of Chico. The Site is surrounded primarily by large undeveloped parcels to the east, south, and west. Skyway runs the entire length of the northwest Site boundary, and Paradise Rod & Gun Club is located adjacent to the northeast of the Site.

The purpose of this report is to provide a preliminary drainage plan and hydraulic design for the proposed Tuscan Ridge development and to preliminarily show compliance with the County of Butte's requirements for mitigation of increased run off for the 10- and 100-year storms.

1.1 Project Description

As shown on the Vesting Tentative Map prepared by LACO Associates dated November 3, 2021 (herein referred to as the Tentative Map), Land Use Plan dated April 21, 2022, and Planned Development (PD) plan dated February 23, 2022, the proposed Planned Development and Major Subdivision includes the following uses:

- 165 single family residential lots ranging from 4,000 square feet to 40,000 square feet.
- Commercial development spanning approximately 19.3 acres. While specific commercial development is unknown at this time, potential uses would generally align with the permitted and conditionally permitted uses allowed within the General Commercial (GC) and Neighborhood Commercial (NC) zoning districts, pursuant to *Table 24-22-1 Permitted Land Uses in the Commercial and Mixed-Use Zones* of the *Butte County Code* (Code). A sanitary waste disposal station is also proposed within the northeastern commercial area.
- Approximately 3.9 acres (169,885 square feet) of landscaped open space and 52.6 acres for passive recreational to include bicycle and pedestrian trails, and open space areas.

1.2 Proposed Drainage System

In pre-development conditions, there are three watersheds (A, B, and C). These watersheds are made up of subbasins (e.g., Watershed A consists of subbasins A-1, A-2, and A-3). Figure 1 shows the pre-development topography and watershed delineation. As denoted on Figure 1, the Site has three primary drainages: between the planned development and Skyway going towards the west (Discharge Point A, where Watershed A discharges); along the trail easement down to the existing sanitary sewer ponds towards the southeast of the site (Discharge Point B, where Watershed B discharges); and above the northwest property line from Skyway and down across the southern property line (Discharge Point C, where Watershed C discharges). Watersheds B and C were delineated by shared points of confluence, i.e., it was assumed that areas that drain to the same location offsite can be considered part of the same watershed. Watershed sub-areas B-1 and B-2 have different discharge points off the site but end up converging downstream to the south. Watershed sub-area C-1 drainage turns to concentrated flow near the southern property line but sub-area C-2 drains as primarily sheet flow to the south before becoming concentrated flow and converging downstream with the runoff from C-1. On the southern side of the site, the existing topography shows pre-

development drainage from sub-areas A-3 and B-1 primarily flowing past and around the two sewage treatment ponds, making the ponds outside of the watershed area of concern.

Based on the preliminary grading of the Site, the lots along the western portion of the development drain towards the drainage parallel to Skyway, as opposed to draining towards the roadway in front of the lots. To accommodate this, a 10-foot drainage easement is proposed for the lots along the west side of the development with separate inlets for each lot. Similarly, the lots along the east side of the development drain to the back towards the drainage that goes to the sanitary sewer ponds. A bioswale is proposed to convey the runoff from those lots and connect it to one of the proposed storm pipe networks. The most eastern commercial lots also do not drain towards the front of the lot. As such, a small pipe network is proposed to collect and transport the runoff generated there. The runoff flowing south from the northeastern neighboring property will be concentrated in a swale and flow into the eastern commercial storm drain system. In total, three separate pipe networks are proposed to collect the runoff generated from the development. Due to the increase in runoff, two detention ponds will be needed to detain the excess stormwater runoff. Both ponds are proposed be placed in areas previously denoted as open space. The proposed development includes several acres of open space between the main development and Skyway that will be left primarily undeveloped and that ultimately drain into the drainage parallel to Skyway towards Discharge Point A. See appendix for existing culvert calculations. Figure 2 shows displays the post-development conditions and catchment delineation.

2.0 ANALYSIS AND METHODOLOGY STANDARDS

Per *Section 10.05-3 Drainage Calculations* of the *Butte County Public Works Improvement Standards* dated February 19, 2020, the rational method was used to calculate pre- and post-development peak flow rates (Q) for the project area for both the 10-year and 100-year design storms. Time of concentration (Tc) was determined using methods outlined in the USDA's *Urban Hydrology for Small Watersheds: TR-55* (1986). Pre- and post-development calculations are detailed in Appendix 1 and 2, respectively. Per our conversation with Gavin Leiper, Stormwater Program Coordinator for Butte County, we have designed the project to mitigate increased runoff for the 10- and 100-year storms.

2.1 Weighted Runoff Coefficients

Runoff coefficients (C) for pre-development conditions were determined using the *County Standard No. D-5* for unimproved areas (Butte County Public Works Improvement Standards, 2020). Surface permeability was determined based on the predominant soil type. Soil type was determined to be soil type D, based on USDA Web Soil Survey data (USDA, 2019). Average slope was determined based on contour data, as displayed in Figure 1.

Runoff coefficients for post-development conditions were determined using the *County Standard No. D-5* for "improved" areas (Butte County Public Works Improvement Standards, 2020). All open space and landscaped areas within the proposed development were assumed to be classified as "landscaped areas" with the exception of open space areas that were not to be changed due to the proposed development. The runoff coefficient for these areas were calculated using the "unimproved areas" methodology detailed in the County Standards. A composite runoff coefficient was then calculated for the catchments that had both "improved" and "unimproved" areas.

For residential lots larger than 1/8 acre, a conservative assumption that 50 percent of the lot would be pervious (i.e., landscaped) was used. 30 percent was assumed to be roof surface and 20 percent was assumed to be paved. For sub-catchment areas with any residential lots less than 1/8 acre, a conservative

assumption that 35 percent of all the lots would be pervious (i.e., landscaped) was used. For these lots, 40 percent was assumed to be roof surface and 25 percent was assumed to be paved. Commercial areas were treated with the conservative assumption that the vast majority of the area would be paved, making for 70 percent assumed to be paved, 25 percent assumed to be roofed, and 5 percent assumed to be landscaped.

2.2 Time of Concentration (T_c)

As stated above, the time of concentration was primarily determined using the methods described in TR-55. The longest flow path in each sub-basin for both pre- and post-development conditions was determined using AutoCAD Civil 3D Flow Path analysis tool on the pre- and post-development surfaces in Civil 3D. As per TR-55, if a flow path was not over pavement, the first 300 feet of flow would be classified as sheet flow then would transition to shallow concentrated flow. If the flow path traversed along a curb, then open channel flow was assumed using the gutter dimensions. Paved areas (i.e., street surfaces) were assumed to be sheet flow. Per CalTrans' *Highway Design Manual* (2020) recommendations, a minimum T_c of 10 minutes was used to avoid the use of overly conservative rainfall intensities.

2.3 Rainfall Intensity

The rainfall intensity (I) for each sub-basin was determined based on current National Oceanic and Atmospheric Administration (NOAA) point precipitation frequency estimates for the specified time of concentration per the *Butte County Public Works Improvement Standards, Section 10.05-3.01*. Intensity Duration Frequency (IDF) curves were made using the point precipitation frequency estimates for the 10-year and 100-year design storms ranging from 5 minutes to 24 hours. A trend line was fit to the data and the resulting equation was used to estimate the rainfall intensity for T_c values not explicitly included on the NOAA website. A printout of the NOAA data used is included as Appendix 3.

3.0 PRE-DEVELOPMENT CONDITIONS

The overall site has been split into three primary watersheds under pre-development conditions (indicated as Watersheds A through C on Figure 1). In accordance with the *Butte County Public Works Improvement Standards*, the Rational Method was used to compute the 10-year and 100-year peak flows for pre-development conditions. Due to the soil and vegetation conditions present at the site, the weighted runoff coefficients for pre-development conditions are relatively high for undeveloped space (0.53 to 0.54). Existing sub-basin B-1 and B-2 drain offsite to a shared confluence point making one large Watershed B. Existing sub-basin C-1 and C-2 also share a confluence point offsite combining to make Watershed C. The pre-development flows at these confluence points were calculated using the longest time of concentration from the longest flow path to the confluence points. This includes the offsite flow path from POC 4 to "Watershed B Confluence Point" east of the eastern property line. Because this methodology results in lower pre-development flow values than just adding the flows at each confluence point, it provides for a conservative comparison of pre- vs post-construction runoff. See Appendix 1 for calculations.

Pre-development watershed details and rational method results for the 10-year storm are presented in Table A, below.

Table A. Pre-Development Watershed Delineation Details

Sub-Basin ID	Sub-Basin Area (ac)	Weighted Runoff Coefficient	10-YR Rainfall Intensity (in/hr)	10-YR Peak Flow (cfs)	100-YR Peak Flow (cfs)
A-1	1.20	0.54	2.61	1.69	2.54
A-2	38.86	0.53	1.73	36.65	54.81
A-3	58.93	0.54	1.62	86.20	128.80
B-1	7.19	0.53	2.25	8.59	12.89
B-2	14.18	0.53	1.55	19.61	17.45
C-1	10.65	0.53	1.90	10.73	16.05
C-2	22.45	0.53	1.90	22.60	33.83

4.0 POST-DEVELOPMENT CONDITIONS

The proposed development will result in an overall increase in impervious area. To combat this, three separate drainage networks are proposed at the site: Eastern Commercial Catchment which drains to Discharge Point C, Upper Commercial Catchment which drains to Discharge Point B, and Lower Catchment which drains to Discharge Point A. A section of open space, located between the development and Skyway and previously part of Watershed A, is not included in any of the drainage networks. This section naturally drains down to Discharge Point A in post-development conditions and is not proposed to be developed, apart from an entrance road being installed through the middle of it. A culvert was sized to allow flow beneath the development's entrance road connecting the two portions of the undeveloped portion of Watershed A. Figure 2 shows the post-development catchment delineations and proposed pipe networks.

The grading and development will also change the catchment delineation at the site from pre-development conditions. Sub-basin delineation for post-development conditions was primarily dictated by the placement of drainage inlets. Drainage inlets were placed in accordance with the *Butte County Public Works Improvement Standards*, ensuring that there was a maximum of 600 feet of continuous gutter flow between inlets.

The Eastern Commercial Catchment corresponds to Watershed C; however, a large portion of Watershed C was rerouted to the Upper Commercial Catchment due to the post-development grading. This resulted in a lower runoff volume at Discharge Point C in the post-development conditions. As such, no runoff mitigation was required for the Eastern Commercial Catchment. The other two discharge points all had an increased runoff when compared to pre-development conditions. To reduce the peak runoff to pre-development conditions, two detention basins are proposed. These basins and their sizing are described in the following sections.

A table of the Rational Method results for post-development conditions is included in Appendix 2. Table B, below, summarizes the results of the Rational Method for the four catchments. Further description of the post-development catchments is included in the following sections.

Table B. Catchment details.

Catchment	Area (ac)	Weighted Average Runoff Coefficient	10-YR Peak Flow (cfs)	100-YR Peak Flow (cfs)
Eastern Commercial	24.28	0.88	18.68	35.63
Upper Commercial	25.80	0.63	29.56	49.10
Lower	85.06	0.64	129.25	143.13
Portion of Undeveloped Watershed A	26.36	0.57	24.41	36.47

4.1 Eastern Commercial Catchment

The Eastern Commercial Catchment is approximately 24 acres and is solely commercial lots plus the open space area in the neighboring property to the north. A bioswale will capture the runoff from the northern property before entering the storm drain system. The smallest of the three pipe networks transports the runoff from the open space area and commercial lots and streets to the outfall located in the trail easement at Discharge Point C. As mentioned previously, no detention pond for runoff mitigation was needed for this catchment due to a large portion of the pre-development area of this catchment being rerouted to the Upper Commercial Catchment which discharges at Discharge Point B. This means that the post-development peak flow at this discharge point is less than the pre-development peak flow.

4.2 Upper Commercial Catchment

The Upper Commercial Catchment is approximately 26 acres and consists primarily of commercial lots and a section of the open space between Skyway and the development. Due to the increase in peak flow runoff in post-development conditions at Discharge Point B, a detention pond was required to detain runoff. The runoff from the catchment will be directed to a detention basin located in the open space lot to the west of the cul-de-sac across from the northern most entrance road. The basin will discharge at Discharge Point B.

4.3 Lower Catchment

The Lower Catchment is the largest of the catchments with approximately 85 acres. It consists of mainly residential lots but also includes open space areas and commercial lots. The residential lots along the west edge of the development are graded such that they drain to the back of the lot rather than to the front where runoff could be collected along the street. To address this, a 10-foot drainage easement along the back of the lots is proposed. The pipes along the easement would connect to the rest of the Lower Catchment network just before the outlet. Additionally, several of the lots along the eastern side of the development are graded towards the back (i.e., away from the roadway). A bioswale will be designed to collect and transport the runoff generated from those lots to the rest of the Lower Catchment pipe system. The bioswale will be placed in the trail easement behind the lots and the outlet feeding into the pipe system will be located just north of the smaller of the two existing sanitary sewer ponds. See Appendix 5 for Swale calculations. Flow value comes from SSA max discharge through swale pipe inlet. Further analysis and design will be needed for final design of the bioswale.

The runoff collected from the Lower Catchment will be directed towards a detention pond to be located by the southernmost cul-de-sac in an area previously denoted as a potential area for stormwater detention on the Tentative Map. Outflow from the detention pond will be directed to Discharge Point A.

4.4 Undeveloped Portion of Watershed A

A portion of Watershed A that runs along the main drainage between the proposed development and Skyway, will not be developed in post-development conditions. As such, runoff from this portion of Watershed A was not routed into the Lower Catchment and was instead left to naturally route to Discharge Point A. In post-development, an entrance road is proposed to bisect this section of Watershed A, so a 24-inch culvert is proposed to convey the runoff below the road.

4.5 Detention Pond and Weir Sizing

To reduce peak flows to pre-development conditions, runoff will be detained in two detention basins for the Upper Commercial and the Lower Catchments. The detention ponds were sized to be trapezoidal with 3:1 (horizontal:vertical) side slope and to contain the entire runoff volume generated at each outlet as determined by the Autodesk Storm and Sanitary Analysis (SSA) hydraulic modeling results for the 100-year storm. The detention ponds were sized to have at least a 1.5-foot freeboard when passing the 10-year total runoff at a pre-condition flow rate, and sufficient capacity to pass a 100-year storm also at pre-condition flow rates.

Detention pond placement was determined by topographically low areas that were previously denoted as available for storm water detention or as open space on the Tentative Map for the development. Then based on the available dimensions, a maximum top width, top length, and depth were determined for each detention pond area. Using Microsoft Excel Solver, optimized dimensions were obtained that would hold the entirety of the volume generated from the 10-year storm with a 1.5-foot freeboard and 100-year storm without freeboard.

Rectangular weirs were sized with Autodesk Storm and Sanitary Analysis (SSA) using the pre-development 10-year storm peak flow as the flow rate. Estimated weir dimensions were used initially for trial and error. The final lengths of the weirs were 10 inches for the Upper Commercial pond and 3 ft for the Lower pond and the heights were designed to be the total height of the ponds (See Table C. below). The analysis showed that, for both ponds there would be more than 1.5 feet of freeboard in a 10 year storm and that they would not overflow in a 100 year storm. Furthermore, the weir design ensures that discharge out of the ponds will not exceed pre-development peak flows (See Table D. below). All this shows that the designed detention ponds are more than capable of mitigating runoff to pre-development conditions. Further details of the basin and weir sizing are included in Appendix 2.

Table C. Detention basin and Weir details.

Catchment	Discharge Point	Weir Length (ft)	Weir Height (ft)	Basin Capacity (ft)	Minimum Freeboard – 10yr Storm (ft)	Minimum Freeboard – 100yr Storm (ft)
Upper Commercial	B	0.83	5.5	51,921	1.92	0.77
Lower	A	3.0	7.5	120,289	3.3	3.17

Table D. Runoff Mitigation Results.

Discharge Point	Peak Discharge Without Pond (cfs)	Change in Discharge without Pond (Pre vs Post) (cfs)	Peak Discharge with Pond (cfs)	Change in Discharge with Pond (Pre vs Post) (cfs)
B (10-yr)	29.56	9.29	18.80	-1.47
A (10-yr)	129.25	43.05	84.66	-1.54
B (100-yr)	49.10	18.77	28.56	-1.77
A (100-yr)	143.13	14.33	126.42	-2.38

Note: Minimal increases in peak discharge values between pre- and post- conditions are due to these reasons: Significantly longer travel paths and time of concentrations, relatively high runoff coefficients of existing site, ponding at curb drain inlets increasing time of concentration.

5.0 SITE DRAINAGE & HYDRAULIC ANALYSIS

The hydraulics of the proposed pipe systems were analyzed using Autodesk Storm and Sanitary Analysis version 2022.0.1. Figure 2 shows the preliminary pipe network layout. All proposed piping and substructures are concrete. Pipe sizes range from 15 inches to 45 inches in diameter. For the purposes of preliminary design, the hydraulic model treated all inlets as being located in a sag resulting in 100 percent runoff catchment. Pipes and substructures were named with a letter delimiter to identify which catchment system it was for (e.g., Pipe-L(1) is located in the Lower Catchment).

Surcharging is when the amount of water flowing through a pipe exceeds the pipe's capacity, causing the water level in the manholes to rise above the top of the pipe. This results in the pipe being under pressure. No surcharging during the 10-year storm occurred. During the 100-year storm, two pipes in the Lower Catchment network surcharged: Pipe-L(46) for a total of 3 minutes, Pipe-L(92) for a total of 9 minutes, and Pipe-L(97) for a total of 10 minutes. The Upper Commercial and Eastern Commercial catchment networks also had pipes that surcharged during the 100-year storm: Pipe-UC(3) for a total of 7 minutes and Pipe-EC(0) for a total of 10 minutes. Appendix 4 summarizes the results of the hydraulic analysis. Electronic versions of the rational method calculations and SSA model are available upon request.

6.0 REFERENCES

Butte County Public Works Improvement Standards, 2020. Improvement Standards for Subdivisions, Parcel Maps and Site Improvements Pursuant to Chapter 20 of the Butte County Code. February 19, 2020. https://www.buttecounty.net/Portals/22/downloads/IS-06/ImprovementStd2006.pdf?ver=2020-02-19-124024-510

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FIGURES

Figure 1 **Watershed Delineation**

Figure 2 **Preliminary Pipe Network Layout**

CALLOUT LEGEND

- POC 1 — POINT OF CONCENTRATION
- A-1 — SUB-BASIN ID (WATERSHED ID + SUB-AREA ID)
- WATERSHED BOUNDARY
- SUB-BASIN BOUNDARY
- CHANNELIZED FLOW
- FLOW PATH OF INITIAL SHEET FLOW
- WATERSHED C
- WATERSHED B
- WATERSHED A

WATERSHED/ BASIN NOTES

SUB-BASIN ID	SUB-BASIN AREA (ACRE)	WEIGHTED RUN-OFF COEFFICIENT	10-YR RAINFALL INTENSITY (IN/HR)	10-YR PEAK FLOW (CFS)
A-1	1.20	0.54	2.61	1.69
A-2	38.86	0.53	1.73	36.65
A-3	58.93	0.54	1.62	86.20
B-1	7.19	0.53	2.25	8.59
B-2	14.18	0.53	1.55	11.68
C-1	10.65	0.53	1.90	10.73
C-2	22.45	0.53	1.90	22.60

HYDROLOGY CALCULATIONS WERE PREPARED USING THE BUTTE COUNTY PUBLIC WORKS IMPROVEMENT STANDARDS, DATED FEBRUARY 2, 2020.

WEIGHTED "C" VALUES DETERMINED BASED ON BUTTE COUNTY STD. D-5, "VALUES FOR ESTIMATING COEFFICIENT OF RUNOFF "C"", SOIL TYPE D BASED ON USDA WEB SOIL SURVEY DATA, AND AVERAGE WATERCOURSE SLOPE BASED ON CONTOUR DATA SHOWN IN THIS DRAWING.

SEE HYDROLOGY CALCULATIONS FOR DETAILS.

200 0 100 200 400
1 IN. = 200 FT.

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NO.	HISTORY / REVISION	BY	CHK.	DATE

EXISTING CONDITIONS HYDROLOGY MAP
TUSCAN RIDGE SUBDIVISION-
TENTATIVE MAP
COUNTY OF BUTTE, CA 95969

DRAWN	TA
CHECK	CM
APPROVED	CM
DATE	February 6, 2023
JOB NUMBER	9799.02
DRAWING No.	HYD-1
	SHEET 1 OF 1

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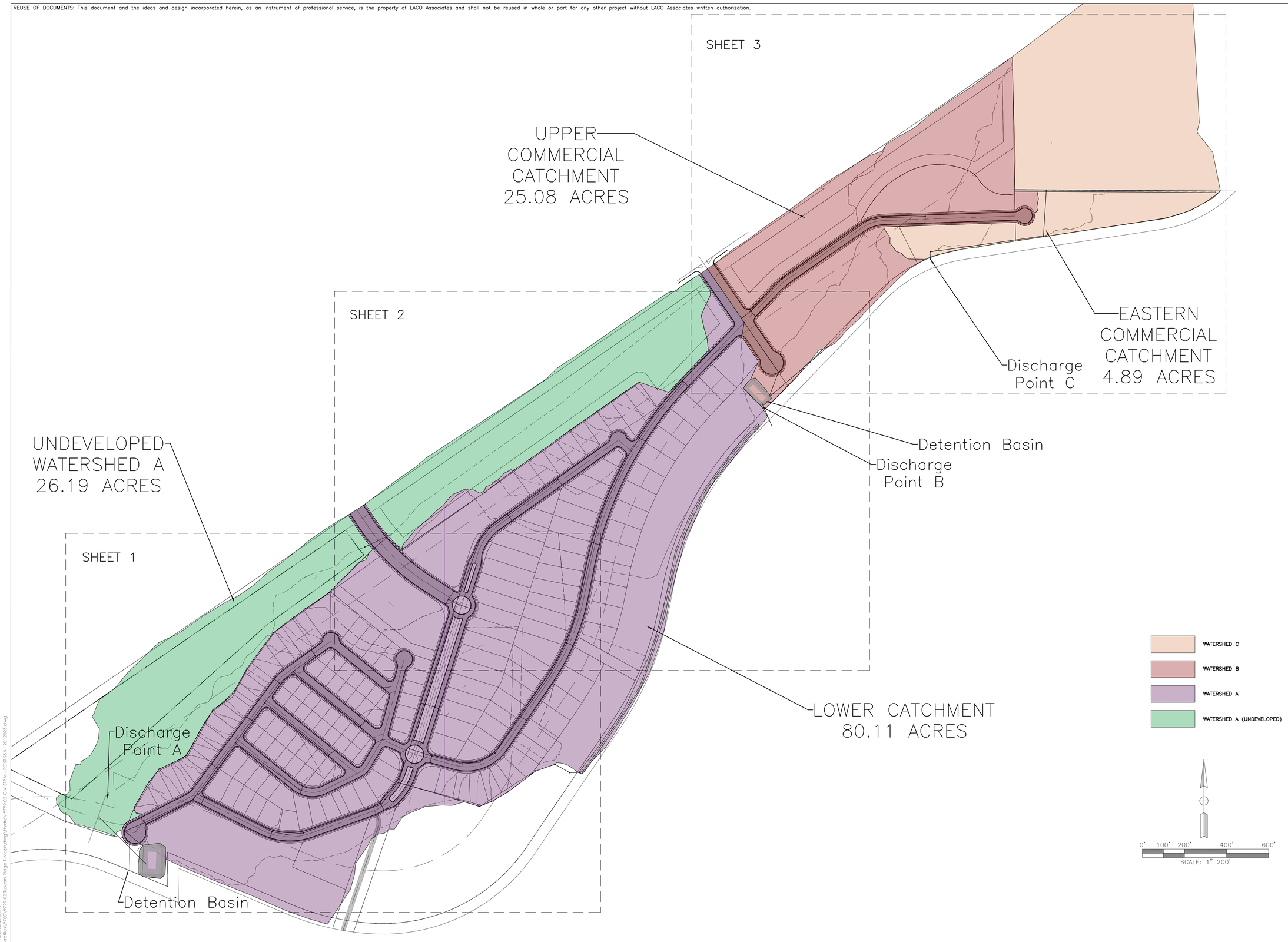

WATERSHED C
WATERSHED B
WATERSHED A
WATERSHED A (UNDEVELOPED)

0' 100' 200' 400' 600'
SCALE: 1" 200'

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NO.	HISTORY / REVISION	BY	CHK.	DATE

TUSCAN RIDGE SUBDIVISION
PRELIMINARY DRAINAGE PLAN
DRAINAGE PLAN 1

TUSCAN RIDGE ASSOCIATES, LLC
____, ____

DRAWN	FRR
CHECK	RLW
APPROVED	
DATE	2/6/2023
JOB NUMBER	9799.02
SHEET	1

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WATERSHED C

WATERSHED B

WATERSHED A

WATERSHED A (UNDEVELOPED)

Discharge Point A

LOWER CATCHMENT DETENTION BASIN

PROP. 50' TRAIL ESM'T

SCALE: 1" 80'

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NO.	HISTORY / REVISION	BY	CHK.	DATE

TUSCAN RIDGE SUBDIVISION
PRELIMINARY DRAINAGE PLAN
DRAINAGE PLAN 2

TUSCAN RIDGE ASSOCIATES, LLC
----, ----

DRAWN	FRR
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APPROVED	
DATE	2/6/2023
JOB NUMBER	9799.02
SHEET	2

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WATERSHED C

WATERSHED B

WATERSHED A

WATERSHED A (UNDEVELOPED)

UPPER COMMERCIAL CATCHMENT DETENTION BASIN

APPROXIMATE LOCATION OF 14' WIDE BIOSWALE

PROP. 50' TRAIL ESM'T

0' 40' 80' 160' 240'

SCALE: 1" 80'

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NO.	HISTORY / REVISION	BY	CHK.	DATE

TUSCAN RIDGE SUBDIVISION
PRELIMINARY DRAINAGE PLAN
DRAINAGE PLAN 3

TUSCAN RIDGE ASSOCIATES, LLC
-----, -----

DRAWN	FRR
CHECK	RLW
APPROVED	
DATE	2/6/2023
JOB NUMBER	9799.02
SHEET	3

Date: 1.5.2023, 2:35pm
T:\Civil\Files\9700\9799.02 Tuscan Ridge\1-Mapping\dwg\Hydro\9799.02 CIV SHR4 - POST SSA 1201.2023.dwg

WATERSHED C

WATERSHED B

WATERSHED A

WATERSHED A (UNDEVELOPED)

0' 40' 80' 160' 240'

SCALE: 1" 80'

MUD : 7
210215.43 SF
4.83 AC

MUD : 3
29909.88 SF
0.59 AC

OPEN SPACE : 3
185570.95 SF
4.35 AC

COMMERCIAL : 5
112268.32 SF
2.58 AC

MUD : 9
147440.02 SF
3.38 AC

COMMERCIAL : 4
64380.94 SF
1.48 AC

COMMERCIAL : 1
236477.34 SF
5.43 AC

OPEN SPACE : 4
27352.41 SF
0.63 AC

OPEN SPACE : 2
14326.16 SF
0.33 AC

STRUCTURE – EC(6)

PIPE – EC(3)

STRUCTURE – EC(1)

PIPE – EC(1)

STRUCTURE – EC(2)

PIPE – EC(2)

OUT – EC(3)

EASTERN COMMERCIAL CATCHMENT OUTFALL – NO BASIN NEEDED

PROP. 50' TRAIL ESM'T

PIPE – UC(4)

PIPE – UC(3)

PIPE – UC(1)

PI: 1+30.70

PIPE – UC(2)

STRUCTURE – UC(1)

STRUCTURE – UC(2)

STRUCTURE – UC(3)

STRUCTURE – UC(4)

STRUCTURE – UC(5)

PI: 3+45.60

PI: 4+53.60

PIPE – UC(5)

STRUCTURE – UC(6)

PI: 8+98.83

PIPE – UC(6)

PIPE – UC(7)

STRUCTURE – UC(7)

PIPE – UC(8)

STRUCTURE – UC(8)

PIPE – UC(9)

STRUCTURE – UC(9)

STRUCTURE – UC(10)

PI: 11+66.48

PIPE – UC(10)

STRUCTURE – UC(13)

PI: 14+75.89

PIPE – UC(12)

STRUCTURE – UC(11)

PIPE – UC(11)

UPPER COMMERCIAL CATCHMENT DETENTION BASIN

L(1)

L(2)

LACO
EUREKA • UKIAH • SANTA ROSA
1-800-515-5054 www.lacoassociates.com

NO.	HISTORY / REVISION	BY	CHK.	DATE

TUSCAN RIDGE SUBDIVISION
PRELIMINARY DRAINAGE PLAN
DRAINAGE PLAN 4

TUSCAN RIDGE ASSOCIATES, LLC
_____, _____

DRAWN	FRR
CHECK	RLW
APPROVED	
DATE	2/6/2023
JOB NUMBER	9799.02
SHEET	4

Dec 15 2023 2:35pm
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APPENDIX 1

Pre-Development Calculations

9799.02 Tuscan Ridge
Drainage Report
Butte County, CA 95969
Hydrology Calculations

10-YR & 100-YR Peak Flow Using Incremental Rational Method

Sub-Basin	Point of Concentration	Area (sf)	Area (acres)	∑Area (acres)	Upstream Elevation (ft)	Downstream Elevation (ft)	Flow Path Length (ft)	Slope (ft/ft)	Runoff Type	Velocity (ft/sec)	Travel Time (min)	Time of Concentration (min)	Weighted C-Value	C*A	∑C*A	Rainfall Intensity 10-YR (in/hr)	10 -YR Peak Flow (cfs)	Rainfall Intensity 100-YR (in/hr)	100 -YR Peak Flow (cfs)
A-1	1	52283	1.20	1.20	868	845	400	0.0575	Overland Flow		10.00	10.00	0.54	0.65	0.65	2.61	1.69	3.92	2.54
A-2	2	1692707	38.86	40.06	845	718	2600	0.0488	Shallow Concentrated Flow	3.56	12.16	22.16	0.53	20.60	21.24	1.73	36.65	2.58	54.81
A-3	3	2567112	58.93	98.99	718	650	1200	0.0567	Channel Flow	7.33	2.73	24.88	0.54	31.82	53.07	1.62	86.20	2.43	128.80

IF SLOPE IS 5% THEN .11

9799.02 Tuscan Ridge
Drainage Report
Butte County, CA 95969
Hydrology Calculations

Weighted C-Value Determination

Sub-Basin ID	Slope Coeff.	Extreme Surface Perm Coeff.	Extreme to High Veg. Coeff.	High Surface Coeff.	Weighted C-Value
A-1	0.11	0.17	0.15	0.11	**0.54**
A-2	0.1	0.17	0.15	0.11	**0.53**
A-3	0.11	0.17	0.15	0.11	**0.54**
B-1	0.1	0.17	0.15	0.11	**0.53**
B-2	0.1	0.17	0.15	0.11	**0.53**
C-1	0.1	0.17	0.15	0.11	**0.53**
C-2	0.1	0.17	0.15	0.11	**0.53**

9799.02 Tuscan Ridge
Drainage Report
Butte County, CA 95969
Hydrology Calculations

Determine Average Velocities (Watershed 'A')

Sub-Basin A-1 (Initial Area)

Sub-Basin A-2: POC1 to POC2

Shallow Concentrated Flow

$$V=16.13*S^{0.5}$$

Where: V=velocity of flow (ft/sec)
S=slope of flow path (ft/ft)

S=	0.0488	ft/ft
V=	3.56	ft/sec

9799.02 Tuscan Ridge
Drainage Report
Butte County, CA 95969
Hydrology Calculations

Sub-Basin A-3: (POC2 to POC3)

Channel Flow (Assumes 0.7' flow depth)
$V=(1.49/n)*(R^{2/3})*(S^{0.5})$

Where: V=velocity of flow (ft/sec)
n=Manning's value
R=hydraulic radius (ft)
=A/P
A=cross-sectional area (ft^2)
P=wetted perimeter (ft)
S=slope of flow path (ft/ft)

Channel Assumptions: Trapezoidal Channel Bottom width is 5', side slopes are 2H:1V, and mannings n correlating to loose rock rip rap.

n= 0.035 (loose rock rip rap)
A=((a+b)h)/2
where: a=top width of wetted perimeter
b=bottom width of wetted perimeter
h= assumed depth
d=side slope length

Iteration 1:

assumed depth=	0.7	ft	=h
b=	5	ft	
a=	7.8	ft	
A=	4.48	sf	
d=	1.56		
Wetted perimeter=	=2d+b=	8.13	ft
Hydraulic Radius=R=	A/P=	0.55	ft
slope of flow path=		0.0488	ft/ft
V=	6.32	ft/sec	
Q=	28.33	cfs	

Iteration 2:

assumed depth=	0.8	ft	=h
b=	5	ft	
a=	8.2	ft	
A=	5.28	sf	
d=	1.79		
Wetted perimeter=	=2d+b=	8.58	ft
Hydraulic Radius=R=	A/P=	0.62	ft
slope of flow path=		0.0567	ft/ft
V=	7.33	ft/sec	
Q=	38.72	cfs	

A flow depth between 0.7' to 0.8' results in a range of flows (28.33 to 38.72 cfs) that contains the flow calculated at POC2 (36.45 cfs). Use the conservative flow depth of 0.8' and resultant velocity to determine travel time and the resultant time of concentration.

9799.02 Tuscan Ridge
Drainage Report
Butte County, CA 95969
Hydrology Calculations

Determine Flow (Watershed 'B', which consists of sub-basin ID #B-1 & B-2)

Basin B-1

Q=C*I*A

Where:

	C=	0.53				
Sheet Flow	Length	300	ft			
	Tc	10	min			
Shallow Concentrated Flow	Length	790	ft			
	Slope	0.06	ft/ft			
	Velocity	4.06	ft/sec			
	Tc	3.24				
	Total Tc=	13.24	min			
	I_{10}=	2.25	in/hr	I_{100}=	3.38	in/hr
	A=	7.19	acres			
	Q_{10}=	8.59	cfs	Q_{100}=	12.89	cfs

Basin B-2

Q=C*I*A

Where:

C=	0.53			
Tc	13.24	min	*B-1 Tc used because B-2 fully developed before B-1 flow reaches discharge point	
I_{10}=	2.61	in/hr	I_{100}=	3.92 in/hr
A=	14.18	acres		
Q_{10}=	19.61	cfs	Q_{100}=	29.46 cfs

Flow at POC 4 is the summation of flows from B-1 and B-2: **28.20 cfs**

9799.02 Tuscan Ridge
Drainage Report
Butte County, CA 95969
Hydrology Calculations

Determine Flow (Watershed 'C', which consists of sub-basin

Basin C-2

Q=C*I*A

Where:

	C=	0.53				
Sheet Flow	Length	300	ft			
	Tc	10	min			
Shallow Concentrated Flow	Length	1945	ft			
	Slope	0.06	ft/ft			
	Velocity	3.85	ft/sec			
	Tc	8.41				
	Total Tc=	18.41	min			
	I_{10}=	1.90	in/hr	I_{100}=	2.84	in/hr
	A=	10.65	acres			
	Q_{10}=	10.73	cfs	Q_{100}=	16.05	cfs

Basin C-1

Q=C*I*A

Where:

C=	0.53			
T_c=	18.41	min	*C-2 Tc used because C-1 fully developed before C-2 flow reaches discharge point	
I_{10}=	1.90	in/hr	I_{100}=	2.84 in/hr
A=	22.45	acres		
Q_{10}=	22.60	cfs	Q_{100}=	33.83 cfs

Flow at POC 5 is the summation of flows from C-1 and C-2: **33.33 cfs**

APPENDIX 2

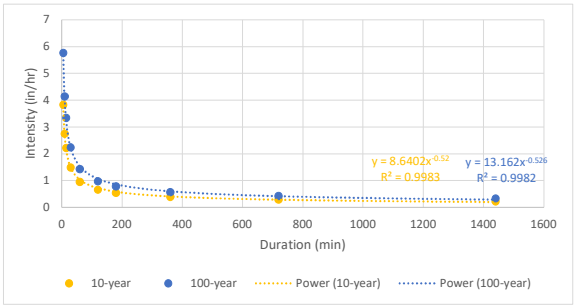
Post-Development Calculations

Tuscan Ridge
Post-Development Rational Method Results

NOAA Rainfall Data

Duration	Duration (min)	10-year		100-year	
		Depth (in)	Intensity (in/hr)	Depth (in)	Intensity (in/hr)
5 min	5	0.319	3.83	0.481	5.77
10 min	10	0.458	2.75	0.69	4.14
15 min	15	0.554	2.22	0.834	3.34
30 min	30	0.744	1.49	1.12	2.24
60 min	60	0.951	0.951	1.43	1.43
2 hr	120	1.31	0.656	1.94	0.97
3 hr	180	1.61	0.537	2.36	0.786
6 hr	360	2.34	0.39	3.38	0.564
12 hr	720	3.49	0.289	5.1	0.423
24 hr	1440	5.34	0.222	7.94	0.331

*Per Butte Standards, precipitation data from 5 min to 24 hours is used



Pre-Conditions Summary

Catchment	Catchment ID	Total Area (ac)	Weighted C-Value	I_{10} (in/hr)	Q_{10} (cfs)	I_{100} (in/hr)	Q_{100} (cfs)
A	A-1	1.20	0.54	2.61	1.69	3.92	2.54
	A-2	38.86	0.53	1.73	36.65	2.58	54.81
	A-3	58.93	0.54	1.62	86.20	2.43	128.80
	Total	**98.99**	**0.54**		**86.20**		**128.80**
B	B-1	7.19	0.53	2.25	8.59	3.38	12.89
	B-2	14.18	0.53	2.61	19.61	3.92	29.46
	Total	**21.37**	**0.53**		**28.20**		**42.35**
C	C-1	10.65	0.53	1.90	10.73	2.84	16.05
	C-2	22.45	0.53	1.90	22.60	2.84	33.83
	Total	**33.10**	**0.53**		**33.33**		**49.89**

Tuscan Ridge
Post-Development Rational Method Results

Rational Method Calculations

Catchment	Catchment ID	Total Area (ac)	Weighted C-Value	TC_{10} (min)	I_{10} (in/hr)	Q_{10} (cfs)	TC_{100} (min)	I_{100} (in/hr)	Q_{100} (cfs)
Eastern Commercial	EC-C1	3.46	0.88	10.00	2.75	**8.37**	10.00	4.14	**12.59**
	EC-C2	1.43	0.88	10.00	2.75	**3.47**	10.00	4.14	**5.22**
	OS-C3	19.39	0.53	10.00	2.75	**28.26**	10.00	4.14	**42.54**
	Total	**24.28**							
Upper Commercial	UC-C1	8.24	0.79	16.79	1.99	**12.97**	14.06	3.28	**21.32**
	UC-C3	0.52	0.90	10.00	2.75	**1.28**	10.00	4.14	**1.92**
	UC-C8	9.07	0.43	19.35	1.85	**7.30**	16.19	3.04	**12.00**
	UC-C9	0.53	0.90	10.00	2.75	**1.31**	10.00	4.14	**1.97**
	UC-C11	6.04	0.81	10.00	2.75	**13.52**	10.00	4.14	**20.36**
	UC-C13	1.40	0.88	10.00	2.75	**3.39**	10.00	4.14	**5.10**
	Total	**25.80**							
Lower	L-C1	1.08	0.61	10.00	2.75	**1.81**	10.00	4.14	**2.73**
	L-C3	0.27	0.90	10.00	2.75	**0.66**	10.00	4.14	**0.99**
	L-C6	0.24	0.90	10.00	2.75	**0.58**	10.00	4.14	**0.88**
	L-C7	0.23	0.90	10.00	2.75	**0.57**	10.00	4.14	**0.86**
	L-C11	1.14	0.71	10.00	2.75	**2.23**	10.00	4.14	**3.36**
	L-C12	0.37	0.90	10.00	2.75	**0.92**	10.00	4.14	**1.39**
	L-C15	3.65	0.62	17.18	1.97	**4.45**	14.86	3.18	**7.20**
	L-C16	2.80	0.60	14.60	2.14	**3.57**	12.12	3.54	**5.91**
	L-C17	2.86	0.60	10.00	2.75	**4.74**	10.00	4.14	**7.14**
	L-C19	0.43	0.86	10.00	2.75	**1.00**	10.00	4.14	**1.51**
	L-C21	0.03	0.90	10.00	2.75	**0.08**	10.00	4.14	**0.11**
	L-C22	0.51	0.79	10.00	2.75	**1.10**	10.00	4.14	**1.65**
	L-C24	1.19	0.62	12.00	2.37	**1.76**	10.00	4.14	**3.07**
	L-C26	0.20	0.90	10.00	2.75	**0.49**	10.00	4.14	**0.74**
	L-C27	0.65	0.61	10.00	2.75	**1.08**	10.00	4.14	**1.62**
	L-C31	0.25	0.90	10.00	2.75	**0.61**	10.00	4.14	**0.92**
	L-C32	0.20	0.80	10.00	2.75	**0.45**	10.00	4.14	**0.67**
	L-C34	2.65	0.62	10.00	2.75	**4.51**	10.00	4.14	**6.79**
	L-C35	0.20	0.68	10.00	2.75	**0.36**	10.00	4.14	**0.55**
	L-C38	0.29	0.90	10.00	2.75	**0.72**	10.00	4.14	**1.08**
	L-C39	1.50	0.63	14.76	2.13	**2.01**	12.03	3.56	**3.36**
	L-C44	1.76	0.65	13.29	2.25	**2.60**	11.12	3.71	**4.28**
	L-C45	0.67	0.77	16.15	2.03	**1.05**	13.39	3.36	**1.74**
	L-CB47	16.51	0.53	24.12	1.65	**14.53**	20.10	2.72	**23.90**
	L-C50	1.75	0.55	15.33	2.09	**2.00**	12.76	3.45	**3.30**
	L-C51	0.56	0.59	10.00	2.75	**0.91**	10.00	4.14	**1.38**
	L-C52	0.19	0.59	10.00	2.75	**0.30**	10.00	4.14	**0.46**
	L-C53	0.27	0.59	10.00	2.75	**0.45**	10.00	4.14	**0.67**
	L-C54	0.22	0.59	10.00	2.75	**0.35**	10.00	4.14	**0.53**
	L-C55	0.24	0.59	10.00	2.75	**0.39**	10.00	4.14	**0.59**
	L-C58	0.69	0.48	18.27	1.91	**0.64**	15.49	3.11	**1.04**
	L-C59	1.19	0.59	20.90	1.78	**1.25**	17.47	2.92	**2.05**
	L-C63	0.39	0.90	10.00	2.75	**0.97**	10.00	4.14	**1.47**
	L-C64	1.02	0.70	10.00	2.75	**1.98**	10.00	4.14	**2.97**
	L-C67	1.27	0.65	10.00	2.75	**2.27**	10.00	4.14	**3.42**
	L-C68	0.89	0.77	11.71	2.40	**1.66**	10.00	4.14	**2.85**
	L-C70	0.96	0.74	10.00	2.75	**1.95**	10.00	4.14	**2.93**
	L-C72	0.25	0.86	10.00	2.75	**0.59**	10.00	4.14	**0.89**
	L-C74	1.55	0.53	10.00	2.75	**2.26**	10.00	4.14	**3.40**
	L-C76	0.15	0.90	10.00	2.75	**0.38**	10.00	4.14	**0.58**
	L-C77	2.12	0.76	10.00	2.75	**4.44**	10.00	4.14	**6.68**
	L-C79	0.83	0.73	10.00	2.75	**1.67**	10.00	4.14	**2.51**
	L-C81	0.11	0.86	10.00	2.75	**0.26**	10.00	4.14	**0.39**
	L-C83	0.15	0.90	10.00	2.75	**0.37**	10.00	4.14	**0.56**
	L-C84	2.15	0.76	10.00	2.75	**4.47**	10.00	4.14	**6.73**
	L-C86	0.33	0.70	10.00	2.75	**0.64**	10.00	4.14	**0.97**
	L-C88	1.64	0.72	10.00	2.75	**3.22**	10.00	4.14	**4.85**
	L-C90	0.19	0.90	10.00	2.75	**0.48**	10.00	4.14	**0.72**
	L-C91	2.31	0.72	10.00	2.75	**4.54**	10.00	4.14	**6.84**
	L-C94	0.30	0.90	10.00	2.75	**0.74**	10.00	4.14	**1.12**
	L-C95	0.33	0.90	10.00	2.75	**0.83**	10.00	4.14	**1.24**
	L-C96	0.30	0.90	10.00	2.75	**0.73**	10.00	4.14	**1.10**
	L-C98	0.38	0.58	11.60	2.42	**0.54**	10.00	4.14	**0.92**
	L-C99	0.28	0.59	10.00	2.75	**0.45**	10.00	4.14	**0.67**
	L-C100	0.25	0.59	10.00	2.75	**0.41**	10.00	4.14	**0.61**
	L-C101	0.24	0.59	10.00	2.75	**0.40**	10.00	4.14	**0.60**
	L-C102	0.25	0.59	10.00	2.75	**0.41**	10.00	4.14	**0.61**
	L-C103	0.26	0.59	10.00	2.75	**0.42**	10.00	4.14	**0.63**
	L-C104	0.26	0.59	10.00	2.75	**0.42**	10.00	4.14	**0.63**
	L-C105	0.28	0.59	10.00	2.75	**0.45**	10.00	4.14	**0.67**
	L-C106	0.28	0.59	10.00	2.75	**0.45**	10.00	4.14	**0.67**
	L-C107	0.59	0.82	10.00	2.75	**1.32**	10.00	4.14	**1.98**
	L-C109	3.25	0.77	10.00	2.75	**6.93**	10.00	4.14	**10.43**
	L-C110	0.69	0.90	10.00	2.75	**1.71**	10.00	4.14	**2.58**
	L-C111	3.01	0.71	10.00	2.75	**5.84**	10.00	4.14	**8.80**
	L-C112	1.11	0.59	12.34	2.34	**1.54**	10.22	3.88	**2.55**
	L-C113	0.24	0.59	10.00	2.75	**0.39**	10.00	4.14	**0.59**
	L-C114	0.19	0.59	10.00	2.75	**0.31**	10.00	4.14	**0.46**
	L-C115	0.15	0.40	10.00	2.75	**0.16**	10.00	4.14	**0.25**
	L-C116	0.27	0.51	10.00	2.75	**0.39**	10.00	4.14	**0.58**
	L-C117	0.24	0.47	10.00	2.75	**0.31**	10.00	4.14	**0.47**
	L-C118	0.21	0.59	10.00	2.75	**0.35**	10.00	4.14	**0.52**
	L-C119	0.15	0.59	10.00	2.75	**0.24**	10.00	4.14	**0.37**
	L-C120	0.15	0.59	10.00	2.75	**0.24**	10.00	4.14	**0.36**
	L-C121	0.17	0.59	10.00	2.75	**0.27**	10.00	4.14	**0.41**
	L-C122	0.19	0.59	10.00	2.75	**0.31**	10.00	4.14	**0.47**
	L-C123	0.19	0.25	10.00	2.75	**0.13**	10.00	4.14	**0.20**
	L-C124	0.19	0.59	10.00	2.75	**0.31**	10.00	4.14	**0.47**
	L-C125	0.15	0.59	10.00	2.75	**0.25**	10.00	4.14	**0.37**
	L-C126	0.16	0.59	10.00	2.75	**0.26**	10.00	4.14	**0.40**
	L-C127	0.14	0.59	10.00	2.75	**0.23**	10.00	4.14	**0.35**
	L-C128	0.17	0.25	10.00	2.75	**0.12**	10.00	4.14	**0.18**
	L-C129	0.23	0.59	10.00	2.75	**0.37**	10.00	4.14	**0.56**
	L-C130	0.25	0.59	10.00	2.75	**0.40**	10.00	4.14	**0.60**
	L-C131	0.19	0.59	10.00	2.75	**0.31**	10.00	4.14	**0.46**
	L-C132	0.25	0.90	10.00	2.75	**0.62**	10.00	4.14	**0.94**
	L-C97	7.99	0.58	10.06	2.60	**12.13**	10.00	4.14	**19.30**
	Total	**85.06**							
Unimproved Water Shed A	A-1	26.36	0.57	24.88	1.62	**24.41**	24.88	2.43	**36.47**
	Total	**26.36**							

Tuscan Ridge
Post-Development Calculations
Runoff Mitigation Determination

Pre-Development 100-YR

Catchment	Discharge Point	Area (ac)	Peak Flow (cfs)
A	A	98.99	128.80
B	B	21.37	42.35
C	C	33.10	49.89

Post-Development 100-YR

Catchment	Discharge Point	Area (ac)	Peak Flow Without Pond (cfs)	Change in Q Without Pond (cfs)	Peak Flow With Pond (cfs)	Change in Q With Pond (cfs)
Lower & Undeveloped A	A	111.42	143.13	14.33	126.42	-2.38
Upper Commercial	B	25.80	49.10	6.75	42.35	0.00
Eastern Commercial	C	24.28	35.63	-14.26	NA	NA

*Corresponding discharge point as denoted on Figure 1 for Pre-development conditions

*Because a portion of Pre-development Watersehd C was rereouted to Discharge Point B (Upper Commercial Catchment), there is now less runoff in post development conditions. Thus, the Eastern Commercial Catchment does not require a detention basin to mitigate runoff.

*Lower Catchment has smaller area than original Watershed A as undeveloped portion between development and Skyline Road is excluded from the Storm Network but detention basin is still needed - see below

*Peak Flows from SSA

Tuscan Ridge
Post-Development Calculations
Runoff Mitigation Determination

Pre-Development 10-YR

Catchment	Discharge Point	Area (ac)	Peak Flow (cfs)
A	A	98.99	86.20
B	B	21.37	28.20
C	C	33.10	33.33

Post-Development 10-YR

Catchment	Discharge Point	Area (ac)	Peak Flow Without Pond (cfs)	Change in Q Without Pond (cfs)	Peak Flow With Pond (cfs)	Change in Q With Pond (cfs)
Lower & Undeveloped A	A	111.42	129.25	43.05	84.66	-1.54
Upper Commercial	B	25.80	29.56	1.36	26.23	-1.97
Eastern Commercial	C	24.26	18.68	0.00	NA	NA

*Corresponding discharge point as denoted on Figure 1 for Pre-development conditions

*Because a portion of Pre-development Watersehd C was rereouted to Discharge Point B (Upper Commercial Catchment), there is now less runoff in post development conditions. Thus, the Eastern Commercial Catchment does not require a detention basin to mitigate runoff.

*Lower Catchment has smaller area than original Watershed A as undeveloped portion between development and Skyline Road is excluded from the Storm Network but detention basin is still needed - see below

*Peak Flows from SSA

Tuscan Ridge
Subcatchment Descriptions and Composite C-Value Determination

Subcatchment Descriptions and Weighted C-Value Determination

Subcatchments were broken up into paved and non-paved areas for ease of determining C values. Subcatchment IDs with "R" in them delineate that the subcatchment is paved. Area of roofs, landscaped, and paved were determined based on the assumptions described in the "Land-sue Assumptions" sheet of this workbook. Catchment IDs were named with the number corresponding to the inlet number on the CAD drawing. C-values were determined using the Butte County Improvement Standards.Subcatchment IDs were named based on the catchment (e.g. Eastern Commercial, etc.) and the Civil 3D autogenerated structure (inlet) number. For subcatchments that were not proposed to be developed, the unimporved c-value methodology detailed in the Butte Standards was used. A composite C value was then determined for that catchment.

Eastern Commercial- Improved Areas

Subcatchment	Area (sf)	Description	Inlet	Roof (sf)	Landscaped (sf)	Paved (sf)
EC-1	150580	eastern-most subcatchment	EC(1)	37645.02	7529.004	105406.056
EC-2	62391	lower subcatchment below UC-R2 that contains the basin	EC(2)	15597.7925	3119.5585	43673.819
Outlet			Out-EC(3)			

Upper Commercial Catchment - Improved Areas

Subcatchment	Area (sf)	Description	Inlet	Road/sidewalk?	Commercial Lots (sf)	Open space (sf)	Roofs (sf)	Landscaped (sf)	Paved (sf)
UC-1	12443	small corner	UC(1)	FALSE	12443	0	3111	622	8710
UC-2	218267	portion of large northern-most sub catchment that is commercial	UC(1)	FALSE	218267	0	54567	10913	152787
UC-R1	21981	upper portion of roadway	UC(1)	TRUE	0	0	0	0	21981
UC-R2	22450	lower portion of roadway	UC(3)	TRUE	0	0	0	0	22450
UC-3	185862	open space area next to UC-2	UC(8)	FALSE	0	185862	0	185862	0
UC-R3	23550	Upper road portion below UC-3	UC(8)	TRUE	0	0	0	0	23550
UC-R4	22977	lower road portion	UC(9)	TRUE	0	0	0	0	22977
UC-4	19406	previously denoted as subcatchment a-1	UC(111)	FALSE	0	19406	0	19406	0
UC-R5	44384	entry road and cul-de-sac that flows directly to the outlet	UC(111)	TRUE	0	0	0	0	44384
UC-5	179902	commercial area below UC-R4	UC(111)	FALSE	179902	0	44975	8995	125931
UC-6	61030	section of commercial lot that doesn't drain the same	UC(13)	FALSE	61030	0	15257	3051	42721
Outlet		to detention pond	Out-UC(12)						

Upper Commercial Catchment - Unimproved Areas

Subcatchment	Area	Description	Inlet	Slope Coeff.	Extreme Surface Perm Coeff.	Extreme to High Veg. Coeff.	High Surface Coeff.	Weighted C-Value
UC-2.5	106276	portion of large northern-most sub catchment that is openspace	UC(1)	0.11	0.2	0.15	0.11	**0.57**
UC-3	185862	open space area next to UC-2	UC(8)	0.1	0.2	0.15	0.11	**0.56**
UC-4	19406	previously denoted as subcatchment a-1	UC(11)	0.11	0.2	0.15	0.11	**0.57**

Tuscan Ridge
Subcatchment Descriptions and Composite C-Value Determination

Lower Catchment- Improved Areas

Subcatchment	Area (sf)	Description	Inlet	Road/sidewalk?	Residential Lots (sf)	Open space (sf)	Roofs (sf)	Landscaped (sf)	Paved (sf)
M-1	20983	Small portion west of the upper entrance that drains to the road - fully open space	L(1)	FALSE	0	20983	0	20983	0
M-R1	26073	left side of road from top entrance	L(1)	TRUE	0	0	0	0	26073
M-R2	11609	right side of road along open space and lot 165	L(3)	TRUE	0	0	0	0	11609
M-R9	10271	left side section of road below structure 233	L(6)	TRUE	0	0	0	0	10271
M-R10	10008	right side section of road below structure 230	L(7)	TRUE	0	0	0	0	10008
M-R12	19386	left side of section of most eastern road across from the first bulb	L(11)	TRUE	0	0	0	0	19386
M-10	30334	lots 121 and 120	L(11)	FALSE	30334	0	9100	15167	6067
M-R11	16218	right side of section of most eastern road across from the first bulb	L(12)	TRUE	0	0	0	0	16218
M-R4	14878	right side of road	L(15)	TRUE	0	0	0	0	14878
M-3	144248	portion of lots on the eastern boundary that drain to the front	L(15)	FALSE	144248	0	43274	72124	28850
M-R3	14870	left side of road	L(16)	TRUE	0	0	0	0	14870
M-2	107164	lots 122 to 127 plus most of an open space lot	L(16)	FALSE	95440	11724	28632	59444	19088
M-R8	16855	right side of road	L(17)	TRUE	0	0	0	0	16855
M-7	106674	lots to the east of the first round-a-bout	L(17)	FALSE	96889	9785	29067	58230	19378
M-9	1170	right side of landscaped center divider	L(17)	FALSE	0	1170	0	1170	0
M-R7	17361	left side of road	L(19)	TRUE	0	0	0	0	17361
M-8	1170	left side of landscaped center divider	L(19)	FALSE	0	1170	0	1170	0
M-R8	1342	western portion of round-a-bout that drains to outlet	L(21)	TRUE	0	0	0	0	1342
M-4	7945	portion of area above bulb that drains into the road	L(22)	FALSE	7945	0	2384	3973	1589
M-R5	14103	left side of bulb and road	L(22)	TRUE	0	0	0	0	14103
M-R6	10163	right side of road below bulb	L(24)	TRUE	0	0	0	0	10163
M-5	41701	lots directly below bulb that drain to the west	L(24)	FALSE	37460	4241	11238	22971	7492
M-R13	8673	left side of road across from lot 108	L(26)	TRUE	0	0	0	0	8673
M-R14	8729	right side of road across from lot 107	L(27)	TRUE	0	0	0	0	8729
M-11	19496	lot 107 and open space lot	L(27)	FALSE	12801	6695	3840	13096	2560
L-R5	10706	left side of western road directly below first round-a-bout	L(31)	TRUE	0	0	0	0	10706
L-R6	5966	right side of western road directly below first round-a-bout	L(32)	TRUE	0	0	0	0	5966
L-9	2893	left side of landscaped first round-a-bout	L(32)	FALSE	2893	0	868	1447	579
L-R8	11038	right side of eastern road directly below first round-a-bout	L(34)	TRUE	0	0	0	0	11038
L-11	104291	lots 94 to 100 plus section of open space	L(34)	FALSE	104291	0	31287	52146	20858
L-10	2905	right side of landscaped first round-a-bout	L(35)	FALSE	0	2905	0	2905	0
L-R7	5594	left side of eastern road directly below first round-a-bout	L(35)	TRUE	0	0	0	0	5594
L-R1	12590	northern most section of road along eastern most road - right side	L(38)	TRUE	0	0	0	0	12590
L-1	53062	portions of lots 128 to 131 including small section of open space lot	L(39)	FALSE	48938	4124	14681	28593	9788
L-R2	12465	northern most section of road along eastern most road - left side	L(39)	TRUE	0	0	0	0	12465
L-R3	15806	northern part of curved section of eastern most road	L(44)	TRUE	0	0	0	0	15806
L-2	61044	lots 131 to 136	L(44)	FALSE	61044	0	18313	30522	12209
L-R4	16886	southern part of curved section of eastern most road	L(45)	TRUE	0	0	0	0	16886
L-3	12342	lot 145	L(45)	FALSE	12342	0	3703	6171	2468
L-36	76402	lots 146 to 148	L(50)	FALSE	66590	9812	19977	43107	13318
L-4	24545	lots 142 to 144	L(51)	FALSE	24545	0	7364	12273	4909
L-5	8164	lot 141	L(52)	FALSE	8164	0	2449	4082	1633
L-6	11949	lot 140	L(53)	FALSE	11949	0	3585	5975	2390
L-7	9400	lot 139	L(54)	FALSE	9400	0	2820	4700	1880
L-8	10513	lot 138	L(55)	FALSE	10513	0	3154	5257	2103
L-R10	10413	western side of road that goes through second round-a-bout	L(58)	TRUE	0	0	0	0	10413
L-16	2906	left half of second round-a-bout	L(58)	FALSE	0	2906	0	2906	0
L-R11	467	small section of road above second round-a-bout	L(58)	TRUE	0	0	0	0	467
L-17	2286	left side of lower landscaped center divider	L(58)	FALSE	0	2286	0	2286	0
L-18	14081	left side of upper landscaped center divider	L(58)	FALSE	0	14081	0	14081	0
L-R9	21418	eastern side of road that goes through second round-a-bout	L(59)	TRUE	0	0	0	0	21418
L-12	10889	lot 137	L(59)	FALSE	10889	0	3267	5445	2178
L-13	2904	right half of second round-a-bout	L(59)	FALSE	0	2904	0	2904	0
L-14	2452	right side of lower landscaped center divider	L(59)	FALSE	0	2452	0	2452	0
L-15	14163	right side of upper landscaped center divider	L(59)	FALSE	0	14163	0	14163	0
L-R13	17142	most southern side of road along the curve of the most southern road	L(63)	TRUE	0	0	0	0	17142

Tuscan Ridge
Subcatchment Descriptions and Composite C-Value Determination

Subcatchment	Area (sf)	Description	Inlet	Road/sidewalk?	Residential Lots (sf)	Open space (sf)	Roofs (sf)	Landscaped (sf)	Paved (sf)
L-R12	16098	most northern side of road along the curve of the most southern road	L(64)	TRUE	0	0	0	0	16098
L-19	28495	lots 13 through 15	L(64)	FALSE	28495	0	8549	14248	5699
L-R14	10853	northern half of road below lots 8 through 12 along most southern road	L(67)	TRUE	0	0	0	0	10853
L-20	44381	lots 8 through 12	L(67)	FALSE	44381	0	13314	22191	8876
L-R22	23000	half of upper cul-de-sac and bulb	L(68)	TRUE	0	0	0	0	23000
L-28	15810	lot 84 and portions of lots 81 through 85 between the two bulbs	L(68)	FALSE	15810	0	4743	7905	3162
L-R23	13390	section of roadway that runs directly above lots 71 and 76	L(70)	TRUE	0	0	0	0	13390
L-29	28557	lots 71 through 76 plus portion of open space lot	L(70)	FALSE	26405	2152	10562	11394	6601
L-R17	9402	section of road directly below upper cul-de-sac	L(72)	TRUE	0	0	0	0	9402
L-22	1586	half of lot 70	L(72)	FALSE	1586	0	476	793	317
L-21	50375	lots 86 to 91 plus section of open space	L(74)	FALSE	17512	32863	7005	38992	4378
L-R16	17124	right half of upper cul-de-sac and half of road that drains down	L(74)	TRUE	0	0	0	0	17124
L-R25	6730	section of road that runs along lots 32, 33, and 77	L(76)	TRUE	0	0	0	0	6730
L-R24	30071	road directly below lots 64 through 70	L(77)	TRUE	0	0	0	0	30071
L-30	30803	lots 64 through 70	L(77)	FALSE	30803	0	12321	10781	7701
L-31	31640	lots 56 through 63	L(77)	FALSE	31640	0	12656	11074	7910
L-R18	21386	section of road that runs above second round-a-bout and goes until lot 53	L(79)	TRUE	0	0	0	0	21386
L-23	11800	parts of lots 54 through part of lot 56 plus section of open space	L(79)	FALSE	7823	3977	3129	6715	1956
L-24	2938	open space lot to the left of the second round-a-bout	L(79)	FALSE	0	2938	0	2938	0
L-R19	4104	section of road that runs above lot 41	L(81)	TRUE	0	0	0	0	4104
L-25	658	portion of lot 41	L(81)	FALSE	658	0	197	329	132
L-R26	6596	section of road that runs along lots 28 through 31	L(83)	TRUE	0	0	0	0	6596
L-R27	29376	section of road below lots 48 through 52	L(84)	TRUE	0	0	0	0	29376
L-32	28092	lots 48 through 52	L(84)	FALSE	28092	0	11237	9832	7023
L-33	35985	lots 42 to 47	L(84)	FALSE	35985	0	14394	12595	8996
L-R21	7606	section of road directly below lot 40 and open space lot	L(86)	TRUE	0	0	0	0	7606
L-27	6976	lot 40 and open space lot	L(86)	FALSE	3553	3423	1421	4667	888
L-R20	18190	section of road coming off of second-round-a-bout that goes down to lot 14	L(88)	TRUE	0	0	0	0	18190
L-26	53107	lots 16 to 21 plus open space lot	L(88)	FALSE	48355	4752	19342	21676	12089
L-R28	8366	road section that runs along lots 6, 7, and 27	L(90)	TRUE	0	0	0	0	8366
L-R29	30618	section of road directly below lots 34 through 39	L(91)	TRUE	0	0	0	0	30618
L-34	30848	lots 34 through 39	L(91)	FALSE	30848	0	12339	10797	7712
L-35	39034	lots 26 through 22 and part of lot 14	L(91)	FALSE	39034	0	11710	19517	7807
L-R30	13039	road section that runs along lots 1 through 5	L(94)	TRUE	0	0	0	0	13039
L-R31	14546	road section next to lot 8	L(95)	TRUE	0	0	0	0	14546
L-R32	12898	bottom cul-de-sac	L(96)	TRUE	0	0	0	0	12898
W-1	10169	lot 116 + section of open space	L(98)	FALSE	10169	0	3051	5084	2034
W-2	11986	lot 115	L(99)	FALSE	11986	0	3596	5993	2397
W-3	10875	lot 114	L(100)	FALSE	10875	0	3263	5438	2175
W-4	10633	lot 113	L(101)	FALSE	10633	0	3190	5316	2127
W-5	10912	lot 112	L(102)	FALSE	10912	0	3274	5456	2182
W-6	11229	lot 111	L(103)	FALSE	11229	0	3369	5614	2246
W-7	11208	lot 110	L(104)	FALSE	11208	0	3362	5604	2242
W-8	12031	lot 109	L(105)	FALSE	12031	0	3609	6015	2406
W-9	12015	lot 108	L(106)	FALSE	12015	0	3605	6008	2403
W-10	25574	small section of commercial next to lot 108	L(107)	FALSE	22939	2635	5735	3782	16057
W-11	112599	larger portion of commercial lot below lot 108	L(109)	FALSE	88033	24566	22008	28968	61623
W-R1	9155	section of road off highway on the side closest to L-11	L(109)	TRUE	0	0	0	0	9155
L-R2	19844	section of road between W-R1 and first round-a-bout	L(109)	TRUE	0	0	0	0	19844
W-R3	9493	section of road off highway	L(110)	TRUE	0	0	0	0	9493
W-R4	20638	section of road between L-R3 and first round-a-bout	L(110)	TRUE	0	0	0	0	20638
W-12	131273	Commercial and open space area that contains detention pond for the lower system	L(111)	FALSE	94811	36462	23703	41203	66368

Tuscan Ridge
Subcatchment Descriptions and Composite C-Value Determination

Subcatchment	Area (sf)	Description	Inlet	Road/sidewalk?	Residential Lots (sf)	Open space (sf)	Roofs (sf)	Landscaped (sf)	Paved (sf)
L-13	48518	parts of lots 85, 83, 82, 81, 80, and all of 79	L(112)	FALSE	48518	0	14555	24259	9704
L-14	10489	lot 78	L(113)	FALSE	10489	0	3147	5244	2098
W-15	8222	lot 77	L(114)	FALSE	8222	0	2467	4111	1644
W-16	6484	portion of open space lot	L(115)	FALSE	2823	3660	847	5072	565
W-17	11977	portion of lot 33 and open space lot	L(116)	FALSE	9149	2828	2745	7402	1830
W-18	10560	lot 32	L(117)	FALSE	6900	3660	2070	7110	1380
W-19	9313	lot 31	L(118)	FALSE	9313	0	2794	4657	1863
W-20	6557	lot 30	L(119)	FALSE	6557	0	1967	3279	1311
W-21	6473	lot 29	L(120)	FALSE	6473	0	1942	3236	1295
W-22	7313	lot 28	L(121)	FALSE	7313	0	2194	3657	1463
W-23	8406	lot 27	L(122)	FALSE	8406	0	2522	4203	1681
W-24	8261	open space lot	L(123)	FALSE	0	8261	0	8261	0
W-25	8343	lot 7	L(124)	FALSE	8343	0	2503	4172	1669
W-26	6652	lot 6	L(125)	FALSE	6652	0	1996	3326	1330
W-27	7109	lot 5	L(126)	FALSE	7109	0	2133	3555	1422
W-28	6187	lot 4	L(127)	FALSE	6187	0	1856	3094	1237
W-29	7476	open space lot	L(128)	FALSE	0	7476	0	7476	0
W-30	9981	lot 3	L(129)	FALSE	9981	0	2994	4991	1996
W-31	10728	lot 2	L(130)	FALSE	10728	0	3218	5364	2146
W-32	8216	lot 1	L(131)	FALSE	8216	0	2465	4108	1643
L-R15	10959	southern half of road below lots 8 through 12 along most southern road	L(132)	TRUE	0	0	0	0	10959
L-30	64118	section of WW area	Out-L(97)	FALSE	64118	0	0	3206	44883
Outlet		to detention pond	Out-L(97)						

Bioswale section that feeds into the lower system

L-B1	265700	upper lots below upper commercial system	L(47)	FALSE	215411	50290	64623	157995	43082
L-B2	217965	eastern lots directly below middle system	L(47)	FALSE	161590	56375	48477	137170	32318

Subcatchment	Area	Description	Inlet	Slope Coeff.	Extreme Surface Perm Coeff.	Extreme to High Veg. Coeff.	High Surface Coeff.	Weighted C-Value
L-B3	235589	unimproved space along bioswale area	L(47)	0.11	0.20	0.15	0.11	0.57

Lower Catchment - Unimproved Areas

Subcatchment	Area	Description	Inlet	Slope Coeff.	Extreme Surface Perm Coeff.	Extreme to High Veg. Coeff.	High Surface Coeff.	Weighted C-Value
L-30.5	284035	portion of WW area that is not commercial	Out-L(97)	0.11	0.2	0.15	0.11	**0.57**
W-1.5	6421	portion of open space next to lot 116	L(98)	0.11	0.2	0.15	0.11	**0.57**

Watershed A - Unimproved Areas

Subcatchment	Area	Description	Inlet	Slope Coeff.	Extreme Surface Perm Coeff.	Extreme to High Veg. Coeff.	High Surface Coeff.	Weighted C-Value
A-1	523071	open space	a1	0.11	0.2	0.15	0.11	**0.57**
A-2	625193	open space to drainage	a1	0.11	0.2	0.15	0.11	**0.57**

Watershed C - Northern Offsite

Subcatchment	Area	Description	Inlet	Slope Coeff.	Extreme Surface Perm Coeff.	Extreme to High Veg. Coeff.	High Surface Coeff.	Weighted C-Value
OS-C3	844478	offsite northern open space	N-offsite	0.11	0.2	0.15	0.11	**0.57**

Tuscan Ridge
Subcatchment Descriptions and Composite C-Value Determination

Improved Areas C

Surface	C
Roof	0.95
Pavement, Driveways, Streets, Sidewalks	0.9
Landscaped areas	0.25
Roadways	0.8

*From Butte County Standard D-5

ac to sf	43560

$$\text{Composite C} = \frac{\sum (C_{\text{Individual Areas}})(A_{\text{Individual Areas}})}{A_{\text{Total Area}}}$$

IMPROVED AREAS

Surface	C
Roof Surfaces	.95
A.C. or P.C.C. Pavement, patios, driveways, streets, sidewalks	.90
Landscaped areas	.25
Gravel walks, roadways	.80

EXAMPLE: Unimproved

20% Slope	.22
Well drained soil	.05
Fair cover	.07
No ponds	.08
C =	.42

EXAMPLE: Improved

100 acre tract

15 acres roof	@ .95
50 acres A.C. Pave	@ .90
35 acres Landscaped	@ .25

$$C = \frac{(15 \times .95) + (50 \times .90) + (35 \times .25)}{100 \text{ acres}} = 0.68$$

C = .68

Eastern Commercial

Catchment ID	Total Area (ac)	Roof Area (ac)	Landscaped Area (ac)	Paved Area (ac)	Weighted C
EC-C1	3.46	0.86	0.17	2.42	0.88
EC-C2	1.43	0.36	0.07	1.00	0.88

Upper Commercial Catchment

Catchment ID	Total Improved Area (ac)	Total Unimporved Area (ac)	Total Area	Roof Area (ac)	Landscaped Area (ac)	Paved Area (ac)	Improved Weighted C	Unimproved Weighted C	Composite C
UC-C1	5.80	2.44	8.24	1.32	0.26	4.21	0.88	0.57	**0.79**
UC-C3	0.52	0.00	0.52	0.00	0.00	0.52	0.90	0.00	**0.90**
UC-C8	4.81	4.27	9.07	0.00	4.27	0.54	0.32	0.56	**0.43**
UC-C9	0.53	0.00	0.53	0.00	0.00	0.53	0.90	0.00	**0.90**
UC-C11	5.59	0.45	6.04	1.03	0.65	3.91	0.83	0.57	**0.81**
UC-C13	1.40	0.00	1.40	0.35	0.07	0.98	0.88	0.00	**0.88**

Tuscan Ridge
Subcatchment Descriptions and Composite C-Value Determination

Lower Catchment

Catchment ID	Total Improved Area (ac)	Total Unimporved Area (ac)	Total Area	Roof Area (ac)	Landscaped Area (ac)	Paved Area (ac)	Improved Weighted C	Unimproved Weighted C	Composite C
L-C1	1.08	0.00	1.08	0.00	0.48	0.60	0.61	0.00	**0.61**
L-C3	0.27	0.00	0.27	0.00	0.00	0.27	0.90	0.00	**0.90**
L-C6	0.24	0.00	0.24	0.00	0.00	0.24	0.90	0.00	**0.90**
L-C7	0.23	0.00	0.23	0.00	0.00	0.23	0.90	0.00	**0.90**
L-C11	1.14	0.00	1.14	0.21	0.35	0.58	0.71	0.00	**0.71**
L-C12	0.37	0.00	0.37	0.00	0.00	0.37	0.90	0.00	**0.90**
L-C15	3.65	0.00	3.65	0.99	1.66	1.00	0.62	0.00	**0.62**
L-C16	2.80	0.00	2.80	0.66	1.36	0.78	0.60	0.00	**0.60**
L-C17	2.86	0.00	2.86	0.67	1.36	0.83	0.60	0.00	**0.60**
L-C19	0.43	0.00	0.43	0.00	0.03	0.40	0.86	0.00	**0.86**
L-C21	0.03	0.00	0.03	0.00	0.00	0.03	0.90	0.00	**0.90**
L-C22	0.51	0.00	0.51	0.05	0.09	0.36	0.79	0.00	**0.79**
L-C24	1.19	0.00	1.19	0.26	0.53	0.41	0.62	0.00	**0.62**
L-C26	0.20	0.00	0.20	0.00	0.00	0.20	0.90	0.00	**0.90**
L-C27	0.65	0.00	0.65	0.09	0.30	0.26	0.61	0.00	**0.61**
L-C31	0.25	0.00	0.25	0.00	0.00	0.25	0.90	0.00	**0.90**
L-C32	0.20	0.00	0.20	0.02	0.03	0.15	0.80	0.00	**0.80**
L-C34	2.65	0.00	2.65	0.72	1.20	0.73	0.62	0.00	**0.62**
L-C35	0.20	0.00	0.20	0.00	0.07	0.13	0.68	0.00	**0.68**
L-C38	0.29	0.00	0.29	0.00	0.00	0.29	0.90	0.00	**0.90**
L-C39	1.50	0.00	1.50	0.34	0.66	0.51	0.63	0.00	**0.63**
L-C44	1.76	0.00	1.76	0.42	0.70	0.64	0.65	0.00	**0.65**
L-C45	0.67	0.00	0.67	0.09	0.14	0.44	0.77	0.00	**0.77**
L-CB47	11.10	5.41	16.51	2.60	6.78	1.73	0.52	0.57	**0.53**
L-C50	1.75	0.00	1.75	0.46	0.99	0.31	0.55	0.00	**0.55**
L-C51	0.56	0.00	0.56	0.17	0.28	0.11	0.59	0.00	**0.59**
L-C52	0.19	0.00	0.19	0.06	0.09	0.04	0.59	0.00	**0.59**
L-C53	0.27	0.00	0.27	0.08	0.14	0.05	0.59	0.00	**0.59**
L-C54	0.22	0.00	0.22	0.06	0.11	0.04	0.59	0.00	**0.59**
L-C55	0.24	0.00	0.24	0.07	0.12	0.05	0.59	0.00	**0.59**
L-C58	0.69	0.00	0.69	0.00	0.44	0.25	0.48	0.00	**0.48**
L-C59	1.19	0.00	1.19	0.07	0.57	0.54	0.59	0.00	**0.59**
L-C63	0.39	0.00	0.39	0.00	0.00	0.39	0.90	0.00	**0.90**
L-C64	1.02	0.00	1.02	0.20	0.33	0.50	0.70	0.00	**0.70**
L-C67	1.27	0.00	1.27	0.31	0.51	0.45	0.65	0.00	**0.65**
L-C68	0.89	0.00	0.89	0.11	0.18	0.60	0.77	0.00	**0.77**
L-C70	0.96	0.00	0.96	0.24	0.26	0.46	0.74	0.00	**0.74**
L-C72	0.25	0.00	0.25	0.01	0.02	0.22	0.86	0.00	**0.86**
L-C74	1.55	0.00	1.55	0.16	0.90	0.49	0.53	0.00	**0.53**
L-C76	0.15	0.00	0.15	0.00	0.00	0.15	0.90	0.00	**0.90**
L-C77	2.12	0.00	2.12	0.57	0.50	1.05	0.76	0.00	**0.76**
L-C79	0.83	0.00	0.83	0.07	0.22	0.54	0.73	0.00	**0.73**
L-C81	0.11	0.00	0.11	0.00	0.01	0.10	0.86	0.00	**0.86**
L-C83	0.15	0.00	0.15	0.00	0.00	0.15	0.90	0.00	**0.90**
L-C84	2.15	0.00	2.15	0.59	0.51	1.04	0.76	0.00	**0.76**
L-C86	0.33	0.00	0.33	0.03	0.11	0.20	0.70	0.00	**0.70**
L-C88	1.64	0.00	1.64	0.44	0.50	0.70	0.72	0.00	**0.72**
L-C90	0.19	0.00	0.19	0.00	0.00	0.19	0.90	0.00	**0.90**
L-C91	2.31	0.00	2.31	0.55	0.70	1.06	0.72	0.00	**0.72**
L-C94	0.30	0.00	0.30	0.00	0.00	0.30	0.90	0.00	**0.90**
L-C95	0.33	0.00	0.33	0.00	0.00	0.33	0.90	0.00	**0.90**
L-C96	0.30	0.00	0.30	0.00	0.00	0.30	0.90	0.00	**0.90**
L-C98	0.23	0.15	0.38	0.07	0.12	0.05	0.59	0.57	**0.58**
L-C99	0.28	0.00	0.28	0.08	0.14	0.06	0.59	0.00	**0.59**
L-C100	0.25	0.00	0.25	0.07	0.12	0.05	0.59	0.00	**0.59**
L-C101	0.24	0.00	0.24	0.07	0.12	0.05	0.59	0.00	**0.59**

Tuscan Ridge
Subcatchment Descriptions and Composite C-Value Determination

Catchment ID	Total Improved Area (ac)	Total Unimporved Area (ac)	Total Area	Roof Area (ac)	Landscaped Area (ac)	Paved Area (ac)	Improved Weighted C	Unimproved Weighted C	Composite C
L-C102	0.25	0.00	0.25	0.08	0.13	0.05	0.59	0.00	**0.59**
L-C103	0.26	0.00	0.26	0.08	0.13	0.05	0.59	0.00	**0.59**
L-C104	0.26	0.00	0.26	0.08	0.13	0.05	0.59	0.00	**0.59**
L-C105	0.28	0.00	0.28	0.08	0.14	0.06	0.59	0.00	**0.59**
L-C106	0.28	0.00	0.28	0.08	0.14	0.06	0.59	0.00	**0.59**
L-C107	0.59	0.00	0.59	0.13	0.09	0.37	0.82	0.00	**0.82**
L-C109	3.25	0.00	3.25	0.51	0.67	2.08	0.77	0.00	**0.77**
L-C110	0.69	0.00	0.69	0.00	0.00	0.69	0.90	0.00	**0.90**
L-C111	3.01	0.00	3.01	0.54	0.95	1.52	0.71	0.00	**0.71**
L-C112	1.11	0.00	1.11	0.33	0.56	0.22	0.59	0.00	**0.59**
L-C113	0.24	0.00	0.24	0.07	0.12	0.05	0.59	0.00	**0.59**
L-C114	0.19	0.00	0.19	0.06	0.09	0.04	0.59	0.00	**0.59**
L-C115	0.15	0.00	0.15	0.02	0.12	0.01	0.40	0.00	**0.40**
L-C116	0.27	0.00	0.27	0.06	0.17	0.04	0.51	0.00	**0.51**
L-C117	0.24	0.00	0.24	0.05	0.16	0.03	0.47	0.00	**0.47**
L-C118	0.21	0.00	0.21	0.06	0.11	0.04	0.59	0.00	**0.59**
L-C119	0.15	0.00	0.15	0.05	0.08	0.03	0.59	0.00	**0.59**
L-C120	0.15	0.00	0.15	0.04	0.07	0.03	0.59	0.00	**0.59**
L-C121	0.17	0.00	0.17	0.05	0.08	0.03	0.59	0.00	**0.59**
L-C122	0.19	0.00	0.19	0.06	0.10	0.04	0.59	0.00	**0.59**
L-C123	0.19	0.00	0.19	0.00	0.19	0.00	0.25	0.00	**0.25**
L-C124	0.19	0.00	0.19	0.06	0.10	0.04	0.59	0.00	**0.59**
L-C125	0.15	0.00	0.15	0.05	0.08	0.03	0.59	0.00	**0.59**
L-C126	0.16	0.00	0.16	0.05	0.08	0.03	0.59	0.00	**0.59**
L-C127	0.14	0.00	0.14	0.04	0.07	0.03	0.59	0.00	**0.59**
L-C128	0.17	0.00	0.17	0.00	0.17	0.00	0.25	0.00	**0.25**
L-C129	0.23	0.00	0.23	0.07	0.11	0.05	0.59	0.00	**0.59**
L-C130	0.25	0.00	0.25	0.07	0.12	0.05	0.59	0.00	**0.59**
L-C131	0.19	0.00	0.19	0.06	0.09	0.04	0.59	0.00	**0.59**
L-C132	0.25	0.00	0.25	0.00	0.00	0.25	0.90	0.00	**0.90**
L-C97	1.47	6.52	7.99	0.00	0.07	1.03	0.64	0.57	**0.58**

Catchment ID	Total Improved Area (ac)	Total Unimporved Area (ac)	Total Area	Roof Area (ac)	Landscaped Area (ac)	Paved Area (ac)	Imporved Weighted C	Unimproved Weighted C	Composite C
A-1	0.00	26.36	26.36	0.00	0.00	0.00	0.00	0.57	**0.57**

Catchment ID	Total Improved Area (ac)	Total Unimporved Area (ac)	Total Area	Roof Area (ac)	Landscaped Area (ac)	Paved Area (ac)	Imporved Weighted C	Unimproved Weighted C	Composite C
OS-C3	0.00	19.39	19.39	0.00	0.00	0.00	0.00	0.57	**0.57**

Tuscan Ridge
Commercial Catchment Time of Concentration Calculations

Commercial Catchments Tc Calculations
Assumptions:

If not on paved area (commercial lot, pavement, etc.), sheet flow will persist for the first 300 feet. Sheet flow will be determined using the kinematic wave equation. After 300 ft, flow will be shallow concentrated flow. Shallow concentrated flow velocity and travel time is determined using TR-55 figure 3-1 and equation 3-1, respectively. Gutter flow will be treated as open channel flow and solved using Manning's Equation and the gutter dimensions explained on the "Gutter Dimensions" sheet. Per Caltrans Highway Design Manual (2020) recommendations, a minimum Tc of 10 minutes should be used to not underestimate the time of concentration, therefore the Tc in compliance with the recommendation was used in cases where Tc was calculated to be less than 10 minutes. Flow paths were mainly determined using the Flow Path feature on Civil 3D.

Eastern Commercial Catchment

10-year Design Storm

EC-C1

Sheet Flow — *since commercial lot- assuming fully sheet flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	903.92	887.02	0.06	5.14	0.014	2.71	2.71

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
162	887.02	883.94	0.019	2.8	0.96

Tc_{10} Calculated (min) 3.67
Tc_{10} Used (min) 10.00

EC-C2

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	881	863.12	0.06	5.21	0.014	2.65	2.65

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
71	863.12	862.31	0.011	2.1	0.56

Tc_{10} Calculated (min) 3.21
Tc_{10} Used(min) 10.00

Upper Commercial Catchment

UC-C1

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	939.17	916.92	0.07	2.13	0.15	14.71	14.71

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
559	916.92	875.48	0.074	5.5	1.69

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
96.31	875.48	873.71	0.02	4.21	0.38

Tc_{10} Calculated (min) 16.79
Tc_{10} Used(min) 16.79

UC-C3

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
536	894.44	873.72	0.04	6.10	1.46

Tc_{10} Calculated (min) 1.46
Tc_{10} Used(min) 10.00

UC-C8

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	903	888	0.05	1.98	0.15	17.08	17.08

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
200.54	888	877	0.055	4.8	0.70

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
642	877	846.33	0.05	6.78	1.58

Tc_{10} Calculated (min) 19.35
Tc_{10} Used(min) 19.35

UC-C9

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
759	876.9	845.89	0.04	6.27	2.02

Tc_{10} Calculated (min) 2.02
Tc_{10} Used(min) 10.00

UC-C11

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	877.46	858.55	0.06	5.26	0.014	2.6	2.60

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
449.42	858.55	840.21	0.041	4.1	1.83

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
106.21	840.21	838.47	0.02	3.97	0.45

Tc_{10} Calculated (min) 4.87
Tc_{10} Used(min) 10.00

UC-C13

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	878	860.85	0.06	5.16	0.014	2.69	2.69

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
427.2	860.85	846.48	0.034	3.8	1.87

Tc_{10} Calculated (min) 4.57
Tc_{10} Used(min) 10.00

100-year Design Storm

EC-C1

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)
300	903.92	887.02	0.06	8.69	0.014	2.2

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
162	887.02	883.94	0.019	2.8	0.96

Tc_{100} Calculated (min) 2.20
Tc_{100} Used(min) 10.00

EC-C2

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)
300	881	863.12	0.06	8.80	0.014	2.15

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
71	863.12	862.31	0.011	2.1	0.56

Tc_{100} Calculated (min) 2.15
Tc_{100} Used(min) 10.00

Upper Commercial Catchment

UC-C1

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)
300	939.17	916.92	0.07	3.56	0.15	11.98

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
559	916.92	875.48	0.074	5.5	1.69

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
96.31	875.48	873.71	0.02	4.21	0.38

Tc_{100} Calculated (min) 14.06
Tc_{100} Used(min) 14.06

UC-C3

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
536	894.44	873.72	0.04	6.10	1.46

Tc_{100} Calculated (min) 1.46
Tc_{100} Used(min) 10.00

UC-C8

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)
300	903	888	0.05	3.29	0.15	13.92

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
200.54	888	877	0.055	4.8	0.70

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
642	877	846.33	0.05	6.78	1.58

Tc_{100} Calculated (min) 16.19
Tc_{100} Used(min) 16.19

UC-C9

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
759	876.9	845.89	0.04	6.27	2.02

Tc_{100} Calculated (min) 2.02
Tc_{100} Used(min) 10.00

UC-C11

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)
300	877.46	858.55	0.06	8.91	0.014	2.1

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
449.42	858.55	840.21	0.041	4.1	1.83

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
106.21	840.21	838.47	0.02	3.97	0.45

Tc_{100} Calculated (min) 4.37
Tc_{100} Used(min) 10.00

UC-C13

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)
300	878	860.85	0.06	8.74	0.014	2.18

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
427.2	860.85	846.48	0.034	3.8	1.87

Tc_{100} Calculated (min) 4.06
Tc_{100} Used(min) 10.00

Tuscan Ridge
Commercial Catchment Time of Concentration Calculations

Commercial Catchments Tc Calculations
Assumptions:

If not on paved area (commercial lot, pavement, etc.), sheet flow will persist for the first 300 feet. Sheet flow will be determined using the kinematic wave equation. After 300 ft, flow will be shallow concentrated flow. Shallow concentrated flow velocity and travel time is determined using TR-55 figure 3-1 and equation 3-1, respectively. Gutter flow will be treated as open channel flow and solved using Manning's Equation and the gutter dimensions explained on the "Gutter Dimensions" sheet. Per Caltrans Highway Design Manual (2020) recommendations, a minimum Tc of 10 minutes should be used to not underestimate the time of concentration, therefore the Tc in compliance with the recommendation was used in cases where Tc was calculated to be less than 10 minutes. Flow paths were mainly determined using the Flow Path feature on Civil 3D.

Eastern Commercial Catchment

10-year Design Storm

EC-C1

Sheet Flow — *since commercial lot- assuming fully sheet flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	903.92	887.02	0.06	5.14	0.014	2.71	2.71

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
162	887.02	883.94	0.019	2.8	0.96

Tc_{10} Calculated (min) 3.67
Tc_{10} Used (min) 10.00

EC-C2

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	881	863.12	0.06	5.21	0.014	2.65	2.65

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
71	863.12	862.31	0.011	2.1	0.56

Tc_{10} Calculated (min) 3.21
Tc_{10} Used(min) 10.00

Upper Commercial Catchment

UC-C1

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	939.17	916.92	0.07	2.13	0.15	14.71	14.71

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
559	916.92	875.48	0.074	5.5	1.69

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
96.31	875.48	873.71	0.02	4.21	0.38

Tc_{10} Calculated (min) 16.79
Tc_{10} Used(min) 16.79

UC-C3

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
536	894.44	873.72	0.04	6.10	1.46

Tc_{10} Calculated (min) 1.46
Tc_{10} Used(min) 10.00

UC-C8

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	903	888	0.05	1.98	0.15	17.08	17.08

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
200.54	888	877	0.055	4.8	0.70

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
642	877	846.33	0.05	6.78	1.58

Tc_{10} Calculated (min) 19.35
Tc_{10} Used(min) 19.35

UC-C9

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
759	876.9	845.89	0.04	6.27	2.02

Tc_{10} Calculated (min) 2.02
Tc_{10} Used(min) 10.00

UC-C11

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	877.46	858.55	0.06	5.26	0.014	2.6	2.60

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
449.42	858.55	840.21	0.041	4.1	1.83

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
106.21	840.21	838.47	0.02	3.97	0.45

Tc_{10} Calculated (min) 4.87
Tc_{10} Used(min) 10.00

UC-C13

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	878	860.85	0.06	5.16	0.014	2.69	2.69

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
427.2	860.85	846.48	0.034	3.8	1.87

Tc_{10} Calculated (min) 4.57
Tc_{10} Used(min) 10.00

100-year Design Storm

EC-C1

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)
300	903.92	887.02	0.06	8.69	0.014	2.2

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
162	887.02	883.94	0.019	2.8	0.96

Tc_{100} Calculated (min) 2.20
Tc_{100} Used(min) 10.00

EC-C2

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)
300	881	863.12	0.06	8.80	0.014	2.15

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
71	863.12	862.31	0.011	2.1	0.56

Tc_{100} Calculated (min) 2.15
Tc_{100} Used(min) 10.00

Upper Commercial Catchment

UC-C1

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)
300	939.17	916.92	0.07	3.56	0.15	11.98

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
559	916.92	875.48	0.074	5.5	1.69

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
96.31	875.48	873.71	0.02	4.21	0.38

Tc_{100} Calculated (min) 14.06
Tc_{100} Used(min) 14.06

UC-C3

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
536	894.44	873.72	0.04	6.10	1.46

Tc_{100} Calculated (min) 1.46
Tc_{100} Used(min) 10.00

UC-C8

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)
300	903	888	0.05	3.29	0.15	13.92

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
200.54	888	877	0.055	4.8	0.70

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
642	877	846.33	0.05	6.78	1.58

Tc_{100} Calculated (min) 16.19
Tc_{100} Used(min) 16.19

UC-C9

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
759	876.9	845.89	0.04	6.27	2.02

Tc_{100} Calculated (min) 2.02
Tc_{100} Used(min) 10.00

UC-C11

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)
300	877.46	858.55	0.06	8.91	0.014	2.1

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
449.42	858.55	840.21	0.041	4.1	1.83

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
106.21	840.21	838.47	0.02	3.97	0.45

Tc_{100} Calculated (min) 4.37
Tc_{100} Used(min) 10.00

UC-C13

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)
300	878	860.85	0.06	8.74	0.014	2.18

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
427.2	860.85	846.48	0.034	3.8	1.87

Tc_{100} Calculated (min) 4.06
Tc_{100} Used(min) 10.00

Tuscan Ridge
Middle Catchment Time of Concentration Calculations

Lower Catchment Tc Calculations
Assumptions:

If not on paved area (commercial lot, pavement, etc.), sheet flow will persist for the first 300 feet. Sheet flow will be determined using the kinematic wave equation. After 300 ft, flow will be shallow concentrated flow. Shallow concentrated flow velocity and travel time is determined using TR-55 figure 3-1 and equation 3-1, respectively. Gutter flow will be treated as open channel flow and solved using Manning's Equation and the gutter dimensions explained on the "Gutter Dimensions" sheet. Per Caltrans Highway Design Manual (2020) recommendations, rural or undeveloped areas should use a minimum Tc of 10 minutes, therefore the Tc in compliance with the recommendation was used in cases where Tc was calculated to be less than 10 minutes. Flow paths were mainly determined using the Flow Path feature on Civil 3D.

10-year Design Storm

L-C6
Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
341	835.03	821	0.04	6.29	0.90

Tc_{10} Calculated (min) 0.90
Tc_{10} Used(min) 10.00

L-C7
Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
724.85	835	821.15	0.02	4.29	2.82

Tc_{10} Calculated (min) 2.82
Tc_{10} Used(min) 10.00

L-C15
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	812.76	803.03	0.03	2.32	0.08	12.5	12.50

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
337.26	803.03	799.61	0.010	1.6	3.51

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
364.67	799.61	789.38	0.03	5.20	1.17

Tc_{10} Calculated (min) 17.18
Tc_{10} Used(min) 17.18

L-C26
Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
288.85	802.22	788.69	0.05	6.72	0.72

Tc_{10} Calculated (min) 0.72
Tc_{10} Used(min) 10.00

L-C19
Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
474.73	788.7	766.96	0.05	6.64	1.19

Tc_{10} Calculated (min) 1.19
Tc_{10} Used(min) 10.00

L-C21
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
44.73	768.07	766.95	0.03	9.29	0.014	0.87	0.87

Tc_{10} Calculated (min) 0.87
Tc_{10} Used(min) 10.00

L-C17
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
183	805	788.54	0.09	3.45	0.08	5.84	5.84

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
489.27	788.54	769.94	0.04	6.05	1.35

Tc_{10} Calculated (min) 7.19
Tc_{10} Used(min) 10.00

100-year Design Storm

L-C6
Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
341	835.03	821	0.04	6.29	0.90

Tc_{100} Calculated (min) 0.90
Tc_{100} Used(min) 10.00

L-C7
Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
724.85	835	821.15	0.02	4.29	2.82

Tc_{100} Calculated (min) 2.82
Tc_{100} Used(min) 10.00

L-C15
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
300	812.76	803.03	0.03	3.88	0.08	10.18	10.18

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
337.26	803.03	799.61	0.010	1.6	3.51

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
364.67	799.61	789.38	0.03	5.20	1.17

Tc_{100} Calculated (min) 14.86
Tc_{100} Used(min) 14.86

L-C26
Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
288.85	802.22	788.69	0.05	6.72	0.72

Tc_{100} Calculated (min) 0.72
Tc_{100} Used(min) 10.00

L-C19
Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
474.73	788.7	766.96	0.05	6.64	1.19

Tc_{100} Calculated (min) 1.19
Tc_{100} Used(min) 10.00

L-C21
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
44.73	768.07	766.95	0.03	15.88	0.014	0.7	0.70

Tc_{100} Calculated (min) 0.70
Tc_{100} Used(min) 10.00

L-C17
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
183	805	788.54	0.09	5.81	0.08	4.74	4.74

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
489.27	788.54	769.94	0.04	6.05	1.35

Tc_{100} Calculated (min) 6.09
Tc_{100} Used(min) 10.00

Tuscan Ridge
Middle Catchment Time of Concentration Calculations

Lower Catchment Tc Calculations Continued

L-C27
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
35.55	804.07	800.13	0.11	10.10	0.030	0.74	0.74

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
249.93	800.13	788.66	0.05	6.65	0.63

Tc_{10} Calculated (min) 1.36
Tc_{10} Used(min) 10.00

*n = weighted average of pavement and urban residential

L-C27
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
35.55	804.07	800.13	0.11	17.22	0.030	0.6	0.60

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
249.93	800.13	788.66	0.05	6.65	0.63

Tc_{100} Calculated (min) 1.22
Tc_{100} Used(min) 10.00

L-C16
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	804.75	796.56	0.03	2.25	0.08	13.34	13.34

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
219.15	796.56	789.43	0.033	2.9	1.26

Tc_{10} Calculated (min) 14.60
Tc_{10} Used(min) 14.60

L-C16
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
300	804.75	796.56	0.03	3.75	0.08	10.86	10.86

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
219.15	796.56	789.43	0.033	2.9	1.26

Tc_{100} Calculated (min) 12.12
Tc_{100} Used(min) 12.12

L-C3
Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
249.93	842.79	835	0.03	5.48	0.76

Tc_{10} Calculated (min) 0.76
Tc_{10} Used(min) 10.00

L-C3
Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
249.93	842.79	835	0.03	5.48	0.76

Tc_{100} Calculated (min) 0.76
Tc_{100} Used(min) 10.00

L-C1
Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
659.59	850.84	835.03	0.02	4.80	2.29

Tc_{10} Calculated (min) 2.29
Tc_{10} Used(min) 10.00

L-C1
Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
659.59	850.84	835.03	0.02	4.80	2.29

Tc_{100} Calculated (min) 2.29
Tc_{100} Used(min) 10.00

L-C11
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
111.4	821.41	816.56	0.04	7.23	0.014	1.41	1.41

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
439	816.56	803.06	0.03	5.44	1.34

Tc_{10} Calculated (min) 2.75
Tc_{10} Used(min) 10.00

L-C11
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
111.4	821.41	816.56	0.04	12.29	0.014	1.14	1.14

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
439	816.56	803.06	0.03	5.44	1.34

Tc_{100} Calculated (min) 2.48
Tc_{100} Used(min) 10.00

L-C12
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
35	821.41	819.7	0.05	11.68	0.014	0.56	0.56

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
509.67	819.7	803	0.03	5.62	1.51

Tc_{10} Calculated (min) 2.07
Tc_{10} Used (min) 10.00

L-C12
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
35	821.41	819.7	0.05	20.03	0.014	0.45	0.45

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
509.67	819.7	803	0.03	5.62	1.51

Tc_{100} Calculated (min) 1.96
Tc_{100} Used(min) 10.00

L-C22
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
210.75	828.84	819.19	0.05	2.91	0.076	8.1	8.10

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
386.05	819.19	802	0.04	6.55	0.98

Tc_{10} Calculated (min) 9.09
Tc_{10} Used (min) 10.00

*n = weighted average of pavement and urban residential

L-C22
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
210.75	828.84	819.19	0.05	4.88	0.076	6.59	6.59

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
386.05	819.19	802	0.04	6.55	0.98

Tc_{100} Calculated (min) 7.57
Tc_{100} Used(min) 10.00

L-C24
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	816.45	804.36	0.04	2.43	0.08	11.51	11.51

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
76.79	804.36	802.42	0.025	2.6	0.49

Tc_{10} Calculated (min) 12.00
Tc_{10} Used (min) 12.00

L-C24
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
300	816.45	804.36	0.04	4.06	0.08	9.37	9.37

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
76.79	804.36	802.42	0.025	2.6	0.49

Tc_{100} Calculated (min) 9.86
Tc_{100} Used(min) 10.00

Tuscan Ridge
Middle Catchment Time of Concentration Calculations

Lower Catchment Tc Calculations Continued

10-year Design Storm

L-C68

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)	
300	753.5	740.95	0.04	2.45	0.080	11.28	11.28	

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
5.04	740.95	740.7	0.052	3.6	0.02

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
157.9	740.7	733.8	0.04	6.49	0.41

Tc_{10} Calculated (min) 11.7
Tc_{10} Used (min) 11.71

L-C94

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
431.4	708.5	688.7	0.05	6.66	1.08

Tc_{10} Calculated (min) 1.1
Tc_{10} Used (min) 10.00

L-C70

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)	
50	751.0	749.21	0.34	14.91	0.014	0.35	0.35	

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
396.7	749.2	733.7	0.04	6.13	1.08

Tc_{10} Calculated (min) 1.4
Tc_{10} Used (min) 10.00

L-C76

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
223.73	733.78	720	0.06	7.70	0.48

Tc_{10} Calculated (min) 0.48
Tc_{10} Used (min) 10.00

L-C77

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)	
126.42	749	741.7	0.06	3.82	0.072	4.8	4.80	*over lots and curb
76.79	727.38	723.17	0.05	8.73	0.014	0.98	0.98	*over pavement

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)	
329.58	741.7	727.38	0.04	6.47	0.85	*first section
57.81	723.17	720	0.05	7.27	0.13	*second section

Tc_{10} Calculated (min) 6.75
Tc_{10} Used (min) 10.00

L-C83

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
222.15	720	713.21	0.03	5.42	0.68

Tc_{10} Calculated (min) 0.68
Tc_{10} Used (min) 10.00

L-C84

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
254	737.3	728.62	0.09	3.16	0.074	6.9	6.90

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
279.7	728.6	713.2	0.06	7.29	0.64

Tc_{10} Calculated (min) 7.5
Tc_{10} Used (min) 10.00

L-C90

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
279.6	713.2	708.6	0.02	4.00	1.16

Tc_{10} Calculated (min) 1.2
Tc_{10} Used (min) 10.00

L-C91

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)	
106.35	735.93	727.4	0.08	4.48	0.067	3.54	3.54	*over lots and curb
88.39	712.05	710.6	0.02	6.54	0.014	1.71	1.71	*over pavement

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)	
352.34	727.4	712.05	0.04	6.48	0.91	*first section
118.83	710.6	708.59	0.02	4.04	0.49	*second section

Tc_{10} Calculated (min) 6.64
Tc_{10} Used (min) 10.00

L-C95

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
70.8	707.43	707.39	0.0006	3.67	0.014	5.18	5.18

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
372.85	708.6	689.68	0.05	6.99	0.89

Tc_{10} Calculated (min) 6.07
Tc_{10} Used (min) 10.00

L-C31

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
493.8	767.0	757.0	0.02	4.42	1.86

Tc_{10} Calculated (min) 1.9
Tc_{10} Used (min) 10.00

100-year Design Storm

L-C68

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
300	753.5	740.95	0.04	4.10	0.080	9.18	9.18

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
5.04	740.95	740.7	0.052	3.6	0.02

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
157.9	740.7	733.8	0.04	6.49	0.41

Tc100 Calculated (min) 9.6
Tc100 Used (min) 10.00

L-C94

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
431.4	708.5	688.7	0.05	6.66	1.08

Tc100 Calculated (min) 1.1
Tc100 Used (min) 10.00

L-C70

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
50	751.0	749.21	0.34	25.71	0.014	0.28	0.28

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
396.7	749.2	733.7	0.04	6.13	1.08

Tc100 Calculated (min) 1.4
Tc100 Used (min) 10.00

L-C76

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
223.73	733.78	720	0.06	7.70	0.48

Tc100 Calculated (min) 0.48
Tc100 Used (min) 10.00

L-C77

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)	
126.42	749	741.7	0.06	6.44	0.072	3.89	3.89	
76.79	727.38	723.17	0.05	14.90	0.014	0.79	0.79	

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)	
329.58	741.7	727.38	0.04	6.47	0.85	*first section
57.81	723.17	720	0.05	7.27	0.13	*second section

Tc100 Calculated (min) 5.66
Tc100 Used (min) 10.00

L-C83

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
222.15	720	713.21	0.03	5.42	0.68

Tc100 Calculated (min) 0.68
Tc100 Used (min) 10.00

L-C84

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
254	737.3	728.62	0.09	5.31	0.074	5.61	5.61

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
279.7	728.6	713.2	0.06	7.29	0.64

Tc100 Calculated (min) 6.3
Tc100 Used (min) 10.00

L-C90

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
279.6	713.2	708.6	0.02	4.00	1.16

Tc100 Calculated (min) 1.2
Tc100 Used (min) 10.00

L-C91

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
106.35	735.93	727.4	0.08	7.56	0.067	2.87	2.87
88.39	712.05	710.6	0.02	11.07	0.014	1.39	1.39

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)	
352.34	727.4	712.05	0.04	6.48	0.91	*first section
118.83	710.6	708.59	0.02	4.04	0.49	*second section

Tc100 Calculated (min) 5.65
Tc100 Used (min) 10.00

L-C95

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
70.8	707.43	707.39	0.0006	6.18	0.014	4.21	4.21

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
372.85	708.6	689.68	0.05	6.99	0.89

Tc100 Calculated (min) 5.10
Tc100 Used (min) 10.00

L-C31

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
493.8	767.0	757.0	0.02	4.42	1.86

Tc100 Calculated (min) 1.9
Tc100 Used (min) 10.00

Tuscan Ridge
Middle Catchment Time of Concentration Calculations

Lower Catchment Tc Calculations Continued

10-year Design Storm

L-C50

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300	783.3	775.8	0.02	2.20	0.08	13.83	13.83

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
268.69	775.8	766.7	0.034	3	1.49

Tc_{10} Calculated (min) 15.33
Tc_{10} Used (min) 15.33

L-C53

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
165.4	764.0	758.2	0.03	2.98	0.08	7.74	7.74

Tc_{10} Calculated (min) 7.74
Tc_{10} Used (min) 10.00

L-C59

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)	
300	767.37	760.81	0.02	2.15	0.08	14.51	14.51	*upper portion of
23.1	752.7	752.1	0.02	12.02	0.014	0.53	0.53	*small section of
276.63	749.9	742.28	0.028	4.62	0.014	3.34	3.34	*pavement - note according to AutoCAD generated

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)	
313.2	760.81	752.71	0.026	2.6	2.01	*portion of longer
82.31	752.1	749.9	0.027	2.7	0.51	*round-a-bout

Tc_{10} Calculated (min) 20.9
Tc_{10} Used (min) 20.90

L-C58

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)	
300	767.36	760.16	0.02	2.19	0.08	14.01	14.01	*upper portion of
22.94	752.72	752.16	0.02	12.02	0.014	0.53	0.53	*small section of
20.29	749.73	748.84	0.04	14.10	0.014	0.39	0.39	*small section of

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)	
312.89	760.16	752.72	0.024	2.5	2.09	*portion of longer
84.01	752.16	749.73	0.029	2.75	0.51	*round-a-bout

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
231.93	748.84	742.34	0.03	5.19	0.74

Tc_{10} Calculated (min) 18.27
Tc_{10} Used (min) 18.27

L-C32

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)	
84.5	770.77	767.62	0.04	3.93	0.08	4.54	4.54	*round-a-bout
22.58	767.62	767.56	0.003	7.82	0.014	1.21	1.21	*pavement

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
442.25	767.56	756.95	0.02	4.81	1.53

Tc_{10} Calculated (min) 7.29
Tc_{10} Used (min) 10.00

L-C34

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)	
255.11	792	766.65	0.0994	3.13	0.077	7.06	7.06	*n = weighted averag

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
406.28	766.65	756.95	0.02	4.79	1.41

Tc_{10} Calculated (min) 8.47
Tc_{10} Used (min) 10.00

L-C35

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)	
75.61	770.53	768.16	0.03	3.97	0.08	4.46	4.46	*round-a-bout
23.42	768.16	767.49	0.03	12.26	0.014	0.51	0.51	*pavement

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
439.75	767.49	757	0.02	4.79	1.53

Tc_{10} Calculated (min) 6.49
Tc_{10} Used (min) 10.00

L-C55

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
135.0	760.9	753.3	0.06	3.54	0.08	5.55	5.55

Tc_{10} Calculated (min) 5.55
Tc_{10} Used (min) 10.00

L-C54

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
137.4	762.5	755.6	0.05	3.45	0.08	5.86	5.86

Tc_{10} Calculated (min) 5.86
Tc_{10} Used (min) 10.00

L-C96

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
119.5	688.9	681.4	0.06	7.54	0.014	1.3	1.30

Tc_{10} Calculated (min) 1.30
Tc_{10} Used (min) 10.00

100-year Design Storm

L-C50

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
300	783.3	775.8	0.02	3.68	0.08	11.27	11.27

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
268.69	775.82	766.7	0.034	3	1.49

Tc100 Calculated (min) 12.76
Tc100 Used (min) 12.76

L-C53

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
165.4	764.0	758.2	0.03	5.00	0.08	6.29	6.29

Tc100 Calculated (min) 6.29
Tc100 Used (min) 10.00

L-C59

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
300	767.37	760.81	0.02	3.59	0.08	11.82	11.82
23.1	752.7	752.1	0.02	20.52	0.014	0.43	0.43
276.63	749.9	742.28	0.028	7.79	0.014	2.71	2.71

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
313.2	760.81	752.71	0.026	2.6	2.01
82.31	752.1	749.9	0.027	2.7	0.51

Tc100 Calculated (min) 17.5
Tc100 Used (min) 17.47

L-C58

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
300	767.36	760.16	0.02	3.66	0.08	11.41	11.41
22.94	752.72	752.16	0.02	20.52	0.014	0.43	0.43
20.29	749.73	748.84	0.04	24.37	0.014	0.31	0.31

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
312.89	760.16	752.72	0.024	2.5	2.09
84.01	752.16	749.73	0.029	2.75	0.51

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
231.93	748.84	742.34	0.03	5.19	0.74

Tc100 Calculated (min) 15.49
Tc100 Used (min) 15.49

L-C32

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
84.5	770.77	767.62	0.04	6.63	0.08	3.68	3.68
22.58	767.62	767.56	0.003	13.30	0.014	0.98	0.98

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
442.25	767.56	756.95	0.02	4.81	1.53

Tc100 Calculated (min) 6.20
Tc100 Used (min) 10.00

L-C34

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
255.11	792	766.65	0.0994	5.25	0.077	5.74	5.74

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
406.28	766.65	756.95	0.02	4.79	1.41

Tc100 Calculated (min) 7.15
Tc100 Used (min) 10.00

L-C35

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
75.61	770.53	768.16	0.03	6.69	0.08	3.62	3.62
23.42	768.16	767.49	0.03	21.04	0.014	0.41	0.41

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
439.75	767.49	757	0.02	4.79	1.53

Tc100 Calculated (min) 5.56
Tc100 Used (min) 10.00

L-C55

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
135.0	760.9	753.3	0.06	5.96	0.08	4.51	4.51

Tc100 Calculated (min) 4.51
Tc100 Used (min) 10.00

L-C54

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
137.4	762.5	755.6	0.05	5.79	0.08	4.76	4.76

Tc100 Calculated (min) 4.76
Tc100 Used (min) 10.00

L-C96

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
119.5	688.9	681.4	0.06	12.83	0.014	1.05	1.05

Tc100 Calculated (min) 1.05
Tc100 Used (min) 10.00

Tuscan Ridge
Middle Catchment Time of Concentration Calculations

Lower Catchment Tc Calculations Continued

10-year Design Storm

L-C97

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
300.0	755.7	744.5	0.04	4.75	0.014	3.16	3.16

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
1449.10	744.46	677	0.047	3.5	6.90

Tc_{10} Calculated (min) 10.06
Tc_{10} Used (min) 10.06

L-C51

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
198.0	769.9	763.0	0.03	2.77	0.08	8.9	8.90

Tc_{10} Calculated (min) 8.90
Tc_{10} Used (min) 10.00

L-C52

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
158.1	765.6	759.8	0.04	3.07	0.08	7.32	7.32

Tc_{10} Calculated (min) 7.32
Tc_{10} Used (min) 10.00

L-C67

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
126.22	726.03	720.39	0.0447	3.71	0.068	5.08	5.08

*n = weighted averag

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
338.19	720.39	709.36	0.03	5.60	1.01

Tc_{10} Calculated (min) 6.08
Tc_{10} Used (min) 10.00

L-C132

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
367.85	721.25	709.19	0.03	5.62	1.09

Tc_{10} Calculated (min) 1.09
Tc_{10} Used (min) 10.00

L-C88

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
46.64	750.33	748.8	0.0328	9.64	0.014	0.81	0.81

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
566.08	748.8	728.76	0.04	5.84	1.62

Tc_{10} Calculated (min) 2.43
Tc_{10} Used (min) 10.00

L-C86

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
87.6	736.55	734.4	0.02	3.89	0.065	4.65	4.65

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
136.67	734.4	728.68	0.04	6.35	0.36

Tc_{10} Calculated (min) 5.01
Tc_{10} Used (min) 10.00

L-C79

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
79.1	747.29	744.74	0.01	3.65	0.014	5.24	5.24

*pavement

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
285.64	756.98	747.29	0.03	5.72	0.83
286.35	744.74	735	0.03	5.72	0.83

*upper portion of
*lower portion of gut

Tc_{10} Calculated (min) 6.91
Tc_{10} Used (min) 10.00

L-C81

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
31.1	738.7	737.26	0.05	12.02	0.014	0.53	0.53

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
99.64	737.26	734.84	0.02	4.84	0.34

Tc_{10} Calculated (min) 0.87
Tc_{10} Used (min) 10.00

L-C39

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
422.79	791.91	775.96	0.04	2.13	0.076	14.76	14.76

Tc_{10} Calculated (min) 14.76
Tc_{10} Used (min) 14.76

L-C38

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
419.76	789.39	776	0.03	5.54	1.26

Tc_{10} Calculated (min) 1.26
Tc_{10} Used (min) 10.00

100-year Design Storm

L-C97

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
300.0	755.7	744.5	0.04	8.03	0.014	2.56	2.56

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
1449.10	744.46	677	0.047	3.5	6.90

Tc100 Calculated (min) 9.5
Tc100 Used (min) 10.00

L-C51

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
198.0	769.9	763.0	0.03	4.64	0.08	7.25	7.25

Tc100 Calculated (min) 7.25
Tc100 Used (min) 10.00

L-C52

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
158.1	765.6	759.8	0.04	5.15	0.08	5.95	5.95

Tc100 Calculated (min) 5.95
Tc100 Used (min) 10.00

L-C67

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
126.22	726.03	720.39	0.0447	6.25	0.068	4.12	4.12

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
338.19	720.39	709.36	0.03	5.60	1.01

Tc100 Calculated (min) 5.13
Tc100 Used (min) 10.00

L-C132

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
367.85	721.25	709.19	0.03	5.62	1.09

Tc100 Calculated (min) 1.09
Tc100 Used (min) 10.00

L-C88

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
46.64	750.33	748.8	0.0328	16.51	0.014	0.65	0.65

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
566.08	748.8	728.76	0.04	5.84	1.62

Tc100 Calculated (min) 2.27
Tc100 Used (min) 10.00

L-C86

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
87.6	736.55	734.4	0.02	6.54	0.065	3.78	3.78

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
136.67	734.4	728.68	0.04	6.35	0.36

Tc100 Calculated (min) 4.14
Tc100 Used (min) 10.00

L-C79

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
79.1	747.29	744.74	0.01	6.14	0.014	4.26	4.26

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
285.64	756.98	747.29	0.03	5.72	0.83
286.35	744.74	735	0.03	5.72	0.83

Tc100 Calculated (min) 5.92
Tc100 Used (min) 10.00

L-C81

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
31.1	738.7	737.26	0.05	20.77	0.014	0.42	0.42

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
99.64	737.26	734.84	0.02	4.84	0.34

Tc100 Calculated (min) 0.77
Tc100 Used (min) 10.00

L-C39

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
422.79	791.91	775.96	0.04	3.56	0.076	12.03	12.03

Tc100 Calculated (min) 12.03
Tc100 Used (min) 12.03

L-C38

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
419.76	789.39	776	0.03	5.54	1.26

Tc100 Calculated (min) 1.26
Tc100 Used (min) 10.00

Tuscan Ridge
Middle Catchment Time of Concentration Calculations

:alculations Continued

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
788.95	777.34	0.04	2.41	0.08	11.69	11.69

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
777.34	772.68	0.043	4.2	0.43

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
772.68	754.97	0.04	6.25	1.16

13.29	
13.29	

100-year Design Storm

L-C44

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
300	788.95	777.34	0.04	4.02	0.08	9.52	9.52

Shallow Concentrated

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
109.52	777.34	772.68	0.043	4.2	0.43

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
436.57	772.68	754.97	0.04	6.25	1.16

Tc100 Calculated (min)	11.12
Tc100 Used (min)	11.12

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
772.23	771.03	0.01	2.12	0.073	14.9	14.90

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
771.03	755.02	0.04	5.90	1.25

16.15	
16.15	

L-C45

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
186.03	772.23	771.03	0.01	3.54	0.073	12.14	12.14

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
442.94	771.03	755.02	0.04	5.90	1.25

Tc100 Calculated (min)	13.39
Tc100 Used (min)	13.39

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
751.06	750.04	0.03	10.99	0.014	0.63	0.63

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
750.04	743.02	0.03	5.17	0.82

1.45	
10.00	

L-C72

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
32.54	751.06	750.04	0.03	18.76	0.014	0.51	0.51

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
253.31	750.04	743.02	0.03	5.17	0.82

Tc100 Calculated (min)	1.32
Tc100 Used (min)	10.00

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)	
747.41	745.19	0.03	7.66	0.014	1.26	1.26	*pavement

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)	
754.12	747.41	0.02	3.92	1.78	*upper portion of
745.19	742.88	0.03	5.11	0.28	*lower gutter

3.33	
10.00	

L-C74

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
78.06	747.41	745.19	0.03	13.03	0.014	1.02	1.02

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
419.85	754.12	747.41	0.02	3.92	1.78
85.06	745.19	742.88	0.03	5.11	0.28

Tc100 Calculated (min)	3.08
Tc100 Used (min)	10.00

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
742.34	721.4	0.04	6.13	1.46

1.46	
10.00	

L-C64

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
536.04	742.34	721.4	0.04	6.13	1.46

Tc100 Calculated (min)	1.46
Tc100 Used (min)	10.00

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
742.28	721.24	0.04	5.97	1.59

1.59	
10.00	

L-C63

Gutter Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
569.24	742.28	721.24	0.04	5.97	1.59

Tc100 Calculated (min)	1.59
Tc100 Used (min)	10.00

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
842.85	830.98	0.03	1.98	0.080	17.03	17.03

swale)

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)	
830.98	769.35	0.03	4.45	7.09	*see bioswale sheet

24.12	
24.12	

L-CB47

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
420.88	842.85	830.98	0.03	3.30	0.080	13.88	13.88

Open Channel Flow (Bioswale)

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
1891.42	830.98	769.35	0.03	5.07	6.22

Tc100 Calculated (min)	20.10
Tc100 Used (min)	20.10

100-year Design Storm

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
828.29	825.51	0.02	2.42	0.08	11.6	11.60

11.60	
11.60	

L-C98

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
185.08	828.29	825.51	0.02	4.04	0.08	9.45	9.45

Tc_{100} Calculated (min)	9.45
Tc_{100} Used (min)	10.00

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
825.3	821.0	0.03	2.80	0.08	8.72	8.72

8.72	
10.00	

L-C99

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
166.2	825.3	821.0	0.03	4.69	0.08	7.1	7.10

Tc_{100} Calculated (min)	7.10
Tc_{100} Used (min)	10.00

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
820.7	816.0	0.04	3.29	0.08	6.4	6.40

6.4	
10.00	

L-C100

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
130.7	820.7	816.0	0.04	5.53	0.08	5.2	5.20

Tc_{100} Calculated (min)	5.2
Tc_{100} Used (min)	10.00

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
817.7	812.0	0.04	3.23	0.08	6.63	6.63

6.6	
10.00	

L-C101

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
143.5	817.7	812.0	0.04	5.43	0.08	5.39	5.39

Tc_{100} Calculated (min)	5.4
Tc_{100} Used (min)	10.00

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
815.2	807.5	0.05	3.19	0.08	6.78	6.78

6.8	
10.00	

L-C102

Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
162.2	815.2	807.5	0.05	5.36	0.08	5.51	5.51

Tc_{100} Calculated (min)	5.5
Tc_{100} Used (min)	10.00

Tuscan Ridge
Middle Catchment Time of Concentration Calculations

Calculations Continued

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
811.6	803.8	0.05	3.24	0.08	6.58	6.58
6.6						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
807.7	799.7	0.05	3.26	0.08	6.53	6.53
6.5						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
803.3	796.6	0.04	3.15	0.08	6.95	6.95
7.0						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
799.0	791.0	0.05	3.12	0.08	7.1	7.10
7.1						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
794.4	784.9	0.03	4.87	0.014	3.01	3.01
3.0						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
786.9	777.5	0.03	4.59	0.014	3.38	3.38

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
777.46	759.41	0.049	4.5	1.35

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
759.4	758.8	0.01	2.84	0.44
5.2				
10.00				

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
766.9	758.8	0.02	4.27	1.69
1.7				
10.00				

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
766.7	748.4	0.06	5.23	0.014	2.63	2.63

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
748.44	733.8	0.044	4.2	1.33
4.0				
10.00				

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
753.4	740.9	0.04	2.44	0.08	11.39	11.39

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
740.91	728.2	0.059	3.8	0.95
12.3				
12.34				

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
738.7	724.9	0.08	3.48	0.08	5.75	5.75
5.8						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
735.0	721.9	0.08	3.40	0.08	6	6.00
6.0						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
730.9	718.1	0.07	3.37	0.08	6.11	6.11
6.1						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
729.9	715.3	0.08	3.35	0.08	6.2	6.20
6.2						
10.00						

100-year Design Storm

L-C103

Sheet Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
158.4	811.6	803.8	0.05	5.45	0.08	5.35	5.35
Tc_{100} Calculated (min)	5.3						
Tc_{100} Used (min)	10.00						

L-C104

Sheet Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
158.9	807.7	799.7	0.05	5.47	0.08	5.31	5.31
Tc_{100} Calculated (min)	5.3						
Tc_{100} Used (min)	10.00						

L-C105

Sheet Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
158.1	803.3	796.6	0.04	5.29	0.08	5.65	5.65
Tc_{100} Calculated (min)	5.7						
Tc_{100} Used (min)	10.00						

L-C106

Sheet Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
170.9	799.0	791.0	0.05	5.24	0.08	5.77	5.77
Tc_{100} Calculated (min)	5.8						
Tc_{100} Used (min)	10.00						

L-C107

Sheet Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
271.6	794.4	784.9	0.03	8.23	0.014	2.44	2.44
Tc_{100} Calculated (min)	2.4						
Tc_{100} Used (min)	10.00						

L-C109

Sheet Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
300	786.9	777.5	0.03	7.75	0.014	2.74	2.74

Shallow Concentrated Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
364.91	777.46	759.41	0.049	4.5	1.35

Gutter Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
75.2	759.4	758.8	0.01	2.84	0.44
Tc_{100} Calculated (min)	4.5				
Tc_{100} Used (min)	10.00				

L-C110

Gutter Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
431.3	766.9	758.8	0.02	4.27	1.69
Tc_{100} Calculated (min)	1.7				
Tc_{100} Used (min)	10.00				

L-C111

Sheet Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
300	766.7	748.4	0.06	8.84	0.014	2.13	2.13

Shallow Concentrated Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
334.50	748.44	733.8	0.044	4.2	1.33
Tc_{100} Calculated (min)	3.5				
Tc_{100} Used (min)	10.00				

L-C112

Sheet Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
300.0	753.4	740.9	0.04	4.08	0.08	9.27	9.27

Shallow Concentrated Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	Average Velocity (ft/s)	Tt (min)
217.00	740.91	728.2	0.059	3.8	0.95
Tc_{100} Calculated (min)	10.2				
Tc_{100} Used (min)	10.22				

L-C113

Sheet Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
170.0	738.7	724.9	0.08	5.84	0.08	4.68	4.68
Tc_{100} Calculated (min)	4.7						
Tc_{100} Used (min)	10.00						

L-C114

Sheet Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
173.5	735.0	721.9	0.08	5.72	0.08	4.87	4.87
Tc_{100} Calculated (min)	4.9						
Tc_{100} Used (min)	10.00						

L-C115

Sheet Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
175.0	730.9	718.1	0.07	5.67	0.08	4.96	4.96
Tc_{100} Calculated (min)	5.0						
Tc_{100} Used (min)	10.00						

L-C116

Sheet Flow Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
185.1	729.9	715.3	0.08	5.62	0.08	5.04	5.04
Tc_{100} Calculated (min)	5.0						
Tc_{100} Used (min)	10.00						

Tuscan Ridge
Middle Catchment Time of Concentration Calculations

:alculations Continued

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
723.8	707.8	0.10	3.72	0.08	5.05	5.05
5.1						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
718.9	705.4	0.11	4.16	0.08	4.07	4.07
4.1						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
716.9	706.1	0.09	4.03	0.08	4.33	4.33
4.3						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
714.9	706.4	0.08	4.09	0.08	4.21	4.21
4.2						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
713.1	699.3	0.12	4.40	0.08	3.66	3.66
3.7						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
712.7	698.4	0.10	3.86	0.08	4.7	4.70
4.7						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
711.4	703.0	0.06	3.68	0.08	5.17	5.17
5.2						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
710.4	700.7	0.08	3.87	0.08	4.69	4.69
4.7						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
709.8	697.1	0.10	4.14	0.08	4.11	4.11
4.1						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
708.8	699.5	0.08	3.95	0.08	4.5	4.50
4.5						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
707.0	696.3	0.08	3.93	0.08	4.56	4.56
4.6						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
706.7	692.2	0.10	3.79	0.08	4.88	4.88
4.9						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
705.3	690.1	0.09	3.67	0.08	5.2	5.20
5.2						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
701.1	689.4	0.09	3.95	0.08	4.5	4.50
4.5						
10.00						

Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
697.0	677.3	0.17	4.72	0.08	3.2	3.20
3.2						
10.00						

100-year Design Storm

L-C117
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
159.7	723.8	707.8	0.10	6.26	0.08	4.11	4.11

Tc_{100} Calculated (min) 4.1
Tc_{100} Used (min) 10.00

L-C118
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
124.9	718.9	705.4	0.11	7.02	0.08	3.3	3.30

Tc_{100} Calculated (min) 3.3
Tc_{100} Used (min) 10.00

L-C119
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
122.2	716.9	706.1	0.09	6.79	0.08	3.52	3.52

Tc_{100} Calculated (min) 3.5
Tc_{100} Used (min) 10.00

L-C120
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
110.2	714.9	706.4	0.08	6.89	0.08	3.42	3.42

Tc_{100} Calculated (min) 3.4
Tc_{100} Used (min) 10.00

L-C121
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
114.3	713.1	699.3	0.12	7.42	0.08	2.97	2.97

Tc_{100} Calculated (min) 3.0
Tc_{100} Used (min) 10.00

L-C122
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
144.3	712.7	698.4	0.10	6.51	0.08	3.81	3.81

Tc_{100} Calculated (min) 3.8
Tc_{100} Used (min) 10.00

L-C123
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
131.2	711.4	703.0	0.06	6.19	0.08	4.2	4.20

Tc_{100} Calculated (min) 4.2
Tc_{100} Used (min) 10.00

L-C124
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
126.7	710.4	700.7	0.08	6.51	0.08	3.81	3.81

Tc_{100} Calculated (min) 3.8
Tc_{100} Used (min) 10.00

L-C125
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
123.4	709.8	697.1	0.10	6.98	0.08	3.34	3.34

Tc_{100} Calculated (min) 3.3
Tc_{100} Used (min) 10.00

L-C126
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
120.3	708.8	699.5	0.08	6.66	0.08	3.65	3.65

Tc_{100} Calculated (min) 3.7
Tc_{100} Used (min) 10.00

L-C127
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
127.7	707.0	696.3	0.08	6.61	0.08	3.7	3.70

Tc_{100} Calculated (min) 3.7
Tc_{100} Used (min) 10.00

L-C128
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
149.8	706.7	692.2	0.10	6.38	0.08	3.96	3.96

Tc_{100} Calculated (min) 4.0
Tc_{100} Used (min) 10.00

L-C129
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
161.0	705.3	690.1	0.09	6.17	0.08	4.22	4.22

Tc_{100} Calculated (min) 4.2
Tc_{100} Used (min) 10.00

L-C130
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
130.2	701.1	689.4	0.09	6.65	0.08	3.66	3.66

Tc_{100} Calculated (min) 3.7
Tc_{100} Used (min) 10.00

L-C131
Sheet Flow

Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
114.3	697.0	677.3	0.17	7.96	0.08	2.6	2.60

Tc_{100} Calculated (min) 2.6
Tc_{100} Used (min) 10.00

Tuscan Ridge
Bioswale initial sizing for time of concentration calculations.

Bioswale (LB-C162) Sizing

The bioswale runs along the 50' trail easement behind the eastern most lots that drain to the back and connects to the Lower Catchment pipe system. For time of concentration sizing purposes, it was modeled as a trapezoidal channel. These are not final dimensions, only approximations so that open channel flow velocity and subsequently time of concentration could be determined.

	A (ac)	roof	landscape	pavement	C	I (in/hr)	Q (cfs)
L-B1	6.10	1.48	3.63	0.99	0.53	1.98	6.34
L-B2	5.00	1.11	3.15	0.74	0.50	1.51	3.80
							10.15

Sheet Flow

Catchment	Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{10} (in/hr)	n	T(guess)	Tt (min)
L-B1	420.88	842.85	830.98	0.03	1.98	0.080	17.03	17.03
L-B2	612.66	799.07	789.66	0.02	1.51	0.08	28.49	28.49

	A (ac)	roof	landscape	pavement	C	I (in/hr)	Q (cfs)
L-B1	6.10	1.48	3.63	0.99	0.53	3.30	10.58
L-B2	5.00	1.11	3.15	0.74	0.50	2.51	6.32
							16.90

Catchment	Length (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Slope (ft/ft)	I_{100} (in/hr)	n	T(guess)	Tt (min)
L-B1	420.88	842.85	830.98	0.03	3.30	0.080	13.88	13.88
L-B2	612.66	799.07	789.66	0.02	2.51	0.08	23.26	23.26

n= 0.03 earth channel from butte county standards

A=((a+b)h)/2

where: a=top width of wetted perimeter
b=bottom width of wetted perimeter
h= assumed depth
d=side slope length

assumed depth=	0.4	ft	=h
b=	6	ft	
a=	14	ft	
A=	2.72	sf	
d=	0.89		
Wetted perimeter=	=2d+b=	7.79	ft
Hydraulic Radius=R=	A/P=	0.35	ft
slope of flow path=		0.033	ft/ft
V=	4.45	ft/sec	
Q=	12.09	cfs	*close to sum of peak flows from contributing areas

assumed depth=	0.5	ft	=h
b=	6	ft	
a=	14	ft	
A=	3.5	sf	
d=	1.12		
Wetted perimeter=	=2d+b=	8.24	ft
Hydraulic Radius=R=	A/P=	0.42	ft
slope of flow path=		0.033	ft/ft
V=	5.07	ft/sec	
Q=	17.74	cfs	

Tuscan Ridge
Detention Basin and Orifice Sizing

Detention Basin Sizing

Detention basins were placed in areas previously called out as "proposed detention basin location" on the Tentative Map, or open space areas. Basins were designed to be trapezoidal with 3:1 side slopes. An excel solver solution was used by setting the "storage volume" cell as the target cell and driving it to zero. The estimated storage volume needed was determined by taking the total runoff volume at each outlet for the post-development 10-yr and 100-yr storm as determined by the SSA model. Per county requirments, a freeboard of 1.5 ft was designed for the 10-yr storm and zero freeboard for the 100-yr storm. Since the Eastern Commercial Catchment's discharge point (Discharge Point C) had a decrease in runoff from pre-development conditions, no detention basin for runoff mitigation was needed.

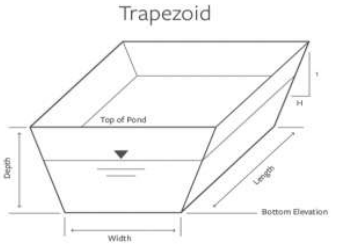
Color Key
Given/User Input
Changing Cell
Target Cell
Answer Cell

Upper Commercial 10-yr

Storage Needed	33792 ft^3	*Total runoff volume at outlet for 10-yr storm from SSA results
Max top length	120 ft	*Limit for top length as determined based on available land
Max top width	60 ft	*Limit for top width as determined based on available land
Max depth	5.5 ft	
Z	3	*3 to 1 side slopes
Storage Volume	0.0 ft^3	*This is the solver objective cell- the volume generated by the changing cells (below in blue) is subtracted from the storage needed cell and the solver solution is driven to zero to optimize the dimensions.
D	4.0 ft	*constraint: D <= (Max depth -1)
L	112 ft	*constraint: L <= Max top length
W	56 ft	*constraint: W <= Max top width
Total Capacity	51921 ft^3	*This volume uses the optimized length and width and the total depth (5.5ft)

Lower 10-yr

Storage Needed	89094 ft^3	*Total runoff volume at outlet for 10-yr storm from SSA results
Max top length	130 ft	*Limit for top length as determined based on available land
Max top width	87 ft	*Limit for top width as determined based on available land
Max depth	7.5 ft	*topography naturally allows for deeper basin
Z	3	*3 to 1 side slopes
Storage Volume	0.0 ft^3	*This is the solver objective cell- the volume generated by the changing cells (below in blue) is subtracted from the storage needed cell and the solver solution is driven to zero to optimize the dimensions.
D	6.0 ft	*constraint: D <= (Max depth -1)
L	126 ft	*constraint: L <= Max top length
W	84 ft	*constraint: W <= Max top width
Total Capacity	120289 ft^3	*This volume uses the optimized length and width and the total depth (7.5ft)



Trapezoidal shaped ponds are computed by:

$$V = LWD + (L+W)ZD^2 + \frac{4}{3}Z^2D^3$$

Where:

V = storage volume at stage D
D = stage or depth
L = bottom length
W = bottom width
Z = side slope, (Z:1) (horizontal to 1-vertical)

Weir Design and Pond Flow Results

The weirs for the upper comercial and lower ponds were designed in SSA. See below for inputs and results tables.

Upper Commercial Weir	10-yr
Shape	Rectangular
Discharge Coeff.	3.33
Weir Length	3 ft
Weir Total Height	5.5 ft
Peak Flow	26.23 cfs

Lower Weir	10-yr
Shape	Rectangular
Discharge Coeff.	3.33
Weir Length	3 ft
Weir Total Height	7.5 ft
Peak Flow	84.66 cfs

Upper Commercial Weir	100-yr
Shape	Rectangular
Discharge Coeff.	3.33
Weir Length	3 ft
Weir Total Height	5.5 ft
Peak Flow	42.35 cfs

Lower Weir	100-yr
Shape	Rectangular
Discharge Coeff.	3.33
Weir Length	3 ft
Weir Total Height	7.5 ft
Peak Flow	89.95 cfs

Upper Pond Capacity Results 10-yr	
Max Water Depth (ft)	1.9
Min Freeboard (ft)	3.60

Lower Pond Capacity Results 10-yr	
Max Water Depth (ft)	4.16
Min Freeboard (ft)	3.34

Upper Pond Capacity Results 100-yr	
Max Water Depth (ft)	2.62
Min Freeboard (ft)	2.88

Lower Pond Capacity Results 100-yr	
Max Water Depth (ft)	4.33
Min Freeboard (ft)	3.17

Tuscan Ridge
Land Use Assumptions

This sheet is used to determine land use percentages for residential and commercial lots in the weighted runoff coefficient calculation. A conservative assumption of 50% pervious was made for the residential lots.

Residential (>1/8 acre lots)

Roof percentage	Paved percentage	Landscaped percentage
30%	20%	50%

Residential (<1/8 acre lots)

Roof percentage	Paved percentage	Landscaped percentage
40%	25%	35%

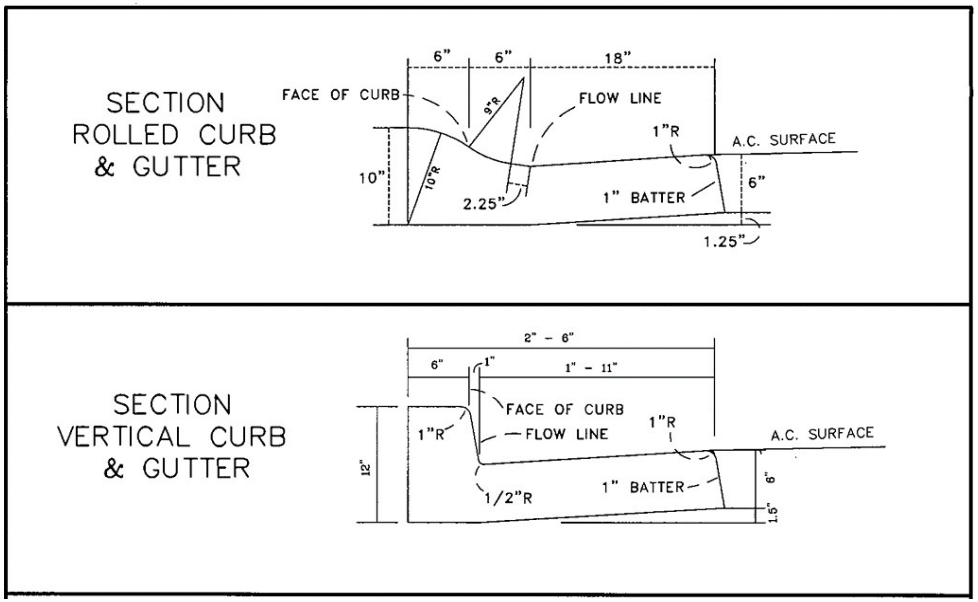
Commercial

*conservative assumption for commercial is majority paved and roofed

Roof percentage	Paved Percentage	Landscaped Percentage
25%	70%	5%

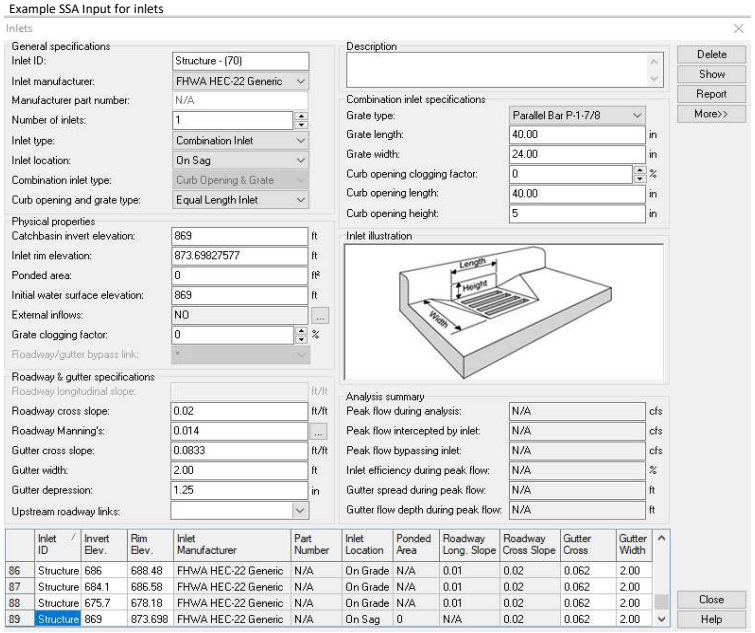
Tuscan Ridge
Gutter Dimensions

This sheet contains the reference cells the gutter dimensions. Gutter dimensions are used in the open channel flow calculations for determining the time of concentration along street gutters.



From Butte County Improvement Standards

Example SSA Input for inlets



	Inlet ID	Invert Elev.	Rim Elev.	Inlet Manufacturer	Part Number	Inlet Location	Ponded Area	Roadway Long. Slope	Roadway Cross Slope	Gutter Cross	Gutter Width
86	Structure	686	688.48	FHWA HEC-22 Generic	N/A	On Grade	N/A	0.01	0.02	0.062	2.00
87	Structure	684.1	686.58	FHWA HEC-22 Generic	N/A	On Grade	N/A	0.01	0.02	0.062	2.00
88	Structure	675.7	678.18	FHWA HEC-22 Generic	N/A	On Grade	N/A	0.01	0.02	0.062	2.00
89	Structure	869	873.698	FHWA HEC-22 Generic	N/A	On Sag	0	N/A	0.02	0.062	2.00

Rolled Gutter:

n	0.013		
Sx (pavement cross slope)	0.02	ft/ft	
WP	10.37	ft	wetted perimeter
A	1.46	ft^2	cross-sectional area
R	0.14	ft	hydraulic radius = A/WP
y	0.33	ft	depth

Assumptions and Rationale:
Gutter dimensions from Butte County Improvement Standards were brought into Civil 3D and brought to scale. From the improvement standards, the maximum depth of gutter flow should not exceed 0.35 feet. On scaled drawing, this depth appears to flow onto the curb and 0.326 appears to be just below curb overflow. As such, 0.326 was used as the design depth for hydraulic modeling. From the scaled drawing, the wetted perimeter and area were calculated automatically in Civil 3D (for reference please refer to cad drawing titled "curb.dwg")

Table 3-1. Manning's *n* for Street and Pavement Gutters

Type of Gutter or Pavement	Manning's *n*
Concrete gutter, troweled finish	0.012
Asphalt Pavement:	
Smooth texture	0.013
Rough texture	0.016
Concrete gutter-asphalt pavement:	
Smooth	0.013
Rough	0.015
Concrete pavement:	
Float finish	0.014
Broom finish	0.016
For gutters with small slope, where sediment may accumulate, increase above values of *n* by	0.02
Reference: U.S. Department of Transportation (USDOT), FHWA, Hydraulic Design Series No. 3 (HDS-3)	

APPENDIX 3

NOAA PF Data Server Printout Page

NOAA Atlas 14, Volume 6, Version 2
Location name: Chico, California, USA*
Latitude: 39.715°, Longitude: -121.7095°
Elevation: 752.17 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**2.08** (1.79-2.44)	**2.59** (2.23-3.05)	**3.28** (2.81-3.86)	**3.83** (3.25-4.57)	**4.60** (3.74-5.70)	**5.17** (4.10-6.59)	**5.77** (4.45-7.57)	**6.38** (4.76-8.66)	**7.22** (5.12-10.3)	**7.86** (5.35-11.7)
10-min	**1.49** (1.28-1.74)	**1.86** (1.60-2.18)	**2.35** (2.01-2.77)	**2.75** (2.33-3.27)	**3.29** (2.68-4.08)	**3.71** (2.95-4.72)	**4.14** (3.19-5.42)	**4.58** (3.41-6.20)	**5.18** (3.67-7.37)	**5.63** (3.83-8.36)
15-min	**1.20** (1.03-1.40)	**1.50** (1.29-1.76)	**1.89** (1.62-2.23)	**2.22** (1.88-2.64)	**2.65** (2.16-3.29)	**2.99** (2.38-3.81)	**3.34** (2.57-4.37)	**3.69** (2.75-5.00)	**4.17** (2.96-5.94)	**4.54** (3.09-6.74)
30-min	**0.804** (0.692-0.944)	**1.01** (0.864-1.18)	**1.27** (1.09-1.50)	**1.49** (1.26-1.77)	**1.78** (1.45-2.21)	**2.01** (1.59-2.56)	**2.24** (1.73-2.94)	**2.48** (1.85-3.36)	**2.80** (1.99-3.99)	**3.05** (2.08-4.53)
60-min	**0.514** (0.442-0.603)	**0.643** (0.553-0.756)	**0.813** (0.696-0.958)	**0.951** (0.806-1.13)	**1.14** (0.927-1.41)	**1.28** (1.02-1.63)	**1.43** (1.10-1.88)	**1.58** (1.18-2.15)	**1.79** (1.27-2.55)	**1.95** (1.33-2.89)
2-hr	**0.363** (0.312-0.426)	**0.451** (0.388-0.530)	**0.565** (0.484-0.666)	**0.656** (0.557-0.782)	**0.780** (0.636-0.968)	**0.874** (0.694-1.11)	**0.970** (0.748-1.27)	**1.07** (0.795-1.45)	**1.20** (0.849-1.71)	**1.30** (0.883-1.93)
3-hr	**0.299** (0.258-0.351)	**0.371** (0.319-0.436)	**0.464** (0.397-0.546)	**0.537** (0.456-0.640)	**0.636** (0.518-0.789)	**0.711** (0.564-0.905)	**0.786** (0.606-1.03)	**0.863** (0.643-1.17)	**0.965** (0.684-1.37)	**1.04** (0.710-1.55)
6-hr	**0.218** (0.188-0.256)	**0.270** (0.232-0.318)	**0.337** (0.289-0.397)	**0.390** (0.331-0.465)	**0.460** (0.374-0.571)	**0.512** (0.407-0.652)	**0.564** (0.435-0.740)	**0.617** (0.460-0.836)	**0.687** (0.487-0.978)	**0.739** (0.503-1.10)
12-hr	**0.153** (0.131-0.179)	**0.195** (0.167-0.229)	**0.248** (0.212-0.292)	**0.289** (0.245-0.345)	**0.344** (0.280-0.426)	**0.384** (0.305-0.488)	**0.423** (0.326-0.555)	**0.463** (0.345-0.627)	**0.514** (0.365-0.733)	**0.553** (0.376-0.820)
24-hr	**0.110** (0.096-0.128)	**0.145** (0.126-0.169)	**0.188** (0.164-0.221)	**0.222** (0.192-0.262)	**0.267** (0.224-0.324)	**0.299** (0.246-0.371)	**0.331** (0.266-0.419)	**0.362** (0.284-0.471)	**0.403** (0.305-0.545)	**0.434** (0.317-0.605)
2-day	**0.074** (0.064-0.086)	**0.097** (0.085-0.114)	**0.127** (0.110-0.148)	**0.150** (0.129-0.177)	**0.180** (0.151-0.219)	**0.202** (0.166-0.250)	**0.223** (0.180-0.283)	**0.245** (0.192-0.319)	**0.273** (0.206-0.369)	**0.294** (0.215-0.410)
3-day	**0.057** (0.050-0.067)	**0.075** (0.066-0.088)	**0.098** (0.085-0.115)	**0.116** (0.100-0.136)	**0.139** (0.116-0.169)	**0.156** (0.128-0.193)	**0.173** (0.139-0.219)	**0.189** (0.148-0.246)	**0.211** (0.159-0.285)	**0.227** (0.166-0.317)
4-day	**0.048** (0.042-0.056)	**0.063** (0.055-0.073)	**0.081** (0.071-0.095)	**0.096** (0.083-0.113)	**0.115** (0.097-0.140)	**0.129** (0.106-0.160)	**0.143** (0.115-0.181)	**0.157** (0.123-0.204)	**0.174** (0.132-0.235)	**0.187** (0.137-0.261)
7-day	**0.034** (0.030-0.040)	**0.044** (0.039-0.052)	**0.057** (0.050-0.067)	**0.068** (0.058-0.080)	**0.080** (0.068-0.098)	**0.090** (0.074-0.111)	**0.099** (0.080-0.126)	**0.108** (0.085-0.141)	**0.120** (0.090-0.162)	**0.128** (0.094-0.179)
10-day	**0.027** (0.024-0.032)	**0.035** (0.031-0.041)	**0.046** (0.040-0.053)	**0.053** (0.046-0.063)	**0.063** (0.053-0.077)	**0.071** (0.058-0.088)	**0.078** (0.063-0.098)	**0.084** (0.066-0.110)	**0.093** (0.070-0.126)	**0.100** (0.073-0.139)
20-day	**0.018** (0.016-0.021)	**0.024** (0.021-0.028)	**0.030** (0.026-0.035)	**0.035** (0.030-0.042)	**0.042** (0.035-0.051)	**0.046** (0.038-0.057)	**0.051** (0.041-0.064)	**0.055** (0.043-0.071)	**0.060** (0.045-0.081)	**0.064** (0.047-0.089)
30-day	**0.015** (0.013-0.017)	**0.019** (0.017-0.022)	**0.024** (0.021-0.028)	**0.028** (0.024-0.033)	**0.033** (0.028-0.040)	**0.037** (0.030-0.045)	**0.040** (0.032-0.051)	**0.043** (0.034-0.056)	**0.047** (0.036-0.064)	**0.050** (0.037-0.070)
45-day	**0.012** (0.011-0.014)	**0.016** (0.014-0.018)	**0.020** (0.017-0.023)	**0.023** (0.020-0.027)	**0.027** (0.022-0.033)	**0.030** (0.024-0.037)	**0.032** (0.026-0.041)	**0.035** (0.027-0.045)	**0.038** (0.028-0.051)	**0.040** (0.029-0.056)
60-day	**0.011** (0.010-0.013)	**0.014** (0.012-0.016)	**0.017** (0.015-0.020)	**0.020** (0.017-0.024)	**0.023** (0.020-0.028)	**0.026** (0.021-0.032)	**0.028** (0.022-0.035)	**0.030** (0.023-0.039)	**0.032** (0.025-0.044)	**0.034** (0.025-0.048)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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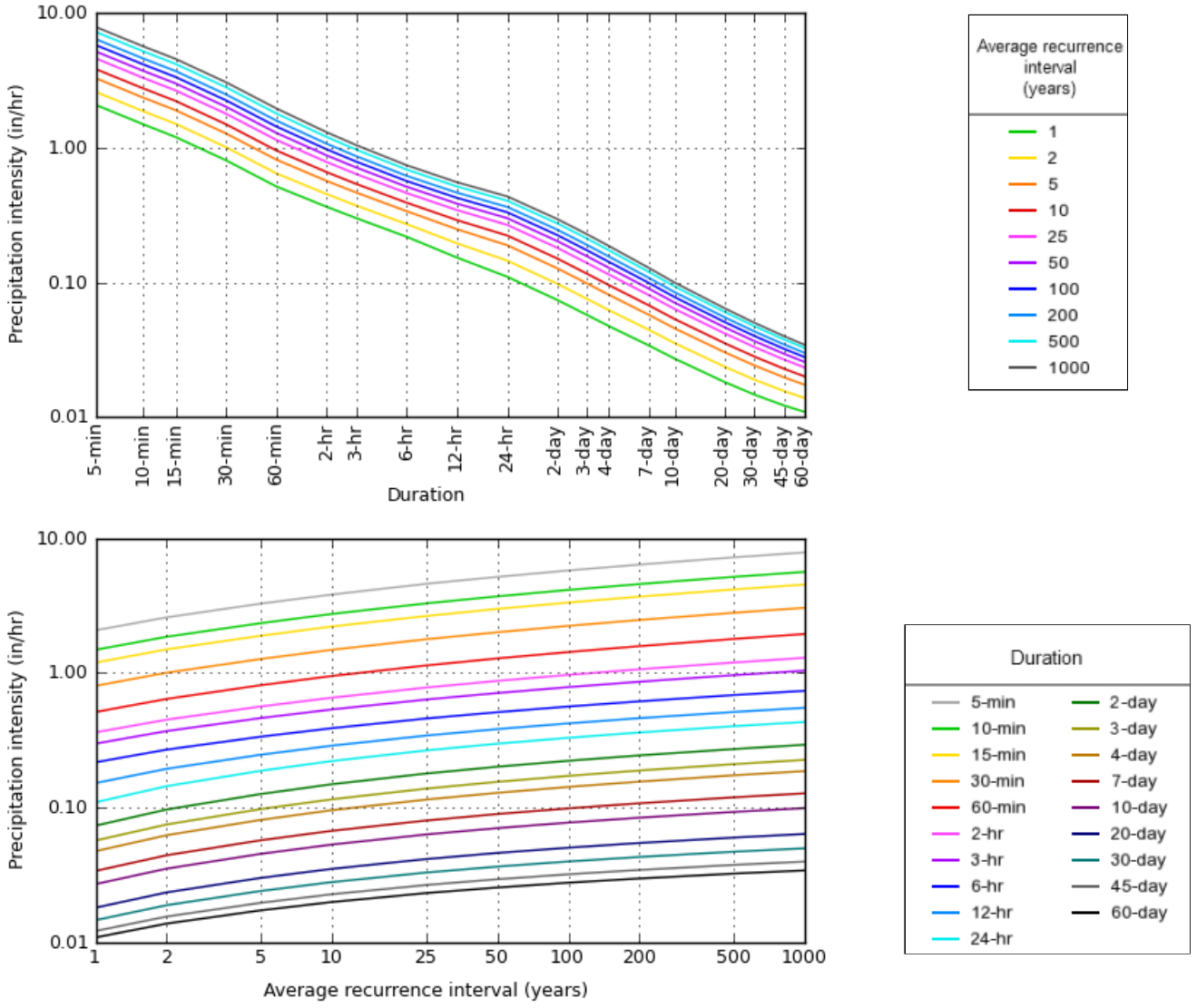
PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 39.7150°, Longitude: -121.7095°



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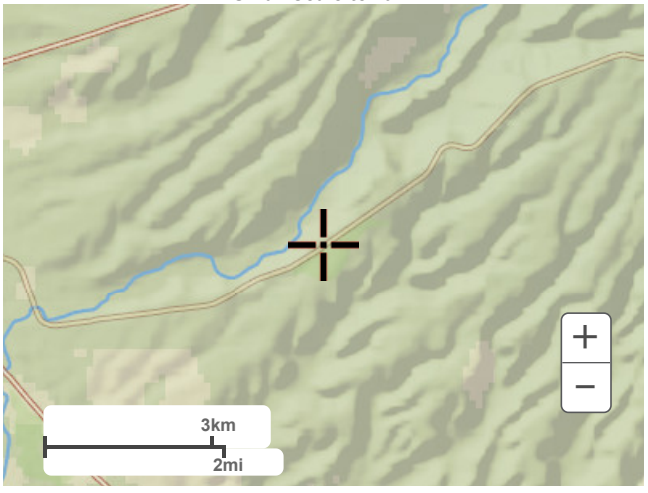
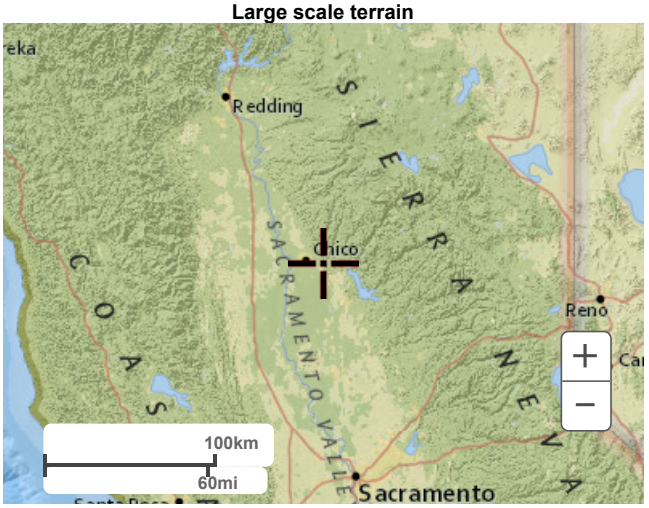
Maps & aerials

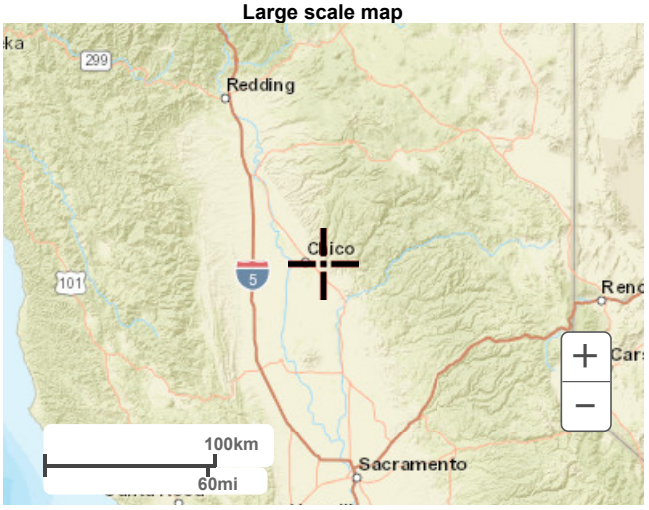
Small scale terrain



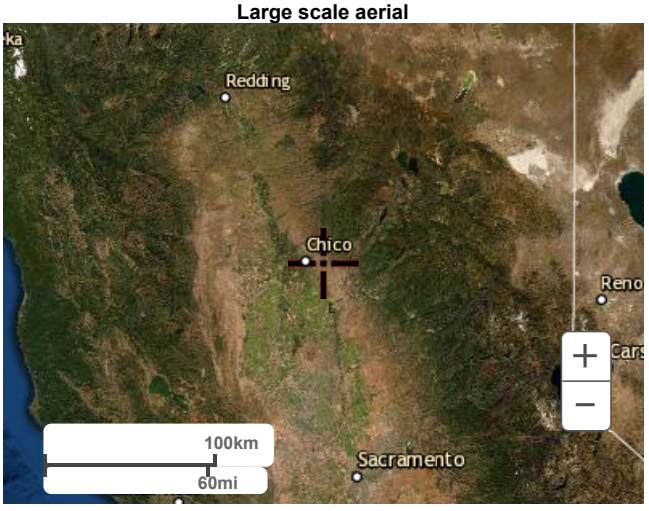
Large scale terrain



Large scale map



Large scale aerial



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National Weather Service
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Questions?: HDSC.Questions@noaa.gov

APPENDIX 4

Post-Development Hydraulic Model Results

Tuscan Ridge
SSA Pipe Summary Output

									10-YR						100-YR					
Catchment System	Pipe ID	Inlet ID	Outlet ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter (in)	Peak Flow (cfs)	Max Velocity (ft/s)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Max Flow Depth (ft)	Peak Flow (cfs)	Max Velocity (ft/s)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Max Flow Depth (ft)
Watershed A	Culvert - A(1)	Structure - A(1)	Out-1Culvert - A(1)	134.08	757.74	751.90	4.3600	24.000	24.74	15.22	47.21	0.52	0.51	1.03	37.20	16.67	47.21	0.79	0.67	1.34
Eastern Commercial	Pipe - EC(0)	N-offsite	Structure - EC(1)	214.59	880.00	879.71	0.1400	30.000	14.91	19.62	13.78	1.08	0.97	1.03	19.85	7.55	18.34	1.08	1.00	2.50
Eastern Commercial	Pipe - EC(1)	Structure - EC(1)	Structure - EC(2)	540.47	879.71	855.10	4.5500	30.000	14.91	19.62	13.78	1.08	0.97	1.21	30.63	16.30	87.53	0.35	0.41	1.02
Eastern Commercial	Pipe - EC(2)	Structure - EC(2)	Out-1Pipe - EC(2)	35.80	855.00	854.00	2.7900	30.000	18.68	11.75	17.56	1.06	0.92	1.38	35.63	14.10	68.55	0.52	0.51	1.28
Lower	Pipe - L(1)	Structure - L(1)	Structure - L(2)	6.56	832.00	831.87	1.9800	24.000	1.79	5.47	31.85	0.06	0.16	0.32	2.69	6.17	31.85	0.08	0.20	0.39
Lower	Pipe - L(10)	Structure - L(11)	Structure - L(10)	8.31	799.96	799.72	2.8900	24.000	2.20	6.64	38.45	0.06	0.16	0.32	3.31	7.49	38.45	0.09	0.20	0.40
Lower	Pipe - L(100)	Structure - L(100)	Structure - L(101)	70.05	812.88	809.08	5.4200	24.000	1.31	6.82	52.69	0.02	0.11	0.22	2.15	8.26	52.69	0.04	0.14	0.28
Lower	Pipe - L(101)	Structure - L(101)	Structure - L(102)	84.72	808.98	804.30	5.5200	24.000	1.68	7.74	53.17	0.03	0.12	0.24	2.72	8.90	53.17	0.05	0.15	0.31
Lower	Pipe - L(102)	Structure - L(102)	Structure - L(103)	78.39	804.20	800.28	5.0000	24.000	2.07	7.92	50.59	0.04	0.14	0.28	3.30	9.06	50.59	0.07	0.17	0.35
Lower	Pipe - L(103)	Structure - L(103)	Structure - L(104)	80.40	800.18	796.58	4.4800	24.000	2.47	8.03	47.87	0.05	0.15	0.31	3.91	9.20	47.87	0.08	0.19	0.39
Lower	Pipe - L(104)	Structure - L(104)	Structure - L(105)	81.50	796.48	793.28	3.9300	24.000	2.87	7.98	44.83	0.06	0.17	0.34	4.51	9.15	44.83	0.10	0.21	0.43
Lower	Pipe - L(105)	Structure - L(105)	Structure - L(106)	88.75	793.18	787.94	5.9000	24.000	3.29	9.62	54.97	0.06	0.17	0.33	5.16	11.00	54.97	0.09	0.21	0.41
Lower	Pipe - L(106)	Structure - L(106)	Structure - L(107)	171.54	787.84	781.82	3.5100	24.000	3.72	8.33	42.38	0.09	0.20	0.40	5.79	9.48	42.38	0.14	0.25	0.50
Lower	Pipe - L(107)	Structure - L(107)	Structure - L(108)	476.23	781.72	758.27	4.9200	24.000	4.11	19.47	50.20	0.08	0.19	0.37	6.42	20.67	50.20	0.13	0.23	0.47
Lower	Pipe - L(108)	Structure - L(108)	Structure - L(109)	92.51	758.17	754.38	4.1000	24.000	4.10	9.48	45.79	0.09	0.20	0.40	6.31	10.45	45.79	0.14	0.25	0.50
Lower	Pipe - L(109)	Structure - L(109)	Structure - L(110)	72.71	754.28	753.38	1.2400	24.000	10.03	7.57	25.17	0.40	0.44	0.88	15.35	8.42	25.17	0.61	0.56	1.13
Lower	Pipe - L(11)	Structure - L(12)	Structure - L(10)	29.15	800.01	799.62	1.3400	24.000	0.90	3.91	26.17	0.03	0.13	0.25	1.36	4.40	26.17	0.05	0.15	0.31
Lower	Pipe - L(110)	Structure - L(110)	Structure - L(111)	312.74	753.34	730.28	7.3700	24.000	11.65	15.06	61.43	0.19	0.29	0.59	17.78	16.97	61.43	0.29	0.37	0.74
Lower	Pipe - L(111)	Structure - L(111)	Structure - L(112)	128.00	730.18	725.10	3.9700	24.000	17.24	13.40	45.07	0.38	0.43	0.86	26.24	14.90	45.07	0.58	0.55	1.10
Lower	Pipe - L(112)	Structure - L(112)	Structure - L(113)	67.60	724.90	721.90	4.4400	24.000	18.58	14.23	47.66	0.39	0.43	0.87	28.26	15.81	47.66	0.59	0.55	1.11
Lower	Pipe - L(113)	Structure - L(113)	Structure - L(114)	62.95	721.80	718.70	4.9200	24.000	18.95	14.85	50.20	0.38	0.43	0.85	28.81	16.53	50.20	0.57	0.54	1.09
Lower	Pipe - L(114)	Structure - L(114)	Structure - L(115)	58.57	718.60	715.08	6.0100	24.000	19.23	16.04	55.46	0.35	0.41	0.81	29.25	17.89	55.46	0.53	0.52	1.03
Lower	Pipe - L(115)	Structure - L(115)	Structure - L(116)	65.07	714.88	710.18	7.2200	24.000	19.39	17.19	60.80	0.32	0.39	0.78	29.48	19.20	60.80	0.48	0.49	0.98
Lower	Pipe - L(116)	Structure - L(116)	Structure - L(117)	95.02	710.08	703.45	6.9800	24.000	19.73	17.07	59.76	0.33	0.40	0.79	30.01	19.04	59.76	0.50	0.50	1.00
Lower	Pipe - L(117)	Structure - L(117)	Structure - L(118)	52.72	703.35	701.78	2.9800	24.000	20.02	12.50	39.04	0.51	0.51	1.02	30.44	13.75	39.04	0.78	0.66	1.33
Lower	Pipe - L(118)	Structure - L(118)	Structure - L(119)	73.08	701.68	701.20	0.6600	30.000	20.32	7.11	33.24	0.61	0.57	1.41	30.89	7.70	33.24	0.93	0.76	1.91
Lower	Pipe - L(119)	Structure - L(119)	Structure - L(120)	45.43	701.10	700.06	2.2900	30.000	20.54	11.35	62.06	0.33	0.40	0.99	31.22	12.66	62.06	0.50	0.50	1.25
Lower	Pipe - L(12)	Structure - L(10)	Structure - L(13)	339.19	799.52	791.00	2.5100	24.000	6.29	8.66	35.85	0.18	0.28	0.57	9.55	9.73	35.85	0.27	0.35	0.70
Lower	Pipe - L(120)	Structure - L(120)	Structure - L(121)	57.92	699.86	695.48	7.5600	30.000	20.76	17.51	112.80	0.18	0.29	0.73	31.55	19.70	112.80	0.28	0.36	0.90
Lower	Pipe - L(121)	Structure - L(121)	Structure - L(122)	82.71	695.38	694.96	0.5100	30.000	20.99	6.50	29.23	0.72	0.63	1.57	31.61	7.00	29.23	1.08	0.94	2.35
Lower	Pipe - L(122)	Structure - L(122)	Structure - L(123)	68.23	694.86	694.50	0.5300	30.000	21.26	6.60	29.79	0.71	0.62	1.56	32.22	7.30	29.79	1.08	0.92	2.31
Lower	Pipe - L(123)	Structure - L(123)	Structure - L(124)	56.59	694.40	694.02	0.6700	30.000	21.36	7.25	33.61	0.64	0.58	1.45	31.46	8.09	33.61	0.94	0.76	1.89
Lower	Pipe - L(124)	Structure - L(124)	Structure - L(125)	56.17	693.92	693.03	1.5800	30.000	21.62	10.05	51.63	0.42	0.45	1.13	31.58	11.17	51.63	0.61	0.56	1.41
Lower	Pipe - L(125)	Structure - L(125)	Structure - L(126)	66.86	692.93	692.55	0.5700	30.000	21.82	6.83	30.92	0.71	0.62	1.55	33.26	7.39	30.92	1.08	0.92	2.29
Lower	Pipe - L(126)	Structure - L(126)	Structure - L(127)	39.45	692.45	691.27	2.9900	30.000	22.04	12.75	70.94	0.31	0.38	0.96	32.94	14.67	70.94	0.46	0.48	1.19
Lower	Pipe - L(127)	Structure - L(127)	Structure - L(128)	33.87	691.07	688.42	7.8200	30.000	22.23	18.08	114.73	0.19	0.30	0.75	33.10	20.54	114.73	0.29	0.37	0.92
Lower	Pipe - L(128)	Structure - L(128)	Structure - L(129)	70.43	688.32	686.34	2.8100	30.000	22.32	12.51	68.77	0.32	0.39	0.98	33.13	14.21	68.77	0.48	0.49	1.22
Lower	Pipe - L(129)	Structure - L(129)	Structure - L(130)	79.90	686.24	679.63	8.2700	30.000	22.63	18.54	117.97	0.19	0.30	0.74	33.37	20.87	117.97	0.28	0.36	0.90
Lower	Pipe - L(13)	Structure - L(13)	Structure - L(14)	153.02	791.00	786.50	2.9400	24.000	6.29	9.09	38.79	0.16	0.27	0.54	9.55	10.23	38.79	0.25	0.34	0.68
Lower	Pipe - L(130)	Structure - L(130)	Structure - L(131)	135.71	679.53	672.15	5.4400	30.000	22.96	16.02	95.65	0.24	0.33	0.83	33.58	18.03	95.65	0.35	0.41	1.02
Lower	Pipe - L(131)	Structure - L(131)	Structure - L(96)	123.94	672.10	671.55	0.4400	33.000	23.18	6.35	35.23	0.66	0.59	1.63	33.90	6.95	35.23	0.96	0.78	2.13
Lower	Pipe - L(14)	Structure - L(15)	Structure - L(14)	30.41	786.39	786.20	0.6200	24.000	4.64	4.79	17.88	0.26	0.35	0.69	7.59	5.48	17.88	0.42	0.45	0.91
Lower	Pipe - L(15)	Structure - L(16)	Structure - L(14)	6.67	786.47	786.27	3.0400	24.000	3.72	7.90	39.42	0.09	0.21	0.41	6.15	9.15	39.42	0.16	0.27	0.53
Lower	Pipe - L(16)	Structure - L(132)	Structure - L(65)	33.28	706.21	705.76	1.3500	24.000	0.61	3.37	26.31	0.02	0.11	0.21	0.92	3.94	26.31	0.03	0.13	0.25
Lower	Pipe - L(17)	Structure - L(17)	Structure - L(18)	73.21	766.14	765.00	1.5600	24.000	4.64	6.65	28.23	0.16	0.27	0.55	6.99	7.49	28.23	0.25	0.34	0.68
Lower	Pipe - L(18)	Structure - L(19)	Structure - L(20)	46.16	763.94	763.75	0.4100	24.000	0.99	3.05	14.51	0.07	0.18	0.36	1.50	3.27	14.51	0.10	0.22	0.43
Lower	Pipe - L(19)	Structure - L(20)	Structure - L(18)	41.82	763.70	763.50	0.4800	24.000	1.06	2.84	15.64	0.07	0.18	0.35	1.61	3.22	15.64	0.10	0.22	0.43
Lower	Pipe - L(2)	Structure - L(3)	Structure - L(2)	30.30	832.00	831.87	0.4300	24.000	0.66	2.51	14.82	0.04	0.14	0.29	0.99	2.74	14.82	0.07	0.18	0.35
Lower	Pipe - L(20)	Structure - L(21)	Structure - L(20)	26.77	763.94	763.74	0.7500	24.000	0.07	1.48	19.56	0.00	0.04	0.09	0.11	1.67	19.56	0.01	0.05	0.11
Lower	Pipe - L(21)	Structure - L(22)	Structure - L(23)	6.61	799.22	799.10	1.8100	24.000	1.09	4.59	30.48	0.04	0.13	0.26	1.65	5.17	30.48	0.05	0.16	0.32
Lower	Pipe - L(22)	Structure - L(24)	Structure - L(23)	30.59	799.40	799.20	0.6500	24.000	1.83	3.73	18.29	0.10	0.21	0.43	2.75	4.20	18.29	0.15	0.26	0.52
Lower	Pipe - L(23)	Structure - L(23)	Structure - L(25)	289.52	799.00	783.37	5.4000	24.000	2.70	8.90	52.56	0.05	0.15	0.31	4.06	10.01	52.56	0.08	0.19	0.37
Lower	Pipe - L(24)	Structure - L(26)	Structure - L(25)	7.40	783.70	783.37	4.4600	24.000	0.49	4.89	47.77	0.01	0.07	0.14	0.73	5.55	47.77	0.02	0.09	0.17
Lower	Pipe - L(25)	Structure - L(27)	Structure - L(25)	29.80	784.00	783.35	2.1800	24.000	1.06	4.87	33.41	0.03	0.12	0.24	1.59	5.49	33.41	0.05	0.15	0.30
Lower	Pipe - L(26)	Structure - L(25)	Structure - L(28)	107.01	783.27	781.48	1.6700	24.000	4.08	6.57	29.26	0.14	0.25	0.50	6.16	7.38	29.26	0.21	0.31	0.62
Lower	Pipe - L(27)	Structure - L(28)	Structure - L(29)	77.36	781.38	778.48	3.7500	24.000	4.08	8.74	43.80	0.09	0.21	0.41	6.16	9.84	43.80	0.14	0.25	0.51
Lower	Pipe - L(28)	Structure - L(29)	Structure - L(18)	318.68	778.38	764.00	4.5100	24.000	4.07	9.34	48.05	0.08	0.20	0.39	6.14	10.53	48.05	0.13	0.24	0.48
Lower	Pipe - L(29)	Structure - L(18)	Structure - L(30)	499.87	763.50	753.73	1.9500	24.000	9.43	8.88	31.63	0.30	0.37	0.75	14.24	9.91	31.63	0.45	0.47	0.94
Lower	Pipe - L(3)	Structure - L(2)	Structure - L(4)	222.45	831.87	823.40	3.8100	24.000	2.42	7.58	44.14	0.05	0.16	0.32	3.64	8.56	44.14	0.08	0.19	0.39
Lower	Pipe - L(30)	Structure - L(31)	Structure - L(30)	13.25	753.73	753.10	4.7500	24.000	0.61	5.38	49.32	0.01	0.08	0.16	0.92	6.04	49.32	0.02	0.10	0.19
Lower	Pipe - L(31)	Structure - L(32)	Structure - L(30)	5.25	753.13	753.05	1.5200	24.000	5.23	6.81	27.93	0.19	0.29	0.59	7.87	7.64	27.93	0.28	0.36	0.73
Lower	Pipe - L(32)	Structure - L(30)	Structure - L(33)	224.23	753.00	745.05	3.5500	24.000	14.88	12.36	42.60	0.35	0.41	0.82	22.44	13.76	42.60	0.53	0.52	1.03
Lower	Pipe - L(33)	Structure - L(34)	Structure - L(35)	18.51	753.95	753.50	2.4300	24.000	4.46	7.70	35.28	0.13	0.24	0.48	6.73	8.66	35.28	0.19	0.30	0.59
Lower	Pipe - L(34)	Structure - L(35)	Structure - L(32)	50.00	753.40	753.18	0.4400	24.000	4.81	4.26	15.01	0.32	0.39	0.78	7.23	4.77	15.01	0.48	0.49	0.98
Lower	Pipe - L(35)	Structure - L(14)	Structure - L(36)	178.01	786.10	780.10	3.3700	24.000	12.46	11.56	41.53	0.30	0.38	0.75	21.41	13.35	41.53	0.52	0.51	1.02
Lower	Pipe - L(36)	Structure - L(36)	Structure - L(37)	236.98	780.00	772.74	3.0600	24.000	12.45	11.16	39.60	0.31	0.39	0.77	21.38	12.87	39.60	0.54	0.52	1.05
Lower	Pipe - L(37)	Structure - L(38)	Structure - L(37)	32.70	772.94	772.70	0.7300	24.000	0.71	2.94	19.38	0.04	0.13	0.26	1.06	3.31	19.38	0.05	0.16	0.32
Lower	Pipe - L(38)	Structure - L(39)	Structure - L(37)	4.12	772.83	772.74	2.1800	24.000	2.11	5.93	33.42	0.06	0.17	0.34	3.52	6.91	33.42	0.11	0.22	0.44
Lower	Pipe - L(39)	Structure - L(37)	Structure - L(40)	211.08	772.64	764.76	3.7300	24.000	14.81	12.58	43.71	0.34	0.40	0.80	25.61	14.48	43.71	0.59	0.55	1.10
Lower	Pipe - L(4)	Structure - L(4)	Structure - L(5)	117.93	823.40	817.85	4.7100	24.000	2.41	8.14	49.08	0.05	0.15	0.30	3.64	9.18	49.08	0.07	0.18	0.37
Lower	Pipe - L(40)	Structure - L(40)	Structure - L(41)	88.22	764.67	761.24	3.8900	24.000	14.80	12.75	44.61	0.33	0.40	0.79	25.61	14.69	44.61	0.57	0.54	1.09
Lower	Pipe - L(41)	Structure - L(41)	Structure - L(42)	77.54	761.14	757.76	4.3600	24.000	14.80	13.29	47.23	0.31	0.38	0.77	25.61	15.34	47.23	0.54	0.52	1.05
Lower	Pipe - L(42)	Structure - L(42)	Structure - L(43)	151.04	757.66	751.45	4.1100	24.000	14.80	13.01	45.87	0.32	0.39	0.78	25.60	15.01	45.87	0.56	0.53	1.07
Lower	Pipe - L(43)	Structure - L(44)	Structure - L(43)	4.97	751.60	751.40	4.0200	24.000	2.70	7.92	45.37	0.06	0.17	0.33	4.43	9.18	45.37	0.10	0.21	0.42
Lower	Pipe - L(44)	Structure - L(45)	Structure - L(43)	32.19	752.02	751.35	2.0800	24.000	1.10	4.84	32.64	0.03	0.12	0.25	1.82	5.61	32.64	0.06	0.16	0.32
Lower	Pipe - L(45)	Structure - L(43)	Structure - L(33)	111.54	751.25	745.05	5.5600	24.000	18.38	15.40	53.34	0.34	0.41	0.81	31.16	17.63	53.34	0.58	0.55	1.10
Lower	Pipe - L(46)	Structure - L(33)	Structure - L(46)	169.04	744.95	742.94	1.1900	30.000	31.57	9.88	44.73	0.71	0.62	1.55	48.39	10.81	44.73	1.08	1.00	2.50
Lower	Pipe - L(47)	Structure - L(47)	Structure - L(48)	48.07	764.69	762.95	3.6200	30.000	14.75	12.23	78.03	0.19	0.29	0.74	24.60	14.08	78.03	0.32	0.39	0.96
Lower	Pipe - L(48)	Structure - L(48)	Structure - L(49)	79.97	762.85	762.37	0.6000	30.000	14.73	6.36	31.78	0.46	0.48	1.19	24.56	7.16	31.78	0.77	0.66	1.65
Lower	Pipe - L(49)	Structure - L(49)	Structure - L(50)	97.36	762.32	761.85	0.4800	30.000	14.69	5.86	28.50	0.52	0.51	1.27	24.51	6.55	28.50	0.86	0.71	1.79
Lower	Pipe - L(5)	Structure - L(6)	Structure - L(5)	6.85	818.03	817.80	3.3600	24.000	0.59	4.70	41.47	0.01	0.08	0.17	0.88	5.23	41.47	0.02	0.10	0.20
Lower	Pipe - L(50)	Structure - L(50)	Structure - L(51)	165.97	761.80	759.90	1.1400	30.000	15.53	8.19	43.89	0.35	0.41	1.03	25.88	9.33	43.89	0.59	0.55	1.38
Lower	Pipe - L(51)	Structure - L(51)	Structure - L(52)	87.90	759.80	756.94	3.2500	30.000	15.52	11.93	73.99	0.21	0.31	0.78	25.87	13.73	73.99	0.35	0.41	1.02

Catchment System	Pipe ID	Inlet ID	Outlet ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter (in)	Peak Flow (cfs)	Max Velocity (ft/s)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	1.03	Peak Flow (cfs)	Max Velocity (ft/s)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Max Flow Depth (ft)
Lower	Pipe - L(52)	Structure - L(52)	Structure - L(53)	63.03	756.84	755.25	2.5200	30.000	15.52	10.88	65.15	0.24	0.33	0.83	25.87	12.51	65.15	0.40	0.44	1.10
Lower	Pipe - L(53)	Structure - L(53)	Structure - L(54)	106.41	755.15	752.90	2.1100	30.000	15.51	10.22	59.64	0.26	0.35	0.87	25.86	11.73	59.64	0.43	0.46	1.15
Lower	Pipe - L(54)	Structure - L(54)	Structure - L(55)	88.70	752.80	750.67	2.4000	30.000	15.51	10.69	63.56	0.24	0.34	0.84	25.86	12.29	63.56	0.41	0.44	1.11
Lower	Pipe - L(55)	Structure - L(55)	Structure - L(46)	206.42	750.67	742.94	3.7400	30.000	15.50	12.56	79.37	0.20	0.30	0.75	25.84	14.47	79.37	0.33	0.39	0.98
Lower	Pipe - L(56)	Structure - L(46)	Structure - L(56)	101.79	742.94	739.45	3.4300	30.000	41.87	15.84	75.95	0.55	0.53	1.33	69.51	17.79	75.95	0.92	0.75	1.88
Lower	Pipe - L(57)	Structure - L(56)	Structure - L(57)	30.59	739.45	738.00	4.7400	30.000	41.87	17.90	89.30	0.47	0.48	1.20	69.48	20.12	89.30	0.78	0.66	1.64
Lower	Pipe - L(58)	Structure - L(58)	Structure - L(57)	9.30	738.91	738.20	7.6300	24.000	0.66	6.46	62.50	0.01	0.07	0.14	1.09	7.51	62.50	0.02	0.09	0.18
Lower	Pipe - L(59)	Structure - L(59)	Structure - L(57)	28.51	739.20	738.10	3.8600	24.000	1.29	6.29	44.43	0.03	0.12	0.23	2.15	7.32	44.43	0.05	0.15	0.30
Lower	Pipe - L(6)	Structure - L(7)	Structure - L(5)	30.24	818.23	817.75	1.5900	24.000	0.56	3.55	28.50	0.02	0.10	0.20	0.84	4.07	28.50	0.03	0.12	0.23
Lower	Pipe - L(60)	Structure - L(57)	Structure - L(60)	393.42	738.00	724.24	3.5000	30.000	43.13	16.09	76.71	0.56	0.54	1.34	71.23	18.03	76.71	0.93	0.76	1.90
Lower	Pipe - L(61)	Structure - L(60)	Structure - L(61)	82.81	724.14	721.45	3.2500	30.000	43.13	15.63	73.93	0.58	0.55	1.37	71.15	17.19	73.93	0.96	0.79	1.97
Lower	Pipe - L(62)	Structure - L(61)	Structure - L(62)	66.70	721.35	718.42	4.3900	30.000	43.13	17.52	85.97	0.50	0.50	1.25	71.12	19.59	85.97	0.83	0.69	1.73
Lower	Pipe - L(63)	Structure - L(63)	Structure - L(62)	29.52	718.16	717.92	0.8100	24.000	0.95	3.33	20.40	0.05	0.15	0.29	1.43	3.75	20.40	0.07	0.18	0.36
Lower	Pipe - L(64)	Structure - L(64)	Structure - L(62)	7.40	718.00	717.82	2.4300	24.000	1.94	6.02	35.28	0.05	0.16	0.32	2.92	6.80	35.28	0.08	0.19	0.39
Lower	Pipe - L(65)	Structure - L(62)	Structure - L(65)	360.48	717.72	705.86	3.2900	30.000	45.06	15.88	74.40	0.61	0.56	1.40	72.76	17.45	74.40	0.98	0.80	2.00
Lower	Pipe - L(66)	Structure - L(65)	Structure - L(66)	38.35	705.66	703.57	5.4500	30.000	46.96	19.41	95.75	0.49	0.49	1.24	75.83	21.64	95.75	0.79	0.67	1.68
Lower	Pipe - L(67)	Structure - L(67)	Structure - L(65)	3.65	706.36	706.20	4.3800	24.000	2.24	7.75	47.34	0.05	0.15	0.30	3.37	8.74	47.34	0.07	0.18	0.36
Lower	Pipe - L(68)	Structure - L(68)	Structure - L(69)	30.31	730.55	730.28	0.8900	24.000	1.72	4.09	21.35	0.08	0.19	0.38	2.80	4.71	21.35	0.13	0.24	0.49
Lower	Pipe - L(69)	Structure - L(70)	Structure - L(69)	6.66	730.46	730.18	4.2100	24.000	1.93	7.31	46.40	0.04	0.14	0.28	2.90	8.21	46.40	0.06	0.16	0.34
Lower	Pipe - L(7)	Structure - L(5)	Structure - L(8)	99.38	817.70	814.10	3.6200	24.000	3.52	8.28	43.06	0.08	0.19	0.39	5.31	9.33	43.06	0.12	0.24	0.47
Lower	Pipe - L(70)	Structure - L(69)	Structure - L(71)	129.02	730.08	721.59	6.5800	24.000	3.39	10.08	58.03	0.06	0.16	0.33	5.67	11.77	58.03	0.10	0.21	0.42
Lower	Pipe - L(71)	Structure - L(72)	Structure - L(73)	31.92	739.95	739.68	0.8500	24.000	0.58	2.92	20.81	0.03	0.11	0.23	0.88	3.30	20.81	0.04	0.14	0.28
Lower	Pipe - L(72)	Structure - L(74)	Structure - L(73)	5.34	739.87	739.58	5.4300	24.000	2.23	8.35	52.70	0.04	0.14	0.28	3.36	9.36	52.70	0.06	0.17	0.34
Lower	Pipe - L(73)	Structure - L(73)	Structure - L(71)	410.45	739.48	721.59	4.3600	24.000	2.76	8.72	47.23	0.06	0.16	0.33	4.16	9.61	47.23	0.09	0.20	0.40
Lower	Pipe - L(74)	Structure - L(71)	Structure - L(75)	85.74	721.49	716.79	5.4800	24.000	6.14	11.24	52.97	0.12	0.23	0.46	9.78	12.87	52.97	0.18	0.28	0.58
Lower	Pipe - L(75)	Structure - L(76)	Structure - L(75)	29.19	716.92	716.75	0.5800	24.000	0.37	2.29	17.27	0.02	0.10	0.20	0.55	2.52	17.27	0.03	0.12	0.24
Lower	Pipe - L(76)	Structure - L(77)	Structure - L(75)	7.90	716.95	716.69	3.2900	24.000	4.37	8.51	41.03	0.11	0.22	0.44	5.97	9.31	41.03	0.15	0.26	0.52
Lower	Pipe - L(77)	Structure - L(75)	Structure - L(78)	115.50	716.59	712.60	3.4500	24.000	10.71	11.20	42.05	0.25	0.34	0.69	16.15	12.52	42.05	0.38	0.42	0.86
Lower	Pipe - L(78)	Structure - L(79)	Structure - L(80)	30.92	731.94	731.63	1.0000	24.000	1.64	4.21	22.65	0.07	0.18	0.36	2.47	4.74	22.65	0.11	0.22	0.45
Lower	Pipe - L(79)	Structure - L(81)	Structure - L(80)	6.56	731.84	731.73	1.6800	24.000	0.26	2.86	29.30	0.01	0.07	0.13	0.39	3.26	29.30	0.01	0.08	0.16
Lower	Pipe - L(8)	Structure - L(8)	Structure - L(9)	279.35	814.00	804.65	3.3500	24.000	3.50	8.09	41.39	0.08	0.20	0.39	5.28	9.11	41.39	0.13	0.24	0.48
Lower	Pipe - L(80)	Structure - L(80)	Structure - L(78)	393.60	731.53	712.55	4.8200	24.000	1.87	7.79	49.68	0.04	0.13	0.26	2.81	8.67	49.68	0.06	0.16	0.32
Lower	Pipe - L(81)	Structure - L(78)	Structure - L(82)	104.97	712.50	710.09	2.3000	24.000	12.56	10.07	34.28	0.37	0.42	0.84	18.94	11.20	34.28	0.55	0.52	1.06
Lower	Pipe - L(82)	Structure - L(83)	Structure - L(82)	29.73	710.20	709.89	1.0400	24.000	0.37	2.71	23.10	0.02	0.09	0.17	0.55	2.98	23.10	0.02	0.11	0.22
Lower	Pipe - L(83)	Structure - L(84)	Structure - L(82)	7.26	710.20	709.99	2.8900	24.000	4.43	8.15	38.47	0.12	0.23	0.46	6.70	9.20	38.47	0.17	0.27	0.57
Lower	Pipe - L(84)	Structure - L(82)	Structure - L(85)	130.70	709.79	708.35	1.1000	24.000	17.13	8.25	23.75	0.72	0.63	1.26	25.67	8.89	23.75	1.08	0.92	1.87
Lower	Pipe - L(85)	Structure - L(86)	Structure - L(87)	22.00	725.65	725.45	0.9100	24.000	0.63	3.06	21.57	0.03	0.12	0.23	0.94	3.46	21.57	0.04	0.14	0.28
Lower	Pipe - L(86)	Structure - L(88)	Structure - L(87)	15.12	725.70	725.40	1.9800	24.000	3.20	6.50	31.86	0.10	0.21	0.43	4.82	7.32	31.86	0.15	0.25	0.53
Lower	Pipe - L(87)	Structure - L(87)	Structure - L(85)	386.68	725.35	708.40	4.3800	24.000	3.77	9.57	47.36	0.08	0.19	0.38	5.68	10.52	47.36	0.12	0.22	0.47
Lower	Pipe - L(88)	Structure - L(85)	Structure - L(89)	147.48	708.30	705.24	2.0700	24.000	20.87	11.02	32.59	0.64	0.58	1.16	30.56	12.21	32.59	0.94	0.75	1.54
Lower	Pipe - L(89)	Structure - L(90)	Structure - L(89)	29.20	705.50	705.19	1.0600	24.000	0.46	2.91	23.31	0.02	0.10	0.20	0.70	3.34	23.31	0.03	0.12	0.24
Lower	Pipe - L(9)	Structure - L(9)	Structure - L(10)	167.00	804.55	800.22	2.5900	24.000	3.49	7.36	36.43	0.10	0.21	0.42	5.27	8.31	36.43	0.14	0.26	0.51
Lower	Pipe - L(90)	Structure - L(91)	Structure - L(89)	7.84	705.50	705.14	4.5900	24.000	4.51	9.68	48.48	0.09	0.21	0.41	6.80	10.90	48.48	0.14	0.25	0.51
Lower	Pipe - L(91)	Structure - L(89)	Structure - L(66)	156.14	705.04	703.52	0.9700	30.000	25.50	8.74	40.47	0.63	0.58	1.44	37.57	9.57	40.47	0.93	0.74	1.90
Lower	Pipe - L(92)	Structure - L(66)	Structure - L(92)	30.54	703.47	702.90	1.8700	33.000	69.78	13.85	72.26	0.97	0.79	2.18	78.15	14.20	72.26	1.08	1.00	2.75
Lower	Pipe - L(93)	Structure - L(92)	Structure - L(93)	254.94	702.90	685.20	6.9400	33.000	69.77	23.47	139.35	0.50	0.50	1.38	79.40	25.08	139.35	0.57	0.53	1.47
Lower	Pipe - L(94)	Structure - L(94)	Structure - L(93)	29.99	685.50	684.15	4.5000	24.000	0.73	5.58	48.00	0.02	0.09	0.17	1.10	6.14	48.00	0.02	0.11	0.21
Lower	Pipe - L(95)	Structure - L(95)	Structure - L(93)	9.34	684.70	684.10	6.4200	24.000	0.81	6.49	57.33	0.01	0.08	0.17	1.21	7.22	57.33	0.02	0.10	0.20
Lower	Pipe - L(96)	Structure - L(93)	Structure - L(96)	105.82	683.10	671.65	10.8200	33.000	71.03	27.81	173.97	0.41	0.44	1.22	80.66	28.95	173.97	0.46	0.48	1.30
Lower	Pipe - L(97)	Structure - L(96)	Out-1Pipe - L(97)	102.96	671.50	669.86	1.5900	45.000	94.78	14.56	152.63	0.62	0.57	2.14	91.16	9.05	84.28	1.08	0.62	3.75
Lower	Pipe - L(98)	Structure - L(98)	Structure - L(99)	82.19	822.06	817.89	5.0700	24.000	0.55	5.34	50.96	0.01	0.07	0.15	0.90	6.17	50.96	0.02	0.09	0.18
Lower	Pipe - L(99)	Structure - L(99)	Structure - L(100)	89.88	817.79	812.98	5.3500	24.000	0.92	6.34	52.33	0.02	0.09	0.18	1.56	7.50	52.33	0.03	0.12	0.24
Upper Commercial	Pipe - UC(1)	Structure - UC(1)	Structure - UC(2)	6.37	869.70	869.50	3.1400	18.000	13.56	11.50	18.61	0.73	0.63	0.95	20.04	12.19	18.61	1.08	1.00	1.50
Upper Commercial	Pipe - UC(10)	Structure - UC(10)	Structure - UC(11)	309.44	840.39	834.47	1.9100	24.000	20.92	10.69	31.29	0.67	0.60	1.20	29.05	11.36	31.29	0.93	0.76	1.52
Upper Commercial	Pipe - UC(11)	Structure - UC(11)	Out-1Pipe - UC(12)	127.77	834.37	825.07	7.2800	24.000	26.28	18.71	61.03	0.43	0.46	0.92	44.40	21.21	61.03	0.73	0.63	1.27
Upper Commercial	Pipe - UC(12)	Structure - UC(13)	Out-1Pipe - UC(12)	366.51	839.23	830.52	2.3800	24.000	3.29	11.82	44.47	0.07	0.18	0.37	4.94	11.29	34.87	0.14	0.25	0.51
Upper Commercial	Pipe - UC(2)	Structure - UC(3)	Structure - UC(2)	30.70	869.71	869.50	0.6800	18.000	1.27	3.51	8.69	0.15	0.26	0.39	1.91	3.95	8.69	0.22	0.32	0.48
Upper Commercial	Pipe - UC(3)	Structure - UC(2)	Structure - UC(4)	202.75	869.50	868.50	0.4900	24.000	13.86	6.33	15.89	0.87	0.72	1.44	17.19	7.24	15.89	1.08	1.00	2.00
Upper Commercial	Pipe - UC(4)	Structure - UC(4)	Structure - UC(5)	70.15	868.50	858.90	13.6900	24.000	13.86	7.13	20.92	0.66	0.59	1.19	17.18	21.12	83.69	0.21	0.31	0.61
Upper Commercial	Pipe - UC(5)	Structure - UC(5)	Structure - UC(6)	495.24	867.90	850.30	3.5500	24.000	13.86	0.00		0.66	0.59	1.19	17.32	13.24	42.65	0.41	0.44	0.88
Upper Commercial	Pipe - UC(6)	Structure - UC(6)	Structure - UC(7)	211.19	850.20	841.75	4.0000	24.000	13.84	12.68	45.25	0.31	0.38	0.76	17.14	13.50	45.25	0.38	0.43	0.85
Upper Commercial	Pipe - UC(7)	Structure - UC(8)	Structure - UC(7)	8.96	842.30	842.00	3.3500	24.000	7.48	9.99	41.40	0.18	0.29	0.58	12.47	11.54	41.40	0.30	0.38	0.75
Upper Commercial	Pipe - UC(8)	Structure - UC(9)	Structure - UC(7)	33.48	842.90	841.85	3.1400	24.000	1.29	5.87	40.06	0.03	0.12	0.24	1.95	6.62	40.06	0.05	0.15	0.30
Upper Commercial	Pipe - UC(9)	Structure - UC(7)	Structure - UC(10)	56.44	841.65	840.49	2.0600	24.000	20.96	10.98	32.43	0.65	0.59	1.17	29.11	11.68	32.43	0.90	0.74	1.48

Tuscan Ridge
SSA Outlet Node Summary Results

		10-YR							100-YR						
Storage Basin	Invert Elevation (ft)	Max Rim Elevation (ft)	Max Rim Offset (ft)	Initial Water Elevation (ft)	Peak Inflow (cfs)	Peak Outflow (cfs)	Max HGL Elevation Attained (ft)	Maximum HGL Depth Attained (ft)	Max Rim Elevation (ft)	Max Rim Offset (ft)	Initial Water Elevation (ft)	Peak Inflow (cfs)	Peak Outflow (cfs)	Max HGL Elevation Attained (ft)	Maximum HGL Depth Attained (ft)
Lower	671.00	678.50	8.64	671.00	104.84	84.66	674.02	4.16	678.50	7.50	671.00	106.66	89.95	675.33	4.33
Upper Commercial	825.07	830.57	5.50	825.07	29.56	26.23	826.97	1.90	830.57	5.50	825.07	49.10	42.35	827.69	2.62

Tuscan Ridge
SSA Inlet Summary Results

Catchment System	Inlet/Junction ID	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Max (Rim) Offset (ft)	10-YR Peak Flow (cfs)	100 -YR Peak Flow (cfs)
Watershed A	Structure - A(1)	760.21	2.47	37.25	37.25	37.25
Eastern Commercial	Structure - EC(1)	883.71	4.00	12.44	8.27	12.44
Eastern Commercial	Structure - EC(2)	859.00	4.00	5.14	3.42	5.14
Lower	Structure - L(1)	835.02	3.02	2.69	1.79	2.69
Lower	Structure - L(100)	815.98	3.10	0.60	0.40	0.60
Lower	Structure - L(101)	812.08	3.10	0.58	0.38	0.58
Lower	Structure - L(102)	807.30	3.10	0.60	0.40	0.60
Lower	Structure - L(103)	803.28	3.10	0.63	0.42	0.63
Lower	Structure - L(104)	799.58	3.10	0.63	0.42	0.63
Lower	Structure - L(105)	793.28	0.10	0.68	0.45	0.68
Lower	Structure - L(106)	790.94	3.10	0.68	0.45	0.68
Lower	Structure - L(107)	784.82	3.10	8.63	5.72	8.63
Lower	Structure - L(109)	758.38	4.10	10.23	6.79	10.23
Lower	Structure - L(11)	803.06	3.10	3.31	2.20	3.31
Lower	Structure - L(110)	756.38	3.04	2.54	1.69	2.54
Lower	Structure - L(111)	733.28	3.10	8.73	5.80	8.73
Lower	Structure - L(112)	728.10	3.20	2.41	1.60	2.41
Lower	Structure - L(113)	724.90	3.10	0.58	0.38	0.58
Lower	Structure - L(114)	721.70	3.10	0.46	0.30	0.46
Lower	Structure - L(115)	718.08	3.20	0.25	0.16	0.25
Lower	Structure - L(116)	714.18	4.10	0.56	0.37	0.56
Lower	Structure - L(117)	706.45	3.10	0.46	0.31	0.46
Lower	Structure - L(118)	704.78	3.10	0.51	0.34	0.51
Lower	Structure - L(119)	706.00	4.90	0.36	0.24	0.36
Lower	Structure - L(12)	803.01	3.00	1.36	0.90	1.36
Lower	Structure - L(120)	705.56	5.70	0.36	0.24	0.36
Lower	Structure - L(121)	698.48	3.10	0.41	0.27	0.41
Lower	Structure - L(122)	698.31	3.45	0.46	0.30	0.46
Lower	Structure - L(123)	700.70	6.30	0.19	0.13	0.19
Lower	Structure - L(124)	698.72	4.80	0.46	0.30	0.46
Lower	Structure - L(125)	696.03	3.10	0.36	0.24	0.36
Lower	Structure - L(126)	697.80	5.35	0.39	0.26	0.39
Lower	Structure - L(127)	695.27	4.20	0.34	0.22	0.34
Lower	Structure - L(128)	691.42	3.10	0.17	0.12	0.17
Lower	Structure - L(129)	689.84	3.60	0.55	0.37	0.55
Lower	Structure - L(130)	687.98	8.45	0.60	0.40	0.60
Lower	Structure - L(131)	678.18	6.08	0.46	0.30	0.46
Lower	Structure - L(132)	709.21	3.00	0.92	0.61	0.92
Lower	Structure - L(15)	789.39	3.00	7.59	4.65	7.59
Lower	Structure - L(16)	789.30	5.83	6.14	3.72	6.14
Lower	Structure - L(17)	769.24	3.10	7.01	4.66	7.01
Lower	Structure - L(19)	766.94	3.00	1.51	1.00	1.51

Tuscan Ridge
SSA Inlet Summary Results

Catchment System	Inlet/Junction ID	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Max (Rim) Offset (ft)	Peak Flow (cfs)	Peak Flow (cfs)
Lower	Structure - L(21)	766.94	3.00	0.11	0.07	0.11
Lower	Structure - L(22)	802.22	3.00	1.65	1.09	1.65
Lower	Structure - L(24)	802.40	3.00	2.75	1.83	2.75
Lower	Structure - L(26)	788.60	4.90	0.74	0.49	0.74
Lower	Structure - L(27)	788.60	4.60	1.59	1.06	1.59
Lower	Structure - L(3)	835.00	3.00	0.99	0.66	0.99
Lower	Structure - L(31)	756.98	3.25	0.92	0.61	0.92
Lower	Structure - L(32)	756.98	3.85	0.65	0.43	0.65
Lower	Structure - L(34)	756.95	3.00	6.71	4.46	6.71
Lower	Structure - L(35)	757.00	3.60	0.56	0.37	0.56
Lower	Structure - L(38)	775.94	3.00	1.07	0.71	1.07
Lower	Structure - L(39)	775.93	3.10	3.52	2.11	3.52
Lower	Structure - L(44)	754.98	3.38	4.43	2.70	4.43
Lower	Structure - L(45)	755.02	3.00	1.82	1.10	1.82
Lower	Structure - L(47)	769.15	4.46	24.62	14.75	24.62
Lower	Structure - L(50)	766.65	4.85	3.48	2.11	3.48
Lower	Structure - L(51)	762.90	3.10	1.35	0.90	1.35
Lower	Structure - L(52)	759.94	3.10	0.46	0.30	0.46
Lower	Structure - L(53)	758.25	3.10	0.65	0.43	0.65
Lower	Structure - L(54)	755.90	3.10	0.53	0.35	0.53
Lower	Structure - L(55)	753.77	3.10	0.58	0.38	0.58
Lower	Structure - L(58)	742.41	3.50	1.09	0.66	1.09
Lower	Structure - L(59)	742.20	3.00	2.15	1.29	2.15
Lower	Structure - L(6)	821.03	3.00	0.88	0.59	0.88
Lower	Structure - L(63)	721.16	3.00	1.43	0.95	1.43
Lower	Structure - L(64)	721.40	3.40	2.92	1.94	2.92
Lower	Structure - L(67)	709.36	3.00	3.37	2.24	3.37
Lower	Structure - L(68)	733.55	3.00	2.80	1.72	2.80
Lower	Structure - L(7)	821.23	3.00	0.85	0.56	0.85
Lower	Structure - L(70)	733.66	3.20	2.90	1.75	2.90
Lower	Structure - L(72)	742.95	3.00	0.88	0.58	0.88
Lower	Structure - L(74)	742.87	3.00	3.36	2.10	3.36
Lower	Structure - L(76)	719.92	3.00	0.55	0.37	0.55
Lower	Structure - L(77)	719.95	3.00	5.98	3.97	5.98
Lower	Structure - L(79)	734.94	3.00	2.48	1.60	2.48
Lower	Structure - L(81)	734.85	3.01	0.39	0.26	0.39
Lower	Structure - L(83)	713.20	3.00	0.55	0.37	0.55
Lower	Structure - L(84)	713.20	3.00	6.68	4.03	6.68
Lower	Structure - L(86)	728.65	3.00	0.94	0.60	0.94
Lower	Structure - L(88)	728.70	3.00	4.83	2.89	4.83
Lower	Structure - L(90)	708.50	3.00	0.70	0.46	0.70
Lower	Structure - L(91)	708.50	3.00	6.80	4.26	6.80
Lower	Structure - L(94)	688.50	3.00	1.10	0.73	1.10
Lower	Structure - L(95)	689.70	5.00	1.21	0.81	1.21
Lower	Structure - L(96)	681.40	9.90	1.10	0.73	1.10
Lower	Structure - L(98)	825.06	3.00	0.90	0.56	0.90
Lower	Structure - L(99)	820.89	3.10	0.68	0.45	0.68
Upper Commercial	Structure - UC(1)	873.71	4.01	22.45	13.54	22.45
Upper Commercial	Structure - UC(11)	838.47	4.10	19.99	13.28	19.99
Upper Commercial	Structure - UC(13)	846.45	7.22	5.03	3.34	5.03
Upper Commercial	Structure - UC(3)	873.71	4.00	1.91	1.27	1.91
Upper Commercial	Structure - UC(8)	846.33	4.03	12.47	7.48	12.47
Upper Commercial	Structure - UC(9)	845.90	3.00	1.95	1.30	1.95

Tuscan Ridge
SSA Inlet Summary Results

Catchment System	Inlet/Junction ID	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Max (Rim) Offset (ft)	10-YR Peak Flow (cfs)	100 -YR Peak Flow (cfs)
Watershed A	Structure - A(1)	760.21	2.47	37.25	37.25	37.25
Eastern Commercial	Structure - EC(1)	883.71	4.00	12.44	8.27	12.44
Eastern Commercial	Structure - EC(2)	859.00	4.00	5.14	3.42	5.14
Lower	Structure - L(1)	835.02	3.02	2.69	1.79	2.69
Lower	Structure - L(100)	815.98	3.10	0.60	0.40	0.60
Lower	Structure - L(101)	812.08	3.10	0.58	0.38	0.58
Lower	Structure - L(102)	807.30	3.10	0.60	0.40	0.60
Lower	Structure - L(103)	803.28	3.10	0.63	0.42	0.63
Lower	Structure - L(104)	799.58	3.10	0.63	0.42	0.63
Lower	Structure - L(105)	793.28	0.10	0.68	0.45	0.68
Lower	Structure - L(106)	790.94	3.10	0.68	0.45	0.68
Lower	Structure - L(107)	784.82	3.10	8.63	5.72	8.63
Lower	Structure - L(109)	758.38	4.10	10.23	6.79	10.23
Lower	Structure - L(11)	803.06	3.10	3.31	2.20	3.31
Lower	Structure - L(110)	756.38	3.04	2.54	1.69	2.54
Lower	Structure - L(111)	733.28	3.10	8.73	5.80	8.73
Lower	Structure - L(112)	728.10	3.20	2.41	1.60	2.41
Lower	Structure - L(113)	724.90	3.10	0.58	0.38	0.58
Lower	Structure - L(114)	721.70	3.10	0.46	0.30	0.46
Lower	Structure - L(115)	718.08	3.20	0.25	0.16	0.25
Lower	Structure - L(116)	714.18	4.10	0.56	0.37	0.56
Lower	Structure - L(117)	706.45	3.10	0.46	0.31	0.46
Lower	Structure - L(118)	704.78	3.10	0.51	0.34	0.51
Lower	Structure - L(119)	706.00	4.90	0.36	0.24	0.36
Lower	Structure - L(12)	803.01	3.00	1.36	0.90	1.36
Lower	Structure - L(120)	705.56	5.70	0.36	0.24	0.36
Lower	Structure - L(121)	698.48	3.10	0.41	0.27	0.41
Lower	Structure - L(122)	698.31	3.45	0.46	0.30	0.46
Lower	Structure - L(123)	700.70	6.30	0.19	0.13	0.19
Lower	Structure - L(124)	698.72	4.80	0.46	0.30	0.46
Lower	Structure - L(125)	696.03	3.10	0.36	0.24	0.36
Lower	Structure - L(126)	697.80	5.35	0.39	0.26	0.39
Lower	Structure - L(127)	695.27	4.20	0.34	0.22	0.34
Lower	Structure - L(128)	691.42	3.10	0.17	0.12	0.17
Lower	Structure - L(129)	689.84	3.60	0.55	0.37	0.55
Lower	Structure - L(130)	687.98	8.45	0.60	0.40	0.60
Lower	Structure - L(131)	678.18	6.08	0.46	0.30	0.46
Lower	Structure - L(132)	709.21	3.00	0.92	0.61	0.92
Lower	Structure - L(15)	789.39	3.00	7.59	4.65	7.59
Lower	Structure - L(16)	789.30	5.83	6.14	3.72	6.14
Lower	Structure - L(17)	769.24	3.10	7.01	4.66	7.01
Lower	Structure - L(19)	766.94	3.00	1.51	1.00	1.51

Tuscan Ridge
SSA Inlet Summary Results

Catchment System	Inlet/Junction ID	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Max (Rim) Offset (ft)	Peak Flow (cfs)	Peak Flow (cfs)
Lower	Structure - L(21)	766.94	3.00	0.11	0.07	0.11
Lower	Structure - L(22)	802.22	3.00	1.65	1.09	1.65
Lower	Structure - L(24)	802.40	3.00	2.75	1.83	2.75
Lower	Structure - L(26)	788.60	4.90	0.74	0.49	0.74
Lower	Structure - L(27)	788.60	4.60	1.59	1.06	1.59
Lower	Structure - L(3)	835.00	3.00	0.99	0.66	0.99
Lower	Structure - L(31)	756.98	3.25	0.92	0.61	0.92
Lower	Structure - L(32)	756.98	3.85	0.65	0.43	0.65
Lower	Structure - L(34)	756.95	3.00	6.71	4.46	6.71
Lower	Structure - L(35)	757.00	3.60	0.56	0.37	0.56
Lower	Structure - L(38)	775.94	3.00	1.07	0.71	1.07
Lower	Structure - L(39)	775.93	3.10	3.52	2.11	3.52
Lower	Structure - L(44)	754.98	3.38	4.43	2.70	4.43
Lower	Structure - L(45)	755.02	3.00	1.82	1.10	1.82
Lower	Structure - L(47)	769.15	4.46	24.62	14.75	24.62
Lower	Structure - L(50)	766.65	4.85	3.48	2.11	3.48
Lower	Structure - L(51)	762.90	3.10	1.35	0.90	1.35
Lower	Structure - L(52)	759.94	3.10	0.46	0.30	0.46
Lower	Structure - L(53)	758.25	3.10	0.65	0.43	0.65
Lower	Structure - L(54)	755.90	3.10	0.53	0.35	0.53
Lower	Structure - L(55)	753.77	3.10	0.58	0.38	0.58
Lower	Structure - L(58)	742.41	3.50	1.09	0.66	1.09
Lower	Structure - L(59)	742.20	3.00	2.15	1.29	2.15
Lower	Structure - L(6)	821.03	3.00	0.88	0.59	0.88
Lower	Structure - L(63)	721.16	3.00	1.43	0.95	1.43
Lower	Structure - L(64)	721.40	3.40	2.92	1.94	2.92
Lower	Structure - L(67)	709.36	3.00	3.37	2.24	3.37
Lower	Structure - L(68)	733.55	3.00	2.80	1.72	2.80
Lower	Structure - L(7)	821.23	3.00	0.85	0.56	0.85
Lower	Structure - L(70)	733.66	3.20	2.90	1.75	2.90
Lower	Structure - L(72)	742.95	3.00	0.88	0.58	0.88
Lower	Structure - L(74)	742.87	3.00	3.36	2.10	3.36
Lower	Structure - L(76)	719.92	3.00	0.55	0.37	0.55
Lower	Structure - L(77)	719.95	3.00	5.98	3.97	5.98
Lower	Structure - L(79)	734.94	3.00	2.48	1.60	2.48
Lower	Structure - L(81)	734.85	3.01	0.39	0.26	0.39
Lower	Structure - L(83)	713.20	3.00	0.55	0.37	0.55
Lower	Structure - L(84)	713.20	3.00	6.68	4.03	6.68
Lower	Structure - L(86)	728.65	3.00	0.94	0.60	0.94
Lower	Structure - L(88)	728.70	3.00	4.83	2.89	4.83
Lower	Structure - L(90)	708.50	3.00	0.70	0.46	0.70
Lower	Structure - L(91)	708.50	3.00	6.80	4.26	6.80
Lower	Structure - L(94)	688.50	3.00	1.10	0.73	1.10
Lower	Structure - L(95)	689.70	5.00	1.21	0.81	1.21
Lower	Structure - L(96)	681.40	9.90	1.10	0.73	1.10
Lower	Structure - L(98)	825.06	3.00	0.90	0.56	0.90
Lower	Structure - L(99)	820.89	3.10	0.68	0.45	0.68
Upper Commercial	Structure - UC(1)	873.71	4.01	22.45	13.54	22.45
Upper Commercial	Structure - UC(11)	838.47	4.10	19.99	13.28	19.99
Upper Commercial	Structure - UC(13)	846.45	7.22	5.03	3.34	5.03
Upper Commercial	Structure - UC(3)	873.71	4.00	1.91	1.27	1.91
Upper Commercial	Structure - UC(8)	846.33	4.03	12.47	7.48	12.47
Upper Commercial	Structure - UC(9)	845.90	3.00	1.95	1.30	1.95

Tuscan Ridge
SSA Junction Summary Results

					10-YR						100-YR					
Catchment System	Junction ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Peak Inflow (cfs)	Maximum HGL Elevation Attained (ft)	Maximum HGL Depth Attained (ft)	Minimum Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Peak Inflow (cfs)	Maximum HGL Elevation Attained (ft)	Maximum HGL Depth Attained (ft)	Minimum Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)
Lower	Structure - L(10)	799.52	803.22	3.70	6.30	800.64	1.12	0.00	2.58	800.22	0.70	800.73	1.21	2.49	800.23	0.71
Lower	Structure - L(108)	758.17	761.27	3.10	4.11	758.66	0.49	0.00	2.61	758.27	0.10	758.75	0.58	2.52	758.28	0.11
Lower	Structure - L(13)	791.00	794.44	3.44	6.29	791.57	0.57	0.00	2.87	791.01	0.01	791.70	0.70	2.74	791.01	0.01
Lower	Structure - L(14)	786.10	789.50	3.40	12.46	787.04	0.94	0.00	2.46	786.51	0.41	787.18	1.08	2.32	786.51	0.41
Lower	Structure - L(18)	763.50	768.00	4.50	9.51	765.55	2.05	0.00	2.45	765.01	1.51	765.68	2.18	2.32	765.01	1.51
Lower	Structure - L(2)	831.87	835.17	3.30	2.44	832.19	0.32	0.00	2.98	831.87	0.00	832.26	0.39	2.91	831.87	0.00
Lower	Structure - L(20)	763.70	767.45	3.75	1.07	764.10	0.40	0.00	3.35	763.75	0.05	764.18	0.48	3.27	763.75	0.05
Lower	Structure - L(23)	799.00	802.45	3.45	2.70	799.63	0.63	0.00	2.82	799.20	0.20	799.72	0.72	2.73	799.21	0.21
Lower	Structure - L(25)	783.27	788.51	5.24	4.08	783.77	0.50	0.00	4.74	783.37	0.10	783.89	0.62	4.62	783.38	0.11
Lower	Structure - L(28)	781.38	784.48	3.10	4.08	781.98	0.60	0.00	2.50	781.49	0.11	782.10	0.72	2.38	781.49	0.11
Lower	Structure - L(29)	778.38	781.48	3.10	4.08	778.89	0.51	0.00	2.59	778.48	0.10	778.99	0.61	2.49	778.49	0.11
Lower	Structure - L(30)	753.00	757.10	4.10	14.89	754.48	1.48	0.00	2.62	753.74	0.74	754.67	1.67	2.43	753.74	0.74
Lower	Structure - L(33)	744.95	751.05	6.10	31.57	746.50	1.55	0.00	4.55	745.07	0.12	751.05	6.10	0.00	745.09	0.14
Lower	Structure - L(36)	780.00	784.51	4.51	12.46	780.85	0.85	0.00	3.66	780.11	0.11	781.12	1.12	3.39	780.11	0.11
Lower	Structure - L(37)	772.64	775.99	3.35	14.81	773.51	0.87	0.00	2.48	772.75	0.11	773.79	1.15	2.20	772.75	0.11
Lower	Structure - L(4)	823.40	826.55	3.15	2.42	823.72	0.32	0.00	2.83	823.40	0.00	823.79	0.39	2.76	823.40	0.00
Lower	Structure - L(40)	764.67	767.76	3.09	14.81	765.56	0.89	0.00	2.20	764.77	0.10	765.86	1.19	1.90	764.77	0.10
Lower	Structure - L(41)	761.14	764.24	3.10	14.80	762.03	0.89	0.00	2.21	761.25	0.11	762.33	1.19	1.91	761.25	0.11
Lower	Structure - L(42)	757.66	761.76	4.10	14.80	758.53	0.87	0.00	3.23	757.77	0.11	758.81	1.15	2.95	757.77	0.11
Lower	Structure - L(43)	751.25	755.45	4.20	18.39	752.23	0.98	0.00	3.22	751.46	0.21	752.52	1.27	2.93	751.46	0.21
Lower	Structure - L(46)	742.94	746.14	3.20	41.88	744.49	1.55	0.00	1.65	742.97	0.03	745.44	2.50	0.70	742.97	0.03
Lower	Structure - L(48)	762.85	765.95	3.10	14.75	764.05	1.20	0.00	1.90	762.97	0.12	764.50	1.65	1.45	762.98	0.13
Lower	Structure - L(49)	762.32	767.87	5.55	14.73	763.59	1.27	0.00	4.28	762.40	0.08	764.11	1.79	3.76	762.40	0.08
Lower	Structure - L(5)	817.70	820.85	3.15	3.52	818.15	0.45	0.00	2.70	817.85	0.15	818.22	0.52	2.63	817.85	0.15
Lower	Structure - L(56)	739.45	743.55	4.10	41.87	740.78	1.33	0.00	2.77	739.48	0.03	741.33	1.88	2.22	739.48	0.03
Lower	Structure - L(57)	738.00	741.30	3.30	43.14	739.34	1.34	0.00	1.96	738.22	0.22	739.93	1.93	1.37	738.22	0.22
Lower	Structure - L(60)	724.14	727.24	3.10	43.13	725.58	1.44	0.00	1.66	724.27	0.13	726.15	2.01	1.09	724.27	0.13
Lower	Structure - L(61)	721.35	724.45	3.10	43.13	722.82	1.47	0.00	1.63	721.48	0.13	723.42	2.07	1.03	721.48	0.13
Lower	Structure - L(62)	717.72	721.42	3.70	45.06	719.67	1.95	0.00	1.75	718.45	0.73	720.15	2.43	1.27	718.45	0.73
Lower	Structure - L(65)	705.66	709.36	3.70	46.96	707.26	1.60	0.00	2.10	706.22	0.56	707.86	2.20	1.50	706.22	0.56
Lower	Structure - L(66)	703.47	707.57	4.10	69.79	705.65	2.18	0.00	1.92	703.60	0.13	707.57	4.10	0.00	703.62	0.15
Lower	Structure - L(69)	730.08	733.78	3.70	3.40	730.66	0.58	0.00	3.12	730.28	0.20	730.77	0.69	3.01	730.28	0.20
Lower	Structure - L(71)	721.49	724.59	3.10	6.14	721.95	0.46	0.00	2.64	721.59	0.10	722.07	0.58	2.52	721.59	0.10
Lower	Structure - L(73)	739.48	742.93	3.45	2.81	739.91	0.43	0.00	3.02	739.68	0.20	739.96	0.48	2.97	739.68	0.20
Lower	Structure - L(75)	716.59	720.04	3.45	10.72	717.28	0.69	0.00	2.76	716.79	0.20	717.45	0.86	2.59	716.80	0.21
Lower	Structure - L(78)	712.50	715.60	3.10	12.57	713.34	0.84	0.00	2.26	712.61	0.11	713.56	1.06	2.04	712.61	0.11
Lower	Structure - L(8)	814.00	817.04	3.04	3.52	814.49	0.49	0.00	2.55	814.10	0.10	814.57	0.57	2.47	814.10	0.10
Lower	Structure - L(80)	731.53	734.98	3.45	1.90	731.99	0.46	0.00	2.99	731.73	0.20	732.08	0.55	2.90	731.73	0.20
Lower	Structure - L(82)	709.79	713.34	3.55	17.15	711.05	1.26	0.00	2.29	710.10	0.31	713.34	3.55	0.00	710.10	0.31
Lower	Structure - L(85)	708.30	711.40	3.10	20.89	709.61	1.31	0.00	1.79	708.41	0.11	710.19	1.89	1.21	708.41	0.11
Lower	Structure - L(87)	725.35	728.95	3.60	3.83	725.83	0.48	0.00	3.12	725.45	0.10	725.93	0.58	3.02	725.45	0.10
Lower	Structure - L(89)	705.04	708.74	3.70	25.53	706.48	1.44	0.00	2.26	705.25	0.21	706.95	1.91	1.79	705.26	0.22
Lower	Structure - L(9)	804.55	807.65	3.10	3.50	805.04	0.49	0.00	2.61	804.65	0.10	805.13	0.58	2.52	804.65	0.10
Lower	Structure - L(92)	702.90	708.20	5.30	69.78	705.08	2.18	0.00	3.12	702.94	0.04	705.65	2.75	2.55	702.94	0.04
Lower	Structure - L(93)	683.10	689.20	6.10	71.03	686.58	3.48	0.00	2.62	685.23	2.13	686.69	3.59	2.51	685.23	2.13
Upper Commercial	Structure - UC(10)	840.39	845.49	5.10	20.96	841.66	1.27	0.00	3.83	840.51	0.12	841.97	1.58	3.52	840.51	0.12
Upper Commercial	Structure - UC(2)	869.50	873.83	4.33	13.98	870.96	1.46	0.00	2.87	869.52	0.02	873.83	4.33	0.00	869.54	0.04
Upper Commercial	Structure - UC(4)	868.50	876.98	8.48	13.86	869.95	1.45	0.00	7.03	868.52	0.02	870.50	2.00	6.48	868.53	0.03
Upper Commercial	Structure - UC(5)	858.90	875.52	16.62	13.86	869.09	1.19	0.00	6.43	867.92	0.02	868.78	9.88	6.74	867.91	9.01
Upper Commercial	Structure - UC(6)	850.20	854.30	4.10	13.86	850.96	0.76	0.00	3.34	850.31	0.11	851.19	0.99	3.11	850.31	0.11
Upper Commercial	Structure - UC(7)	841.65	846.30	4.65	20.97	842.82	1.17	0.00	3.48	842.01	0.36	843.13	1.48	3.17	842.02	0.37

Tuscan Ridge
SSA Outlet Node Summary Results

							10-YR		100-YR	
Weir ID	**Invert Elevation (ft)**	Type	Flap Gate	Length (ft)	Weir Total Height (ft)	Discharge Coefficient	**Crest Elevation (ft)**	**Peak Flow (cfs)**	**Crest Elevation (ft)**	**Peak Flow (cfs)**
Lower	671.00	RECTANGULAR	NO	3.00	5.50	3.33	825.07	26.23	825.07	42.35
Upper Commercial	825.07	RECTANGULAR	NO	3	7.5	3.33	669.86	84.66	671.00	89.95

Tuscan Ridge
SSA Subbasin Summary Results

Catchment System	Catchment ID	Area (ac)	Drainage Inlet ID	Weighted Runoff Coefficient	Accumulated Precipitation (in)	Total Runoff (in)	10-YR Peak Runoff (cfs)	10-YR Rainfall Intensity (in/hr)	10-YR Time of Concentration (days hh:mm:ss)	100-YR Peak Runoff (cfs)	100-YR Rainfall Intensity (in/hr)	100-YR Time of Concentration (days hh:mm:ss)
Watershed A	A-1	26.19	Structure - A(1)	0.5700	0.69	0.39	24.77	1.659	0 00:24:52	37.25	2.495	0 00:24:52
Eastern Commecial	EC-C1	3.46	Structure - EC(1)	0.8800	0.68	0.60	8.27	2.715	0 00:10:00	12.44	4.087	0 00:10:00
	EC-C2	1.43	Structure - EC(2)	0.8800	0.68	0.60	3.42	2.715	0 00:10:00	5.14	4.087	0 00:10:00
	OS-1	19.39	N-offsite	0.5700	0.68	0.39	30.01	2.715	0 00:10:00	45.17	4.087	0 00:10:00
Lower	L-C1	1.08	Structure - L(1)	0.6100	0.45	0.28	1.79	2.715	0 00:10:00	2.69	4.087	0 00:10:00
Lower	L-C100	0.25	Structure - L(100)	0.5900	0.45	0.27	0.40	2.715	0 00:10:00	0.60	4.087	0 00:10:00
Lower	L-C101	0.24	Structure - L(101)	0.5900	0.45	0.27	0.38	2.715	0 00:10:00	0.58	4.087	0 00:10:00
Lower	L-C102	0.25	Structure - L(102)	0.5900	0.45	0.27	0.40	2.715	0 00:10:00	0.60	4.087	0 00:10:00
Lower	L-C103	0.26	Structure - L(103)	0.5900	0.45	0.27	0.42	2.715	0 00:10:00	0.63	4.087	0 00:10:00
Lower	L-C104	0.26	Structure - L(104)	0.5900	0.45	0.27	0.42	2.715	0 00:10:00	0.63	4.087	0 00:10:00
Lower	L-C105	0.28	Structure - L(105)	0.5900	0.45	0.27	0.45	2.715	0 00:10:00	0.68	4.087	0 00:10:00
Lower	L-C106	0.28	Structure - L(106)	0.5900	0.45	0.27	0.45	2.715	0 00:10:00	0.68	4.087	0 00:10:00
Lower	L-C107	0.59	Structure - L(107)	0.8200	0.16	0.14	5.72	11.816	0 00:00:49	8.63	17.834	0 00:00:49
Lower	L-C109	3.25	Structure - L(109)	0.7700	0.45	0.35	6.79	2.715	0 00:10:00	10.23	4.087	0 00:10:00
Lower	L-C11	1.14	Structure - L(11)	0.7100	0.45	0.32	2.20	2.715	0 00:10:00	3.31	4.087	0 00:10:00
Lower	L-C110	0.69	Structure - L(110)	0.9000	0.45	0.41	1.69	2.715	0 00:10:00	2.54	4.087	0 00:10:00
Lower	L-C111	3.01	Structure - L(111)	0.7100	0.45	0.32	5.80	2.715	0 00:10:00	8.73	4.087	0 00:10:00
Lower	L-C112	1.11	Structure - L(112)	0.5900	0.50	0.30	1.60	2.446	0 00:12:20	2.41	3.681	0 00:12:20
Lower	L-C113	0.24	Structure - L(113)	0.5900	0.45	0.27	0.38	2.715	0 00:10:00	0.58	4.087	0 00:10:00
Lower	L-C114	0.19	Structure - L(114)	0.5900	0.45	0.27	0.30	2.715	0 00:10:00	0.46	4.087	0 00:10:00
Lower	L-C115	0.15	Structure - L(115)	0.4000	0.45	0.18	0.16	2.715	0 00:10:00	0.25	4.087	0 00:10:00
Lower	L-C116	0.27	Structure - L(116)	0.5100	0.45	0.23	0.37	2.715	0 00:10:00	0.56	4.087	0 00:10:00
Lower	L-C117	0.24	Structure - L(117)	0.4700	0.45	0.21	0.31	2.715	0 00:10:00	0.46	4.087	0 00:10:00
Lower	L-C118	0.21	Structure - L(118)	0.5900	0.45	0.27	0.34	2.715	0 00:10:00	0.51	4.087	0 00:10:00
Lower	L-C119	0.15	Structure - L(119)	0.5900	0.45	0.27	0.24	2.715	0 00:10:00	0.36	4.087	0 00:10:00
Lower	L-C12	0.37	Structure - L(12)	0.9000	0.45	0.41	0.90	2.715	0 00:10:00	1.36	4.087	0 00:10:00
Lower	L-C120	0.15	Structure - L(120)	0.5900	0.45	0.27	0.24	2.715	0 00:10:00	0.36	4.087	0 00:10:00
Lower	L-C121	0.17	Structure - L(121)	0.5900	0.45	0.27	0.27	2.715	0 00:10:00	0.41	4.087	0 00:10:00
Lower	L-C122	0.19	Structure - L(122)	0.5900	0.45	0.27	0.30	2.715	0 00:10:00	0.46	4.087	0 00:10:00
Lower	L-C123	0.19	Structure - L(123)	0.2500	0.45	0.11	0.13	2.715	0 00:10:00	0.19	4.087	0 00:10:00
Lower	L-C124	0.19	Structure - L(124)	0.5900	0.45	0.27	0.30	2.715	0 00:10:00	0.46	4.087	0 00:10:00
Lower	L-C125	0.15	Structure - L(125)	0.5900	0.45	0.27	0.24	2.715	0 00:10:00	0.36	4.087	0 00:10:00
Lower	L-C126	0.16	Structure - L(126)	0.5900	0.45	0.27	0.26	2.715	0 00:10:00	0.39	4.087	0 00:10:00
Lower	L-C127	0.14	Structure - L(127)	0.5900	0.45	0.27	0.22	2.715	0 00:10:00	0.34	4.087	0 00:10:00
Lower	L-C128	0.17	Structure - L(128)	0.2500	0.45	0.11	0.12	2.715	0 00:10:00	0.17	4.087	0 00:10:00
Lower	L-C129	0.23	Structure - L(129)	0.5900	0.45	0.27	0.37	2.715	0 00:10:00	0.56	4.087	0 00:10:00
Lower	L-C130	0.25	Structure - L(130)	0.5900	0.45	0.27	0.40	2.715	0 00:10:00	0.60	4.087	0 00:10:00
Lower	L-C131	0.19	Structure - L(131)	0.5900	0.45	0.27	0.30	2.715	0 00:10:00	0.46	4.087	0 00:10:00
Lower	L-C132	0.25	Structure - L(132)	0.9000	0.45	0.41	0.61	2.715	0 00:10:00	0.92	4.087	0 00:10:00
Lower	L-C15	3.65	Structure - L(15)	0.6200	0.59	0.36	4.65	2.053	0 00:17:10	7.59	3.356	0 00:14:51
Lower	L-C16	2.80	Structure - L(16)	0.5900	0.55	0.32	3.72	2.250	0 00:14:36	6.14	3.714	0 00:12:07
Lower	L-C17	2.86	Structure - L(17)	0.6000	0.45	0.27	4.66	2.715	0 00:10:00	7.01	4.087	0 00:10:00
Lower	L-C19	0.43	Structure - L(19)	0.8600	0.45	0.39	1.00	2.715	0 00:10:00	1.51	4.087	0 00:10:00
Lower	L-C21	0.03	Structure - L(21)	0.9000	0.45	0.41	0.07	2.715	0 00:10:00	0.11	4.087	0 00:10:00
Lower	L-C22	0.51	Structure - L(22)	0.7900	0.45	0.36	1.09	2.715	0 00:10:00	1.65	4.087	0 00:10:00
Lower	L-C24	1.19	Structure - L(24)	0.6200	0.50	0.31	1.83	2.480	0 00:12:00	2.75	3.732	0 00:12:00
Lower	L-C26	0.20	Structure - L(26)	0.9000	0.45	0.41	0.49	2.715	0 00:10:00	0.74	4.087	0 00:10:00
Lower	L-C27	0.65	Structure - L(27)	0.6000	0.45	0.27	1.06	2.715	0 00:10:00	1.59	4.087	0 00:10:00
Lower	L-C3	0.27	Structure - L(3)	0.9000	0.45	0.41	0.66	2.715	0 00:10:00	0.99	4.087	0 00:10:00
Lower	L-C31	0.25	Structure - L(31)	0.9000	0.45	0.41	0.61	2.715	0 00:10:00	0.92	4.087	0 00:10:00
Lower	L-C32	0.20	Structure - L(32)	0.8000	0.45	0.36	0.43	2.715	0 00:10:00	0.65	4.087	0 00:10:00
Lower	L-C34	2.65	Structure - L(34)	0.6200	0.45	0.28	4.46	2.715	0 00:10:00	6.71	4.087	0 00:10:00
Lower	L-C35	0.20	Structure - L(35)	0.6800	0.45	0.31	0.37	2.715	0 00:10:00	0.56	4.087	0 00:10:00
Lower	L-C38	0.29	Structure - L(38)	0.9000	0.45	0.41	0.71	2.715	0 00:10:00	1.07	4.087	0 00:10:00

Tuscan Ridge
SSA Subbasin Summary Results

Catchment System	Catchment ID	Area (ac)	Drainage Inlet ID	Weighted Runoff Coefficient	Accumulated Precipitation (in)	Total Runoff (in)	Peak Runoff (cfs)	Rainfall Intensity (in/hr)	Time of Concentration (days hh:mm:ss)	Peak Runoff (cfs)	Rainfall Intensity (in/hr)	Time of Concentration (days hh:mm:ss)
Lower	L-C39	1.50	Structure - L(39)	0.6300	0.55	0.35	2.12	2.238	0 00:14:45	3.52	3.728	0 00:12:01
Lower	L-C44	1.76	Structure - L(44)	0.6500	0.52	0.34	2.70	2.357	0 00:13:17	4.44	3.876	0 00:11:07
Lower	L-C45	0.67	Structure - L(45)	0.7700	0.57	0.44	1.10	2.128	0 00:16:08	1.82	3.534	0 00:13:23
Lower	L-C50	1.75	Structure - L(50)	0.5500	0.56	0.31	2.11	2.192	0 00:15:19	3.48	3.620	0 00:12:45
Lower	L-C51	0.56	Structure - L(51)	0.5900	0.45	0.27	0.90	2.715	0 00:10:00	1.35	4.087	0 00:10:00
Lower	L-C52	0.19	Structure - L(52)	0.5900	0.45	0.27	0.30	2.715	0 00:10:00	0.46	4.087	0 00:10:00
Lower	L-C53	0.27	Structure - L(53)	0.5900	0.45	0.27	0.43	2.715	0 00:10:00	0.65	4.087	0 00:10:00
Lower	L-C54	0.22	Structure - L(54)	0.5900	0.45	0.27	0.35	2.715	0 00:10:00	0.53	4.087	0 00:10:00
Lower	L-C55	0.24	Structure - L(55)	0.5900	0.45	0.27	0.38	2.715	0 00:10:00	0.58	4.087	0 00:10:00
Lower	L-C58	0.69	Structure - L(58)	0.4800	0.61	0.29	0.66	1.982	0 00:18:16	1.09	3.279	0 00:15:29
Lower	L-C59	1.19	Structure - L(59)	0.5900	0.64	0.38	1.29	1.834	0 00:20:54	2.15	3.059	0 00:17:28
Lower	L-C6	0.24	Structure - L(6)	0.9000	0.45	0.41	0.59	2.715	0 00:10:00	0.88	4.087	0 00:10:00
Lower	L-C63	0.39	Structure - L(63)	0.9000	0.45	0.41	0.95	2.715	0 00:10:00	1.43	4.087	0 00:10:00
Lower	L-C64	1.02	Structure - L(64)	0.7000	0.45	0.32	1.94	2.715	0 00:10:00	2.92	4.087	0 00:10:00
Lower	L-C67	1.27	Structure - L(67)	0.6500	0.45	0.29	2.24	2.715	0 00:10:00	3.37	4.087	0 00:10:00
Lower	L-C68	0.89	Structure - L(68)	0.7700	0.49	0.38	1.72	2.510	0 00:11:42	2.80	4.087	0 00:10:00
Lower	L-C7	0.23	Structure - L(7)	0.9000	0.45	0.41	0.56	2.715	0 00:10:00	0.85	4.087	0 00:10:00
Lower	L-C70	0.96	Structure - L(70)	0.6700	0.45	0.30	1.93	2.715	0 00:10:00	2.90	4.087	0 00:10:00
Lower	L-C72	0.25	Structure - L(72)	0.8600	0.45	0.39	0.58	2.715	0 00:10:00	0.88	4.087	0 00:10:00
Lower	L-C74	1.55	Structure - L(74)	0.5000	0.45	0.23	2.23	2.715	0 00:10:00	3.36	4.087	0 00:10:00
Lower	L-C76	0.15	Structure - L(76)	0.9000	0.45	0.41	0.37	2.715	0 00:10:00	0.55	4.087	0 00:10:00
Lower	L-C77	2.12	Structure - L(77)	0.6900	0.45	0.31	4.37	2.715	0 00:10:00	5.98	4.087	0 00:10:00
Lower	L-C79	0.83	Structure - L(79)	0.7100	0.45	0.32	1.65	2.715	0 00:10:00	2.48	4.087	0 00:10:00
Lower	L-C81	0.11	Structure - L(81)	0.8600	0.45	0.39	0.26	2.715	0 00:10:00	0.39	4.087	0 00:10:00
Lower	L-C83	0.15	Structure - L(83)	0.9000	0.45	0.41	0.37	2.715	0 00:10:00	0.55	4.087	0 00:10:00
Lower	L-C84	2.15	Structure - L(84)	0.6900	0.45	0.31	4.44	2.715	0 00:10:00	6.68	4.087	0 00:10:00
Lower	L-C86	0.33	Structure - L(86)	0.6700	0.45	0.30	0.63	2.715	0 00:10:00	0.94	4.087	0 00:10:00
Lower	L-C88	1.64	Structure - L(88)	0.6500	0.45	0.29	3.21	2.715	0 00:10:00	4.83	4.087	0 00:10:00
Lower	L-C90	0.19	Structure - L(90)	0.9000	0.45	0.41	0.46	2.715	0 00:10:00	0.70	4.087	0 00:10:00
Lower	L-C91	2.31	Structure - L(91)	0.6800	0.45	0.31	4.52	2.715	0 00:10:00	6.80	4.087	0 00:10:00
Lower	L-C94	0.30	Structure - L(94)	0.9000	0.45	0.41	0.73	2.715	0 00:10:00	1.10	4.087	0 00:10:00
Lower	L-C95	0.33	Structure - L(95)	0.9000	0.45	0.41	0.81	2.715	0 00:10:00	1.21	4.087	0 00:10:00
Lower	L-C96	0.30	Structure - L(96)	0.9000	0.45	0.41	0.73	2.715	0 00:10:00	1.10	4.087	0 00:10:00
Lower	L-C97	7.99	Out-1Pipe - L(97)	0.5800	0.45	0.26	12.54	2.707	0 00:10:03	18.94	4.087	0 00:10:00
Lower	L-C98	0.38	Structure - L(98)	0.5800	0.49	0.28	0.56	2.522	0 00:11:36	0.90	4.087	0 00:10:00
Lower	L-C99	0.28	Structure - L(99)	0.5900	0.45	0.27	0.45	2.715	0 00:10:00	0.68	4.087	0 00:10:00
Lower	L-CB47	16.51	Structure - L(47)	0.5300	0.68	0.36	14.75	1.685	0 00:24:13	24.62	2.814	0 00:20:12
Upper Commercial	UC-C1	8.24	Structure - UC(1)	0.7900	0.58	0.46	13.54	2.081	0 00:16:47	22.45	3.449	0 00:14:03
Upper Commercial	UC-C11	6.04	Structure - UC(11)	0.8100	0.45	0.37	13.28	2.715	0 00:10:00	19.99	4.087	0 00:10:00
Upper Commercial	UC-C13	1.40	Structure - UC(13)	0.8800	0.45	0.40	3.35	2.715	0 00:10:00	5.04	4.087	0 00:10:00
Upper Commercial	UC-C3	0.52	Structure - UC(3)	0.9000	0.45	0.41	1.27	2.715	0 00:10:00	1.91	4.087	0 00:10:00
Upper Commercial	UC-C8	9.07	Structure - UC(8)	0.4300	0.62	0.27	7.48	1.918	0 00:19:21	12.47	3.196	0 00:16:11
Upper Commercial	UC-C9	0.53	Structure - UC(9)	0.9000	0.45	0.41	1.30	2.715	0 00:10:00	1.95	4.087	0 00:10:00

APPENDIX 5

Eastern Weir and Existing 60" Culvert Capacity Analysis Results

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Feb 7 2023

EASTERN 14' WIDE SWALE

Trapezoidal

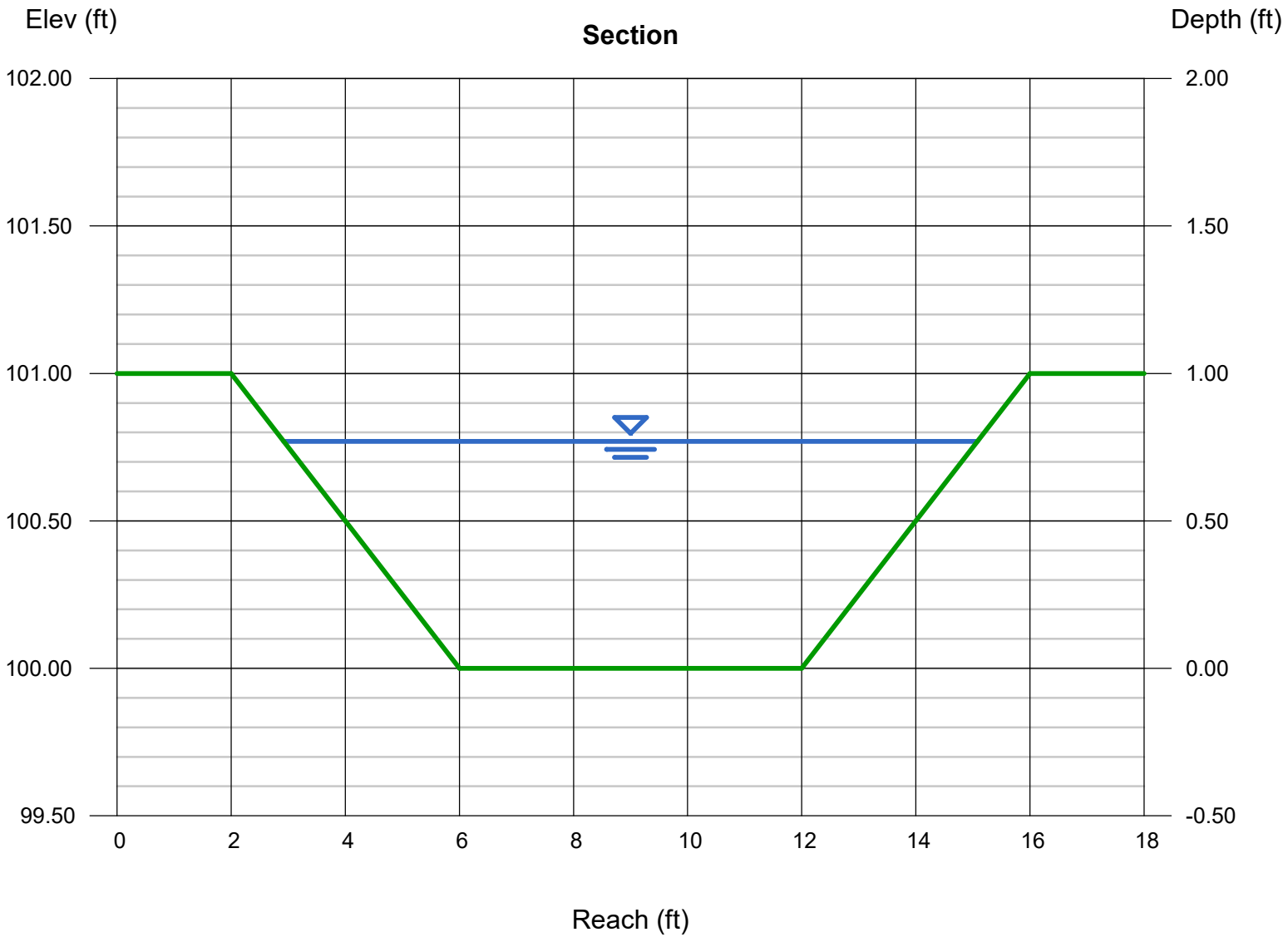
Bottom Width (ft)	= 6.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 100.00
Slope (%)	= 3.20
N-Value	= 0.030

Calculations

Compute by:	Known Q
Known Q (cfs)	= 42.35

Highlighted

Depth (ft)	= 0.77
Q (cfs)	= 42.35
Area (sqft)	= 6.99
Velocity (ft/s)	= 6.06
Wetted Perim (ft)	= 12.35
Crit Depth, Yc (ft)	= 0.94
Top Width (ft)	= 12.16
EGL (ft)	= 1.34



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Feb 7 2023

Circular Culvert

Invert Elev Dn (ft)	=	640.00
Pipe Length (ft)	=	231.00
Slope (%)	=	6.06
Invert Elev Up (ft)	=	654.00
Rise (in)	=	60.0
Shape	=	Circular
Span (in)	=	60.0
No. Barrels	=	1
n-Value	=	0.024
Culvert Type	=	Circular Corrugate Metal Pipe
Culvert Entrance	=	Headwall
Coeff. K,M,c,Y,k	=	0.0078, 2, 0.0379, 0.69, 0.5

Embankment

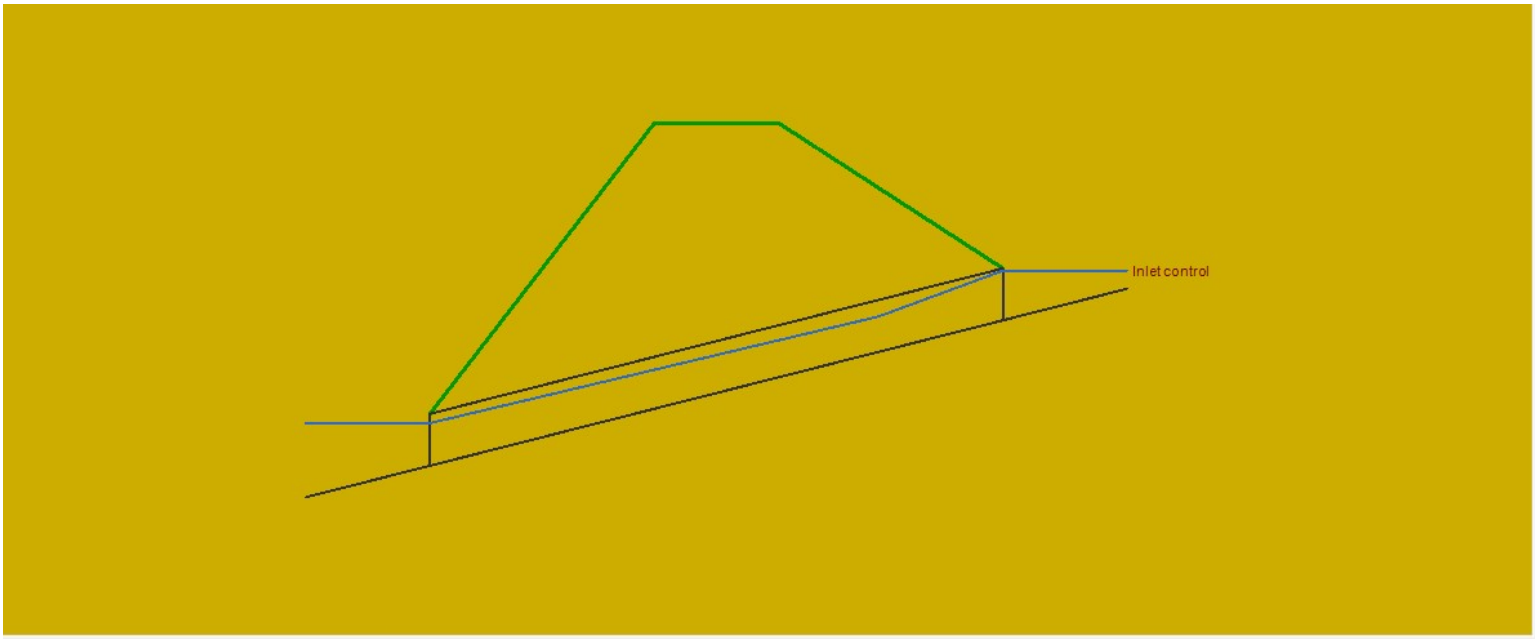
Top Elevation (ft)	=	673.00
Top Width (ft)	=	50.00
Crest Width (ft)	=	300.00

Calculations

Qmin (cfs)	=	126.42
Qmax (cfs)	=	126.42
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	126.42
Qpipe (cfs)	=	126.42
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	7.33
Veloc Up (ft/s)	=	9.48
HGL Dn (ft)	=	644.11
HGL Up (ft)	=	657.21
Hw Elev (ft)	=	658.78
Hw/D (ft)	=	0.96
Flow Regime	=	Inlet Control



APPENDIX H

Environmental Noise & Vibration Assessment

Tuscan Ridge Development

Butte County, California

BAC Job # 2021-199

Prepared For:

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Attn: Angela DaRosa
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Sacramento, CA 95834

Prepared By:

Bollard Acoustical Consultants, Inc.

Dario Gotchet, Principal Consultant

February 26, 2024

BOLLARD
Acoustical Consultants

Introduction

The Tuscan Ridge Development (project) is located along the Skyway, approximately 4 miles east of the City of Chico in Butte County, California. The project proposes the development of 165 single-family residential units, approximately 31 acres of commercial uses, approximately 3 acres of landscaped open space, and approximately 66 acres of recreational and open space areas. The project area with aerial imagery is shown in Figure 1. The project development plan is provided in Figure 2.

The purposes of this assessment are to quantify the existing noise and vibration environments, identify potential noise and vibration impacts resulting from the project, identify appropriate mitigation measures, and provide a quantitative and qualitative analysis of impacts associated with the project. Specifically, impacts are identified if project-related activities would cause a substantial increase in ambient noise or vibration levels at existing sensitive land uses in the project vicinity (i.e., residences), or if project-generated noise or vibration levels would exceed applicable federal, state, or local standards at those uses.

Noise and Vibration Fundamentals

Noise

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are designated as sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or Hertz (Hz). Definitions of acoustical terminology are provided in Appendix A.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure) as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness. Noise levels associated with common noise sources are provided in Figure 3.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by filtering the frequency response of a sound level meter by means of the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}). The L_{eq} is the foundation of the day-night average and day-evening-night average noise descriptors, DNL and CNEL, and show very good correlation with community response to noise. DNL and CNEL are based on the average noise level over a 24-hour day, with a +5-decibel weighting applied to noise occurring during evening hours (CNEL only), and a 10-decibel weighting applied to noise occurring during nighttime hours (both DNL and CNEL). Because DNL and CNEL represent a 24-hour average, it tends to disguise short-term variations in the noise environment.

Vibration

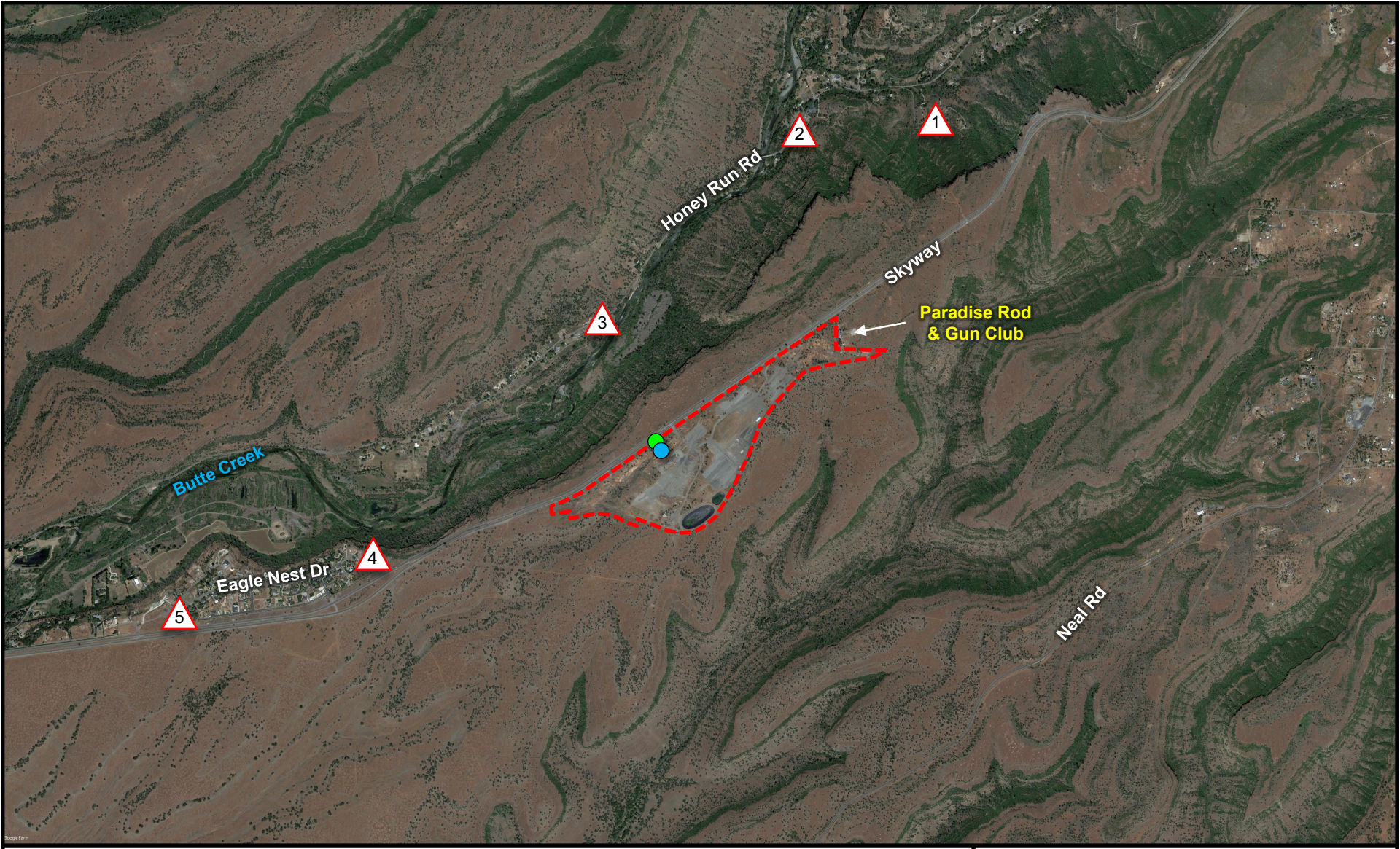
Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of velocity in inches per second peak particle velocity (IPS, PPV) or root-mean-square (VdB, RMS). Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity as well as RMS velocities.

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance.

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans, April 2020), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic, rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.



Legend

- Project Boundary (Approximate)
- # Noise-Sensitive Receivers (Residences)
- Long-Term Noise Survey Location
- Short-Term Vibration Survey Location

N

Scale (Feet)

0 1,000 2,000

Tuscan Ridge Development
Butte County, California

Project Area

Figure 1

BOLLARD Acoustical Consultants

Legend

Proposed Sound Walls

N

Scale (Feet)

0 400 800

Tuscan Ridge Development
Butte County, California

Development Plan

Figure 2

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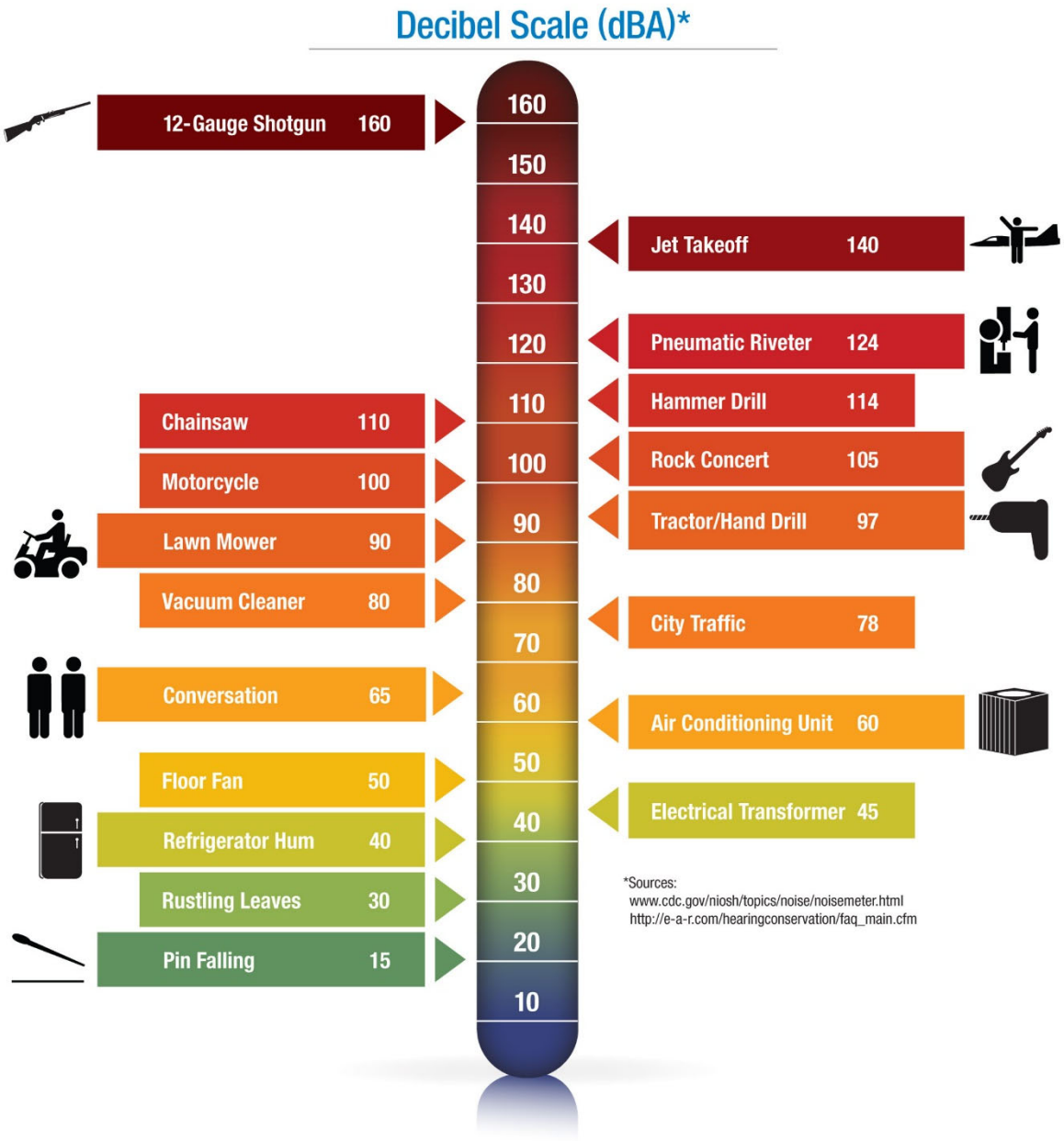
Acoustical Consultants

Figure 3
Noise Levels Associated with Common Noise Sources



Environmental Setting – Existing Ambient Noise and Vibration Environment

Existing Land Uses in the Project Vicinity

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the primary intended use of the land. Places where people live, sleep, recreate, worship and study are generally considered to be sensitive to noise because intrusive noise can be disruptive to these activities.

Existing off-site noise-sensitive receptors which would potentially be affected by the project consist of residential located to the north (in Butte Creek Canyon) and west along the Skyway, identified as receivers 1-5 in Figure 1. Existing recreation, commercial and agricultural land uses are also located within the project vicinity; however, such uses are typically not considered to be noise-sensitive, but rather noise-generating.

Existing Traffic Noise Levels along Project Area Roadway Network

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to develop existing noise contours expressed in terms of DNL for major roadways within the project study area. The FHWA model predicts hourly average (L_{eq}) values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from L_{eq} values.

Traffic data in the form of AM and PM peak hour turning movements for existing conditions were obtained from the client prepared by Fehr & Peers. Average daily traffic volumes (ADT's) were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions. Using these data and the FHWA model, traffic noise levels were calculated. The traffic noise level at 100 feet from the roadway centerline and distances from the centerlines of selected roadways to the 60 dB DNL, 65 dB DNL, and 70 dB DNL contours are summarized in Table 1. A complete listing of the FWHA model inputs for existing conditions are provided as Appendix B.

In many cases, the actual distances to noise level contours may vary from the distances predicted by the FHWA model. Factors such as roadway curvature, roadway grade, shielding from local topography or structures, elevated roadways, or elevated receivers may affect actual sound propagation. It is also recognized that existing sensitive land uses within the project vicinity are located varying distances from the centerlines of the local roadway network. The 100-foot reference distance is utilized in this assessment to provide a reference position at which changes in existing and future traffic noise levels resulting from the project can be evaluated.

Table 1
Existing Traffic Noise Modeling Results

Seg.	Intersection	Direction	DNL 100 ft from Roadway	Distance to Contour (ft)		
				70 dB DNL	65 dB DNL	60 dB DNL
1	(1) Honey Run Rd / Skyway	North	46	2	5	11
2		South	--	--	--	--
3		East	66	55	119	256
4		West	66	55	119	256
5	(2) Bruce Rd / Skyway	North	62	27	59	126
6		South	53	7	15	32
7		East	65	46	100	215
8		West	65	46	98	211
9	(3) Notre Dame Blvd / Skyway	North	61	25	54	116
10		South	59	20	43	92
11		East	66	53	114	246
12		West	68	72	154	332

Blank cell = no traffic data was provided

Source: FHWA-RD-77-108 with inputs from Fehr & Peers. Appendix B contains FHWA model inputs.

Existing Overall Ambient Noise Environment in Project Vicinity

The existing ambient noise environment in the project vicinity is defined primarily by traffic on the Skyway, and by intermittent activities at the Paradise Rod and Gun Club (i.e., shooting range). To generally quantify existing ambient noise environment within the project vicinity, BAC conducted long-term (48-hour) ambient noise level measurements on the project site January 19-21, 2022. The long-term noise survey location is shown on Figure 1. Photographs of the noise survey location are provided in Appendix C.

A Larson Davis Laboratories (LDL) Model LxT precision integrating sound level meter was used to complete the long-term noise level survey. The meter was calibrated immediately before with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all specifications of the American National Standards Institute requirements for Type 1 sound level meters (ANSI S1.4). The complete results of the ambient noise survey are presented in Appendices D and E and are summarized in Table 2.

Table 2
Summary of Long-Term Ambient Noise Survey Results – January 19-21, 2022[1]

Site Description[2]	Date	CNEL (dB)	Average Measured Hourly Noise Levels (dB)[3]					
			Daytime		Evening		Nighttime	
			L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}
Approximately 120' from Skyway centerline	1/19/22 – 1/20/22	68	67	81	62	81	60	75
	1/20/22 – 1/21/22	68	67	82	62	77	59	74

[1] Detailed summaries of the noise monitoring results are provided in Appendices C and D.
[2] Long-term ambient noise monitoring location is identified on Figure 1.
[3] Daytime: 7:00 AM to 7:00 PM | Evening: 7:00 PM to 10:00 PM | Nighttime: 10:00 PM to 7:00 AM

Source: BAC 2022.

As shown in Table 2, measured day-night-evening average levels (CNEL) and average measured hourly noise levels (L_{eq} and L_{max}) were consistent during the 48-hour monitoring period (i.e., relatively small range of values).

Existing Ambient Vibration Environment in Project Vicinity

During a BAC site visit on January 19th, 2022, vibration levels were below the threshold of perception within the project area. Nonetheless, to quantify existing vibration levels in the project vicinity, BAC conducted a short-term (15-minute) vibration survey on January 19th, 2022, at the location identified on Figure 1. Photographs of the vibration survey equipment are provided in Appendix C.

A Larson-Davis Laboratories Model LxT precision integrating sound level meter equipped with a vibration transducer was used to complete the measurements. The results are summarized in Table 3.

Table 3
Summary of Short-Term Ambient Vibration Survey Results – January 19th, 2022

Survey Location	Time	Measured Maximum Vibration Level, PPV (in/sec)
Approximately 200' from Skyway centerline	1:11 p.m.	<0.001
PPV = Peak Particle Velocity (inches/second)		

Source: BAC 2022.

The Table 3 data indicate that measured maximum vibration levels were less than 0.001 PPV in/sec, which is consistent with BAC field observations.

Regulatory Setting: Criteria for Acceptable Noise and Vibration Exposure

Federal

There are no federal noise or vibration criteria which would be directly applicable to this project. However, Butte County does not currently have a policy for assessing noise impacts associated with increases in ambient noise levels due to the project. As a result, the following federal noise criteria was applied to the project.

Federal Interagency Commission on Noise (FICON)

The Federal Interagency Commission on Noise (FICON) has developed a graduated scale for use in the assessment of project-related noise level increases. The criteria shown in Table 4 was developed by FICON as a means of developing thresholds for impact identification for project-related noise level increases. The FICON standards have been used extensively in recent years in the preparation of the noise sections of Environmental Impact Reports that have been certified in many California cities and counties.

The use of the FICON standards is considered conservative relative to thresholds used by other agencies in the State of California. For example, the California Department of Transportation (Caltrans) requires a project-related traffic noise level increase of 12 dB for a finding of significance, and the California Energy Commission (CEC) considers project-related noise level increases between 5 to 10 dB significant, depending on local factors. Therefore, the use of the FICON standards, which set the threshold for finding of significant noise impacts as low as 1.5 dB, provides a very conservative approach to impact assessment for this project.

Table 4
Significance of Changes in Cumulative Noise Exposure

Ambient Noise Level Without Project (DNL)	Change in Ambient Noise Level Due to Project
<60 dB	+5.0 dB or more
60 to 65 dB	+3.0 dB or more
>65 dB[1]	+1.5 dB or more

1. It should be noted that FICONs Federal Agency Review of Selected Airport Noise Analysis Issues (1992) report does not identify a 1.5 dBA increase as a threshold of significance for noise environments exceeding 65 DNL, but an increase that warrants further analysis. However, for purposes of this analysis, a 1.5 dB threshold is utilized to assess the significance of project noise increases at sensitive locations currently exposed to ambient noise environments exceeding 65 dB DNL.

Source: Federal Interagency Committee on Noise (FICON).

Based on the FICON research, as shown in Table 4, a 5 dB increase in noise levels due to a project is required for a finding of significant noise impact where ambient noise levels without the project are less than 60 dB DNL. Where pre-project ambient conditions are between 60 and 65 dB DNL, a 3 dB increase is applied as the standard of significance. Finally, in areas already exposed to higher noise levels, specifically pre-project noise levels in excess of 65 dB DNL, a 1.5 dB increase is considered by FICON as an increase warranting further analysis.

State of California

California Environmental Quality Act (CEQA)

The State of California has established regulatory criteria that are applicable to this assessment. Specifically, Appendix G of the State of California Environmental Quality Act (CEQA) Guidelines are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. According to Appendix G of the CEQA guidelines, the project would result in a significant noise or vibration impact if the following occur:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies.

B. Generation of excessive groundborne vibration or groundborne noise levels.

C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

It should be noted that audibility is not a test of significance according to CEQA. If this were the case, any project which added any audible amount of noise to the environment would be considered significant according to CEQA. Because every physical process creates noise, the use of audibility alone as significance criteria would be unworkable. CEQA requires a substantial increase in noise levels before noise impacts are identified, not simply an audible change.

California Department of Transportation (Caltrans)

Butte County does not currently have adopted standards for groundborne vibration that would be applicable to this specific project. As a result, the vibration impact criteria developed by the California Department of Transportation (Caltrans) was applied to the project. The Caltrans guidance criteria for building structure and vibration annoyance are presented in Tables 5 and 6, respectively.

Table 5
Caltrans Guidance for Building Structure Vibration Criteria

Structure and Condition	Limiting PPV (in/sec)
Historic and some old buildings	0.5
Residential structures	0.5
New residential structures	1.0
Industrial buildings	2.0
Bridges	2.0
PPV = Peak Particle Velocity	

Source: 2020 Caltrans Transportation and Construction Vibration Guidance Manual, Table 14.

Table 6
Caltrans Guidance for Vibration Annoyance Potential Criteria

	Maximum PPV (in/sec)	
Human Response	Transient Sources	Continuous/Frequent Intermittent Sources
Severe/very disturbing	2.0	0.4 to 3.6
Strongly perceptible	0.9	0.1
Distinctly perceptible	0.24	0.035
Barely/slightly perceptible	0.035	0.012
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers and vibratory compaction equipment.		
PPV = Peak Particle Velocity		

Source: 2020 Caltrans Transportation and Construction Vibration Guidance Manual, Tables 4 & 6.

Local

Butte County General Plan

The Health and Safety Element of the Butte County General Plan contains the County's noise-related policies. The specific policies which are generally applicable to this project are reproduced below:

Policies

HS-P1.1 New development projects proposed in areas that exceed the land use compatibility standards in Tables 7 and 8 (General Plan Tables HS-2 and HS-3) shall require mitigation of noise impacts.

HS-P1.2 Noise from transportation sources shall not exceed land use compatibility standards in Table 7 (General Plan Table HS-2).

HS-P1.3 New noise-sensitive land uses shall not be located within the 55 dB DNL contour of airports, roadways, and other noise-generating uses, with the exception of the Chico Municipal Airport.

HS-P1.5 Noise from new recreational activities and events shall not exceed 60 dB at the nearest noise-sensitive land use.

HS-P1.6 Applicants proposing a new noise-producing development project near existing or planned noise-sensitive uses shall provide a noise analysis prepared by an acoustical specialist with recommendations for design mitigation.

HS-P1.9 The following standard construction noise control measures shall be required at construction sites in order to minimize construction noise impacts:

a. Equip all internal combustion engine driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.

b. Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction project area.

c. Utilize quiet air compressors and other stationary noise-generating equipment where appropriate technology exists and is feasible.

Table 7
Maximum Allowable Noise Exposure to Transportation Noise Sources

	Exterior Noise Level Standard for Outdoor Activity Areas (dBA)[1]		Interior Noise Level Standard (dBA)	
Land Use	**DNL**	**L_{eq}**	**DNL**	**L_{eq} (dB)[2]**
Residential	60[3]	--	45	--
Transient Lodging	60[3]	--	45	--
Hospitals, Nursing Homes	60[3]	--	45	--
Theaters, Auditoriums, Music Halls	--	--	--	35
Churches	60[3]	--	--	40
Office Buildings	--	--	--	45
Schools, Libraries, Museums	--	70	--	45
Playgrounds, Neighborhood Parks	--	70	--	--

[1] Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
[2] As determined for a typical worst-case hour during period of use.
[3] An exterior noise level of up to 65 dB DNL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: Butte County General Plan, Health and Safety Element, Table HS-2.

Table 8
Maximum Allowable Noise Exposure to Non-Transportation Sources

	Day (7am – 7pm)		Evening (7pm – 10 pm)		Night (10 pm – 7 am)	
	Designation					
Noise Descriptor	**Urban**	**Non-Urban**	**Urban**	**Non-Urban**	**Urban**	**Non-Urban**
Hourly Average (L_{eq})	55	50	50	45	45	40
Maximum (L_{max})	70	60	60	55	55	50

Notes:
[1] "Non-Urban designations" are Agriculture, Timber Mountain, Resource Conservation, Foothill Residential and Rural Residential. All other designations are considered "urban designations" for the purposes of regulating noise exposure.
[2] Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).
[3] The County can impose noise level standards which are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site.
[4] In urban areas, the exterior noise level standard shall be applied to the property line of the receiving property. In rural areas, the exterior noise level standard shall be applied at a point 100 feet away from the residence. The above standards shall be measured only on property containing a noise sensitive land use. This measurement standard may be amended to provide for measurement at the boundary of a recorded noise easement between all affected property owners and approved by the County.

Source: Butte County General Plan, Health and Safety Element, Table HS-3.

Butte County Code of Ordinances

The provisions of the Butte County Code of Ordinances which would be most applicable to this project are reproduced below.

41A-7 Exterior noise standards.

a) The following noise standards (reproduced in Table 9 of this report), unless otherwise specifically indicated in this chapter, shall apply to all noise sensitive exterior areas within Butte County.

Table 9
Butte County Code of Ordinances – Exterior Noise Level Standards

	Day (7am – 7pm)		Evening (7pm – 10 pm)		Night (10 pm – 7 am)	
	Designation					
Noise Descriptor	Urban	Non-Urban	Urban	Non-Urban	Urban	Non-Urban
Hourly Average (L_{eq})	55	50	50	45	45	40
Maximum (L_{max})	70	60	60	55	55	50

Source: Butte County Code of Ordinances, Section 41A-7.

b) It is unlawful for any person at any location within the County to create any noise which causes the noise levels on an affected property, when measured in the designated exterior location, to exceed the noise standards specified above (Table 9).

c) Each of the noise limits specified in subdivision (a) of this section shall be reduced by five (5) dBA for recurring impulsive noise, simple or pure tone noise, or for noises consisting of speech or music.

d) Noise level standards, which are up to five (5) dBA less than those specified above, based upon determination of existing low ambient noise levels in the vicinity of the project site may be imposed.

e) In urban areas, the exterior noise level standard shall be applied to the property line of the receiving property. In non-urban areas, the exterior noise level standard shall be applied at a point one hundred (100) feet away from the residence or at the property line if the residence is closer than one hundred (100) feet. The above standards shall be measured only on property containing a noise sensitive land use.

41A-8 Interior noise standards.

a) The following noise standards (reproduced in Table 10 of this report), unless otherwise specifically indicated in this chapter, shall apply to all noise-sensitive interior areas within Butte County.

Table 10
Butte County Code of Ordinances – Interior Noise Level Standards

Noise Level Descriptor	Daytime (7am – 7pm)	Evening (7pm – 10 pm)	Nighttime (10 pm – 7 am)
Hourly Average (L_{eq})	45	40	35
Maximum (L_{max})	60	55	50

Source: Butte County Code of Ordinances, Section 41A-8.

b) It is unlawful for any person at any location within the County to create any noise which causes the noise levels on an affected property, when measured in the designated interior noise-sensitive area, to exceed the noise standards specified above (Table 10).

c) Each of the noise limits specified in subdivision (a) of this section shall be reduced by five (5) dBA for recurring impulsive noise, simple or pure tone noise, or for noises consisting of speech or music.

41A-9 Exemptions.

The following activities shall be exempted from the provisions of this chapter:

f) Noise sources associated with construction, repair, remodeling, paving, or grading of any real property or public works project located within one-thousand (1,000) feet of residential uses, provided said activities do not take place between the following hours:

- Sunset to sunrise on weekdays and non-holidays;
- Friday commencing at 6:00 p.m. through and including 8:00 a.m. on Saturday, as well as not before 8:00 a.m. on holidays;
- Saturday commencing at 6:00 p.m. through and including 10:00 a.m. on Sunday; and
- Sunday after the hour of 6:00 p.m.

Provided, however, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work into the hours delineated above and to operate machinery and equipment necessary to complete the specific work in progress until that specific work can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner.

i) Noise sources associated with maintenance of residential area property, provided said activities take place between 7:00 a.m. to sunset on any day except Saturday, Sunday, or a holiday, or between the hours of 9:00 a.m. and 5:00 p.m. on Saturday, Sunday, or a holiday; and, provided machinery is fitted with correctly functioning sound suppression equipment.

l) Private recreational activities (including off-road vehicle operation and gunfire occurring while hunting or target practice consistent with all State laws on private property) taking place during daytime hours (9:00 am to sunset) that does not exceed an L_{eq} of sixty-five (65) dBA when measured at any point on the property line over any thirty (30) minute period.

Discussion of County Noise Level Criteria Applied to Proposed On-Site Activities

The Butte County General Plan and Code of Ordinances establish exterior noise levels limits for non-transportation noise sources affecting noise-sensitive uses that are identical to each other. However, the Code of Ordinances also establishes interior noise level limits for non-transportation noise sources affecting the interior areas of noise-sensitive uses. Thus, compliance with the Code of Ordinances exterior and interior noise level limits presented in Tables 9 and 10 of this report would ensure satisfaction of the General Plan noise criteria.

It should be noted that the County's interior noise level standards shown in Table 10 are 5 to 10 dB lower than the County's exterior noise level limits shown in Table 9. For the purposes of this assessment, it is reasonably assumed that the exterior building facades of residential receivers 1-5 are in relatively good condition. Given this assumption, the estimated noise reduction of the building facades would be approximately 25 dB with windows closed and 10-15 dB with windows open. Therefore, compliance with the County's exterior noise level standards shown in Table 9 would ensure compliance with the County's interior noise level standards shown in Table 10. Considering this information, the impact discussions pertaining to noise from proposed on-site activities focus on compliance with the County's exterior noise standards at both existing and proposed residential uses.

The primary on-site noise sources associated with the project have been identified as activities associated with proposed commercial uses, which purportedly include a combination convenience store (c-store)/gas station, a shopping plaza with retail, and a mini-storage facility. Specifically, the commercial operations analyzed in this assessment include on-site truck circulation, truck delivery activities, on-site passenger vehicle circulation, parking area movements, and HVAC equipment. It should be noted that the future commercial tenants and associated hours of operation are not known at this time. However, it is the experience of BAC in the preparation of previous noise studies for similar shopping plaza with retail uses typically operate during daytime hours only (7:00 a.m. to 7:00 p.m.), and that c-store/gas stations often have 24-hour operations. Finally, this assessment also includes an impact discussion on noise from proposed sewage waste disposal station activities, which were conservatively assumed to potentially occur at any given time during daytime or nighttime hours.

Finally, according to the Butte County GIS online parcel viewer, the existing residential receptors identified on Figure 1 are zoned Foothill Residential (receivers 1-3) and Medium Density Residential (receivers 4 and 5). In addition, the proposed residential uses of the development are identified as Single-Family Residential in the project site plans. Butte County defines Foothill Residential zoning as a "non-urban" designation. All other zoning, including Medium Density Residential and Single-Family Residential, are considered to be "urban" designations for the purposes of regulating noise exposure. In "urban" areas, the County's exterior noise level

standards are applied at the property line of parcel containing a noise-sensitive use (i.e., residential). In "non-urban" areas, the County's exterior noise limits are applied at a point 100 feet away from the noise-sensitive use (i.e., residence).

Based on the information above, and pursuant to criteria established in the Code of Ordinances, the County's exterior noise level standards presented in Table 9 were applied to proposed on-site commercial activities and assessed at existing and proposed residential uses.

Impacts and Mitigation Measures

Thresholds of Significance

For the purposes of this assessment, a noise and vibration impact is considered significant if the project would result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies; or

- Generation of excessive groundborne vibration or groundborne noise levels; or

- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

The project site is not within the vicinity of a private airstrip, an airport land use plan, or within two miles of a public airport. Therefore, the last threshold listed above is not discussed further.

The following criteria based on standards established by the California Department of Transportation (Caltrans), Butte County General Plan and Code of Ordinances were used to evaluate the significance of environmental noise and vibration resulting from the project:

- A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the Butte County General Plan or Code of Ordinances.

- A significant impact would be identified if project-generated off-site traffic would substantially increase noise levels at existing sensitive receptors in the vicinity. A substantial increase in off-site traffic noise level exposure would be identified relative to the FICON noise level increase significance criteria presented in Table 4.

  In terms of determining the temporary noise increase due to project on-site commercial operations and construction activities, an impact would occur if those activities would noticeably increase ambient noise levels above background levels. The threshold of perception of the human ear is approximately 3 to 5 dB – a 5 dB change is considered to be clearly noticeable. For the analysis of project on-site commercial operations and

construction activity noise level increases, a noticeable increase in ambient noise levels is assumed to occur where those activities would result in an increase by 5 dB or more over existing ambient noise levels.

- A significant impact would be identified if proposed on-site activities would expose noise-sensitive receptors to excessive groundborne vibration levels. Specifically, an impact would be identified if groundborne vibration levels due to these sources would exceed the Caltrans vibration impact criteria.

Noise Impacts Associated with Project-Generated Increases in Off-Site Traffic

With development of the project, traffic volumes on the local roadway network will increase. Those increases in daily traffic volumes will result in a corresponding increase in traffic noise levels at existing uses located along those roadways. The FHWA model was used with traffic input data from the project traffic consultant (Fehr & Peers) to predict project traffic noise level increases relative to existing and cumulative project and no project conditions.

Impact 1: Increases in Existing Traffic Noise Levels due to the Project

Traffic data in the form of AM and PM peak hour turning movements for Existing and Existing Plus Project conditions in the project area roadway network were obtained from traffic data prepared by the project transportation consultant, Fehr & Peers. Average daily traffic (ADT) volumes were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions.

Existing versus Existing Plus Project traffic noise levels on the local roadway network are shown in Table 11. The following section includes an assessment of predicted traffic noise levels relative to the FICON noise level increase significance criteria presented in Table 4. The Table 11 data are provided in terms of DNL at a standard distance of 100 feet from the centerlines of the project-area roadways. Appendix B contains the FWHA model inputs.

Table 11
Traffic Noise Modeling Results and Project-Related Traffic Noise Level Increases
Existing vs. Existing Plus Project Conditions

Seg.	Intersection	Direction	Traffic Noise Level at 100 feet, DNL (dB)			Substantial Increase?
			E	E+P	Increase	
1	(1) Honey Run Rd / Skyway	North	45.8	45.8	0.0	No
2		South	--	--	--	--
3		East	66.1	67.3	1.2	No
4		West	66.1	67.3	1.2	No
5	(2) Bruce Rd / Skyway	North	61.5	62.0	0.5	No
6		South	52.6	53.0	0.4	No
7		East	65.0	66.2	1.2	No
8		West	64.9	65.9	1.0	No
9	(3) Notre Dame Blvd / Skyway	North	60.9	61.0	0.1	No
10		South	59.5	59.5	0.0	No
11		East	65.9	66.6	0.7	No
12		West	67.8	68.3	0.5	No
Blank cell = no traffic data was provided						

Source: FHWA-RD-77-108 with inputs from Fehr & Peers. Appendix B contains FHWA model inputs.

As indicated in Table 11, traffic generated by the project would not result in a substantial increase of traffic noise levels on the local roadway network relative to the applicable FICON increase significance criteria. As a result, off-site traffic noise impacts related to increases in traffic resulting from the implementation of the project (Existing vs. Existing Plus Project conditions) are identified as being ***less than significant***.

Impact 2: Increases in Cumulative Traffic Noise Levels due to the Project

Traffic data in the form of AM and PM peak hour turning movements for Cumulative and Cumulative Plus Project conditions in the project area roadway network were obtained from traffic data prepared by the project transportation consultant, Fehr & Peers. Average daily traffic (ADT) volumes were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions.

Cumulative versus Cumulative Plus Project traffic noise levels on the local roadway network are presented in Table 12. The following section includes an assessment of predicted traffic noise levels relative to the FICON noise level increase significance criteria presented in Table 4. The Table 12 data are provided in terms of DNL (L_{dn}) at a standard distance of 100 feet from the centerlines of the project-area roadways. Appendix B contains the FWHA model inputs.

Table 12
Traffic Noise Modeling Results and Project-Related Traffic Noise Level Increases
Cumulative vs. Cumulative Plus Project Conditions

Seg.	Intersection	Direction	Traffic Noise Level at 100 feet, DNL (dB)			Substantial Increase?
			C	C+P	Increase	
1	(1) Honey Run Rd / Skyway	North	49.5	49.5	0.0	No
2		South	--	--	--	--
3		East	68.3	69.1	0.8	No
4		West	68.3	69.1	0.8	No
5	(2) Bruce Rd / Skyway	North	64.2	64.5	0.3	No
6		South	54.6	54.9	0.3	No
7		East	67.4	68.1	0.7	No
8		West	67.3	67.9	0.6	No
9	(3) Notre Dame Blvd / Skyway	North	62.2	62.2	0.0	No
10		South	60.4	60.4	0.0	No
11		East	67.8	68.3	0.5	No
12		West	69.5	69.8	0.3	No
Blank cell = no traffic data was provided						

Source: FHWA-RD-77-108 with inputs from Fehr & Peers. Appendix B contains FHWA model inputs.

The Table 12 data indicate that traffic generated by the project would not result in a substantial increase of traffic noise levels on the local roadway network relative to the applicable FICON increase significance criteria. As a result, off-site traffic noise impacts related to increases in traffic resulting from the implementation of the project (Cumulative vs. Cumulative Plus Project conditions) are identified as being ***less than significant***.

Noise Impacts Associated with Proposed On-Site Operations

The primary on-site noise sources associated with the project have been identified as activities associated with proposed commercial uses, which purportedly include a c-store/gas station, shopping plaza with retail, and a mini-storage facility. Specifically, the commercial operations analyzed in this assessment include on-site truck circulation, truck delivery activities, on-site passenger vehicle circulation, parking area movements, and HVAC equipment. Additionally, an impact discussion for noise associated with a proposed sewage waste disposal station is also included in this assessment. An analysis of each identified project-related noise source at existing off-site residential receivers follows.

For noise generated by on-site commercial activities, the County's exterior noise level standards shown in Table 9 were applied and assessed at residential receivers 1-5. As mentioned previously, the County's exterior noise level standards shall be applied at a point 100 feet away from the residence in "non-urban" areas (receivers 1-3). In "urban" areas, the County's exterior noise limits are applied at the property line of a parcel (receivers 4 and 5).

In terms of determining the noise level increase due to on-site noise sources, an impact would occur if those sources would noticeably increase ambient noise levels above background levels. The threshold of perception of the human ear is approximately 3 to 5 dB – a 5 dB change is considered to be clearly noticeable. For the following analyses of on-site noise sources, a

noticeable increase in ambient noise levels is assumed to occur where noise levels increase by 5 dB or more over existing ambient noise levels at existing residential receivers.

Finally, Table 2 of this report summarizes the results from the BAC long-term ambient noise survey. The ambient noise survey site was located adjacent to the Skyway on the project site, approximately 120' from the centerline of the roadway. Residential receivers 4 and 5 are also located adjacent to the Skyway, ranging in distances of 100 to 300 feet from the centerline of the roadway. Given the proximity of receivers 4 and 5 to the Skyway, and after a comparison of local conditions present at receivers 4 and 5 and the BAC survey site (i.e., adjacent topography and roadway grade), the ambient noise level data obtained at the BAC survey location is believed to be generally representative of the ambient noise environments at receivers 4 and 5. However, the ambient noise level data obtained at the BAC noise survey site would not be considered to be representative of the ambient noise level environments at residential receivers 1-3, which are farther removed and shielded from the Skyway in Butte Creek Canyon. Based on the information above, the lowest average measured hourly daytime, evening and nighttime ambient noise levels from the BAC survey presented in Table 2 were used in the analysis of increases in ambient noise levels due to project on-site noise sources at residential receivers 4 and 5. To quantify the noise level increases due to on-site noise sources at receivers 1-3, the ambient noise level environments at those locations were assumed to be 5 dB less than the County's daytime, evening, and nighttime noise level standards for "non-urban" areas shown in Table 9.

Impact 3: On-Site Delivery Truck Circulation Noise at Existing Residential Uses

It is the experience of BAC that deliveries of product to c-store and shopping plaza uses occur at the front of the store with medium-duty vendor trucks/vans. However, it is expected that the proposed gas station will receive deliveries from medium-duty vendor trucks/vans, as well for deliveries from heavy fueling trucks for the purposes of refilling the underground fuel storage tanks.

On-site truck passbys are expected to be relatively brief and will occur at low speeds. To predict noise levels generated by on-site truck circulation, BAC utilized file data obtained from measurements conducted by BAC of heavy and medium duty truck passbys. According to BAC file data, single-event heavy truck passby noise levels are approximately 74 dB L_{max} and 83 dB SEL at a reference distance of 50 feet. BAC file data also indicate that single-event medium truck passby noise levels are approximately 66 dB L_{max} and 76 SEL at a reference distance of 50 feet.

For the purposes of predicting hourly average noise levels for comparison against the County's hourly average (L_{eq}) noise level standard, it was assumed that the c-store/gas station component of the development could conservatively have 1 heavy truck and 2 medium duty truck deliveries during the same worst-case hour. It was further assumed that the shopping plaza components of the development could conservatively have a total of 6 medium duty truck deliveries during the same worst-case hour. Based on the hourly delivery truck assumptions above, and SEL's of 83 and 76 dB per passby, the combined hourly average noise level generated by project on-site delivery truck circulation computes to 52 dB L_{eq} at a reference distance of 50 feet from the passby route during the worst-case hour of deliveries (maximum noise level of 74 dB L_{max}).

Assuming standard spherical spreading loss (-6 dB per doubling of distance), worst-case project on-site delivery truck circulation noise exposure at residential receivers 1-5 was calculated, and the results of those calculations are presented in Tables 13 and 14. Predicted on-site truck circulation noise levels at residential receivers 1-3 include consideration of screening that would be provided by intervening topography and have been adjusted by -10 dB.

Table 13
Predicted On-Site Truck Circulation Noise Levels at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Distance from On-Site Route (ft)[2]	Predicted Noise Level, L_{eq} (dB)	Applicable County Standards, L_{eq} (dB)[3]		
			Day	Evening	Night
1	7,500	<20	**50**	**45**	**40**
2	6,000	<20	**50**	**45**	**40**
3	2,300	<20	**50**	**45**	**40**
4	6,200	<20	**55**	**50**	**45**
5	10,000	<20	**55**	**50**	**45**

[1] Receiver locations are shown on Figure 1.
[2] Distances scaled from nearest on-site truck route to receivers using site plans and Butte County GIS viewer. It was reasonably assumed that delivery trucks would enter the project site via the main entry point.
[3] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: BAC 2022.

Table 14
Predicted On-Site Truck Circulation Noise Levels at Existing Residential Uses – Maximum L_{max}

Receiver[1]	Distance from On-Site Route (ft)[2]	Predicted Noise Level, L_{max} (dB)	Applicable County Standards, L_{max} (dB)[3]		
			Day	Evening	Night
1	7,500	20	**60**	**55**	**50**
2	6,000	22	**60**	**55**	**50**
3	2,300	31	**60**	**55**	**50**
4	6,200	32	**70**	**60**	**55**
5	10,000	28	**70**	**60**	**55**

[1] Receiver locations are shown on Figure 1.
[2] Distances scaled from nearest on-site truck route to receivers using site plans and Butte County GIS viewer. It was reasonably assumed that delivery trucks would enter the project site via the main entry point.
[3] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: BAC 2022.

BAC recognizes that the development's future commercial tenants would likely have different hours of operation and would be subject to the associated County noise level criteria during daytime, evening, and nighttime hours as applicable. Nonetheless, as shown in Tables 13 and 14, project on-site delivery truck circulation noise exposure is predicted to comply with the applicable Butte County daytime, evening, and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at residential receivers 1-5 by a wide margin.

Using the lowest average measured hourly daytime, evening and nighttime ambient noise levels presented in Table 2, and the assigned ambient noise levels as discussed in a previous section of this report, ambient plus project on-site truck circulation noise level increases were calculated

at receivers 1-5. The results of those calculations indicate that the ambient noise level increases associated with project on-site truck circulation would range from less than 0.1 to 0.2 dB L_{eq}/L_{max} at receivers 1-5 during daytime, evening, and nighttime hours. The calculated range of ambient plus project noise level increases at receivers 1-5 is well below the applied FICON increase significance criterion of 5 dB.

Because noise exposure from commercial on-site truck circulation is predicted to satisfy applicable Butte County exterior noise level standards at the nearest existing residential uses, and because noise exposure from those activities is not calculated to significantly increase ambient noise levels at those uses, this impact is identified as being ***less than significant***.

Impact 4: Truck Delivery Noise at Existing Residential Uses

As mentioned previously, it is the experience of BAC that deliveries of product to c-store and shopping plaza uses occur at the front of the store with medium-duty vendor trucks/vans. However, it is expected that the proposed gas station will receive deliveries from medium-duty vendor trucks/vans, as well for deliveries from heavy fueling trucks for the purposes of refilling the underground fuel storage tanks.

The primary noise sources associated with delivery activities are trucks stopping (air brakes), trucks backing into position (back-up alarms), and pulling away from the unloading area (revving engines). BAC file data indicate that noise levels associated with medium- (including side-step vans) and heavy-duty truck deliveries are approximately 65 dB L_{max} and 76 dB SEL at a distance of 100 feet. For the purposes of predicting hourly average noise levels for comparison against the County's hourly average (L_{eq}) noise standards, it was assumed that the c-store/gas station component of the development could conservatively have 1 heavy truck and 2 medium duty truck deliveries during the same worst-case hour. It was further assumed that the shopping plaza components of the development could conservatively have a total of 6 medium duty truck deliveries during the same worst-case hour. Based on the hourly delivery trucks assumptions above, and an SEL of 76 dB, the hourly average noise level computes to 50 dB L_{eq} at a reference distance of 100 feet during the worst-case hour of deliveries (maximum noise level of 65 dB L_{max}).

Assuming standard spherical spreading loss (-6 dB per doubling of distance), project truck delivery activity noise exposure at residential receivers 1-5 was calculated, and the results of those calculations are presented in Tables 15 and 16. Predicted truck delivery activity noise levels at residential receivers 1-3 include consideration of screening that would be provided by intervening topography and have been adjusted by -10 dB.

Table 15
Predicted Truck Delivery Activity Noise Levels at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Distance from Nearest Delivery Area (ft)[2]	Predicted Noise Level, L_{eq} (dB)	Applicable County Standards, L_{eq} (dB)[3]		
			Day	Evening	Night
1	7,300	<20	**50**	**45**	**40**
2	5,800	<20	**50**	**45**	**40**
3	2,500	<20	**50**	**45**	**40**
4	6,200	<20	**55**	**50**	**45**
5	10,000	<20	**55**	**50**	**45**

[1] Receiver locations are shown on Figure 1.
[2] Distances conservatively scaled from nearest truck delivery area using site plans and Butte County GIS viewer.
[3] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: BAC 2022.

Table 16
Predicted Truck Delivery Activity Noise Levels at Existing Residential Uses – Maximum L_{max}

Receiver[1]	Distance from Nearest Delivery Area (ft)[2]	Predicted Noise Level, L_{max} (dB)	Applicable County Standards, L_{max} (dB)[3]		
			Day	Evening	Night
1	7,300	<20	**60**	**55**	**50**
2	5,800	20	**60**	**55**	**50**
3	2,500	27	**60**	**55**	**50**
4	6,200	29	**70**	**60**	**55**
5	10,000	25	**70**	**60**	**55**

[1] Receiver locations are shown on Figure 1.
[2] Distances conservatively scaled from nearest truck delivery area using site plans and Butte County GIS viewer.
[3] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: BAC 2022.

BAC recognizes that the development's future commercial tenants would likely have different hours of operation and would be subject to the associated County noise level criteria during daytime, evening, and nighttime hours as applicable. Nonetheless, the data shown in Tables 15 and 16 indicate that project truck delivery activity noise exposure is predicted to comply with the applicable Butte County daytime, evening, and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at residential receivers 1-5 by a wide margin.

Using the lowest average measured hourly daytime, evening and nighttime ambient noise levels presented in Table 2, and the assigned ambient noise levels as discussed in a previous section of this report, ambient plus project truck delivery activity noise level increases were calculated at receivers 1-5. The results of those calculations indicate that the ambient noise level increases associated with project truck delivery activities would range from less than 0.1 to 0.1 dB L_{eq}/L_{max} at receivers 1-5 during daytime, evening, and nighttime hours. The calculated range of ambient plus project noise level increases at receivers 1-5 is well below the applied FICON increase significance criterion of 5 dB.

Because noise exposure from commercial truck delivery activities is predicted to satisfy applicable Butte County exterior noise level standards at the nearest existing residential uses, and because noise exposure from those activities is not calculated to significantly increase ambient noise levels at those uses, this impact is identified as being ***less than significant***.

Impact 5: On-Site Passenger Vehicle Circulation Noise at Existing Residential Uses

According to the project site plans, the project proposes two primary vehicle access points to the property. The development's main entry point will be centrally located off the Skyway, adjacent to the proposed shopping plaza components. The secondary entry point will also be located off the Skyway but is located at the northeast end of the development near the mini-storage facility.

The Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) was utilized with trip generation estimates prepared by the project traffic consultant (Fehr & Peers) to quantify on-site commercial traffic circulation noise level exposure. According to Fehr & Peers, the commercial uses of the project (i.e., C-Store/Gas Station, Shopping Plaza – No Supermarket, and Mini-Warehouse land uses) are estimated to generate approximately 9,451 daily vehicle trips, including 393 AM peak hour and 697 PM peak hour vehicle trips.

Based on worst-case peak hour trip generation (697 trips during a PM peak hour), and assuming an on-site vehicle speed 25 mph, commercial on-site passenger vehicle circulation noise exposure at residential receivers 1-5 was calculated. The results of those calculations are presented in Tables 17 and 18. Predicted on-site vehicle circulation noise levels at residential receivers 1-3 include consideration of screening that would be provided by intervening topography and have been adjusted by -10 dB.

Table 17
Predicted On-Site Passenger Vehicle Noise Levels at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Distance from On-Site Route (ft)[2]	Predicted Noise Level, L_{eq} (dB)	Applicable County Standards, L_{eq} (dB)[3]		
			Day	Evening	Night
1	5,800	<20	**50**	**45**	**40**
2	4,500	<20	**50**	**45**	**40**
3	2,300	22	**50**	**45**	**40**
4	6,300	26	**55**	**50**	**45**
5	10,100	23	**55**	**50**	**45**

[1] Receiver locations are shown on Figure 1.
[2] Distances scaled from nearest on-site vehicle circulation route using site plans and Butte County GIS viewer. It was conservatively assumed that worst-case peak hour commercial passenger vehicle traffic could enter the project site via either the main or secondary entry points.
[3] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: BAC 2022.

Table 18
Predicted On-Site Passenger Vehicle Noise Levels at Existing Residential Uses – Maximum L_{max}

Receiver[1]	Distance from On-Site Route (ft)[2]	Predicted Noise Level, L_{max} (dB)[3]	Applicable County Standards, L_{max} (dB)[4]		
			Day	Evening	Night
1	5,800	26	**60**	**55**	**50**
2	4,500	28	**60**	**55**	**50**
3	2,300	32	**60**	**55**	**50**
4	6,300	36	**70**	**60**	**55**
5	10,100	33	**70**	**60**	**55**

[1] Receiver locations are shown on Figure 1.
[2] Distances scaled from nearest on-site vehicle circulation route using site plans and Butte County GIS viewer. It was conservatively assumed that worst-case peak hour commercial passenger vehicle traffic could enter the project site via either the main or secondary entry points.
[3] Predicted Lmax noise levels conservatively estimated to be 10 dB higher than predicted Leq noise levels.
[4] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: BAC 2022.

BAC recognizes that the development's future commercial tenants would likely have different hours of operation and would be subject to the associated County noise level criteria during daytime, evening, and nighttime hours as applicable. Nonetheless, as indicated in Tables 17 and 18, commercial on-site passenger vehicle circulation noise exposure is predicted to comply with the applicable Butte County daytime, evening, and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at residential receivers 1-5 by a wide margin.

Using the lowest average measured hourly daytime, evening and nighttime ambient noise levels presented in Table 2, and the assigned ambient noise levels as discussed in a previous section of this report, ambient plus commercial-related on-site passenger vehicle circulation noise level increases were calculated at receivers 1-5. The results of those calculations indicate that the ambient noise level increases associated with on-site commercial vehicle circulation would range from less than 0.1 to 0.2 dB L_{eq}/L_{max} at receivers 1-5 during daytime, evening, and nighttime hours. The calculated range of ambient plus project noise level increases at receivers 1-5 is well below the applied FICON increase significance criterion of 5 dB.

Because noise exposure from commercial on-site vehicle circulation is predicted to satisfy applicable Butte County exterior noise level standards at the nearest existing residential uses, and because noise exposure from those activities is not calculated to significantly increase ambient noise levels at those uses, this impact is identified as being ***less than significant***.

It should be noted that this assessment does not include an impact discussion on noise from residential component on-site passenger vehicle circulation at residential receivers 1-5. However, based on trip generation estimates contained in the project traffic impact analysis prepared by Fehr & Peers, the commercial component of the project is estimated to generate significantly higher daily vehicle trips and peak hour trips than the residential component. Thus, commercial component on-site traffic circulation noise compliance at receivers 1-5 would ensure for residential component on-site traffic circulation noise compliance at those locations.

Impact 6: Parking Area Noise at Existing Residential Uses

As a means of determining potential noise exposure due to commercial parking lot activities, Bollard Acoustical Consultants, Inc. (BAC) utilized specific parking lot noise level measurements conducted by BAC. Specifically, a series of individual noise measurements were conducted of multiple vehicle types arriving and departing a parking area, including engines starting and stopping, car doors opening and closing, and persons conversing as they entered and exited the vehicles. The results of those measurements revealed that individual parking lot movements generated mean noise levels of approximately 70 dB SEL at a reference distance of 50 feet. The maximum noise level associated with parking lot activity typically did not exceed 65 dB L_{max} at the same reference distance.

To compute hourly average (L_{eq}) noise levels generated by parking lot activities, the approximate number of hourly operations in any given area and distance to the effective noise center of those activities is required. Based on a review of the project development plan, it is estimated that approximately 200 parking spaces stalls will be constructed within the project's commercial component (c-store/gas station – 35 spaces; shopping plaza south of main entry – 60 spaces; shopping plaza north of main entry – 100; mini-storage – 10 spaces). It was conservatively assumed for the purposes of this analysis that all stalls within the proposed parking areas could fill or empty during a given peak hour (worst-case). The hourly average noise level generated by parking lot movements is computed using the following formula:

$$Peak\ Hour\ L_{eq} = 70+10*log\ (N) – 35.6$$

Where 70 is the mean Sound Exposure Level (SEL) for an automobile parking lot arrival or departure, N is the number of parking lot operations in a given hour, and 35.6 is 10 times the logarithm of the number of seconds in an hour.

Using the information provided above, the provided site plans, and assuming standard spherical spreading loss (-6 dB per doubling of distance), commercial parking area noise exposure at residential receivers 1-5 was calculated. The results of those calculations are presented in Tables 19 and 20. Predicted on-site passenger vehicle circulation noise levels at residential receivers 1-3 include consideration of screening that would be provided by intervening topography and have been adjusted by -10 dB.

Table 19
Predicted Parking Area Noise Levels at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Predicted Combined Noise Level from All Parking Areas, L_{eq} (dB)[2]	Applied County Standards, L_{eq} (dB)[3]		
		Day	Evening	Night
1	<20	**50**	**45**	**40**
2	<20	**50**	**45**	**40**
3	<20	**50**	**45**	**40**
4	<20	**55**	**50**	**45**
5	<20	**55**	**50**	**45**

[1] Receiver locations are shown on Figure 1.
[2] Predicted combined hourly average noise level from all parking areas with concurrent operations.
[3] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: BAC 2022.

Table 20
Predicted Worst-Case Parking Area Noise Levels at Existing Residential Uses – Maximum L_{max}

Receiver[1]	Predicted Highest Noise Level from All Parking Areas, L_{max} (dB)[2]	Applied County Standards, L_{max} (dB)[3]		
		Day	Evening	Night
1	<20	**60**	**55**	**50**
2	<20	**60**	**55**	**50**
3	21	**60**	**55**	**50**
4	23	**70**	**60**	**55**
5	<20	**70**	**60**	**55**

[1] Receiver locations are shown on Figure 1.
[2] Predicted highest maximum noise level from all parking areas.
[3] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: BAC 2022.

BAC recognizes that the development's future commercial tenants would likely have different hours of operation and would be subject to the associated County noise level criteria during daytime, evening, and nighttime hours as applicable. Nonetheless, the data presented in Tables 19 and 20 indicate that project commercial parking area noise exposure is predicted to comply with the applicable Butte County daytime, evening, and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at residential receivers 1-5 by a wide margin.

Using the lowest average measured hourly daytime, evening and nighttime ambient noise levels presented in Table 2, and the assigned ambient noise levels as discussed in a previous section of this report, ambient plus project parking area noise level increases were calculated at receivers 1-5. The results of those calculations indicate that the ambient noise level increases associated with project commercial parking area movements would be less than 0.1 dB L_{eq}/L_{max} at receivers 1-5 during daytime, evening, and nighttime hours. The calculated range of ambient plus project noise level increases at receivers 1-5 is well below the applied FICON increase significance criterion of 5 dB.

Because noise exposure from commercial parking area movements is predicted to satisfy applicable Butte County exterior noise level standards at the nearest existing residential uses, and because noise exposure from those activities is not calculated to significantly increase ambient noise levels at those uses, this impact is identified as being ***less than significant***.

Impact 7: HVAC Equipment Noise at Existing Residential Uses

Heating, ventilating, and air conditioning (HVAC) requirements for the proposed commercial uses will most likely be met using packaged roof-mounted systems. As a means of determining potential noise exposure due to rooftop mechanical equipment, BAC utilized reference file data collected for previous studies. BAC reference file data for HVAC systems indicate that a 12.5-ton packaged unit can be expected to generate an A-weighted sound power level of 85 dB.

Because mechanical equipment operation typically generates sustained, steady-state, noise levels, impacts of project rooftop mechanical equipment are assessed in this study relative to the County's hourly average (L_{eq}) noise level standards. Using the sound power data provided above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), commercial HVAC equipment noise exposure at residential receivers 1-5 was calculated. The results of those calculations are presented in Table 21.

As mentioned previously, the commercial shopping plaza area is bisected by the main entry road to the development – resulting in those uses on both the north and south sides of the road. For the purposes of this analysis, the results presented in Table 21 include the combined HVAC equipment noise exposure from all proposed commercial buildings within the closest shopping plaza area (i.e., north or south of the main entry road) at given receiver. In addition, the predicted HVAC equipment noise levels at residential receivers 1-3 include consideration of screening that would be provided by intervening topography and have been adjusted by -10 dB.

Table 21
Predicted Commercial HVAC Noise Levels at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Distance from Nearest Shopping Plaza Buildings (ft)[2]	Predicted Noise Level, L_{eq} (dB)[3]	Applied County Standards, L_{eq} (dB)[4]		
			Day	Evening	Night
1	7,400	<20	**50**	**45**	**40**
2	5.900	<20	**50**	**45**	**40**
3	2,700	<20	**50**	**45**	**40**
4	6,200	<20	**55**	**50**	**45**
5	10,100	<20	**55**	**50**	**45**

[1] Receiver locations are shown on Figure 1.
[2] Distances scaled from effective noise center of all proposed buildings (5) within the nearest shopping plaza area to a given receiver (i.e., north or south of the main entry road) using site plans and Butte County GIS viewer.
[3] Predicted combined equipment noise exposure from all proposed buildings (5) within the nearest shopping plaza area at a given receiver (i.e., north or south of the main entry road).
[4] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: BAC 2022.

BAC recognizes that the development's future commercial tenants would likely have different hours of operation and would be subject to the associated County noise level criteria during daytime, evening, and nighttime hours as applicable. Nonetheless, as indicated in Table 21, commercial HVAC equipment noise exposure is predicted to comply with the applicable Butte County daytime, evening, and nighttime hourly average (L_{eq}) exterior noise level standards at residential receivers 1-5 by a wide margin.

Using the lowest average measured hourly daytime, evening and nighttime ambient noise levels presented in Table 2, and the assigned ambient noise levels as discussed in a previous section of this report, ambient plus project commercial HVAC equipment noise level increases were calculated at receivers 1-5. The results of those calculations indicate that the ambient noise level increases associated with on-site commercial vehicle circulation would be less than 0.1 dB L_{eq} at receivers 1-5 during daytime, evening, and nighttime hours. The calculated range of ambient plus project noise level increases at receivers 1-5 is well below the applied FICON increase significance criterion of 5 dB.

Because noise exposure from commercial HVAC equipment is predicted to satisfy applicable Butte County exterior noise level standards at the nearest existing residential uses, and because noise exposure from those activities is not calculated to significantly increase ambient noise levels at those uses, this impact is identified as being ***less than significant***.

Impact 8: Sewage Waste Disposal Station Activity Noise at Existing Residential Uses

The project proposes a sewage waste disposal station near the mini-storage facility. The proposed location of the disposal station is shown in Figure 2.

The primary noise source associated with sewage waste disposal activities is expected to be vacuum pump truck operations during the removal of sewage from the underground waste storage area. According to the National Institute for Occupational Safety & Health (NIOSH), measured noise levels of sewage truck vacuum pumps are typically around 90 dB at a distance of 1 foot from the equipment. Additionally, based on published online literature from waste disposal companies, the process of sewage tank removal activities for residential and RV park tanks typically ranges from 15 to 45 minutes, depending on tank size. For the purpose of this analysis, it was conservatively assumed that project sewage tank removal activities could occur for 60 minutes of a given daytime, evening or nighttime hour.

Based on the cited reference noise level data and operations assumptions above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), project sewage waste disposal station activity noise exposure at residential receivers 1-5 was calculated and the results of those calculations are presented in Table 22. The predicted sewage waste disposal station activity noise levels at residential receivers 1-3 include consideration of screening that would be provided by intervening topography and have been adjusted by -10 dB.

Table 22
Predicted Sewage Waste Disposal Station Noise at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Distance from Disposal Station (ft)[2]	Predicted Noise Level, L_{eq} (dB)	Applied County Standards, L_{eq} (dB)[3]		
			Day	Evening	Night
1	5,900	<20	**50**	**45**	**40**
2	4,700	<20	**50**	**45**	**40**
3	3,300	<20	**50**	**45**	**40**
4	8,300	<20	**55**	**50**	**45**
5	12,100	<20	**55**	**50**	**45**

[1] Receiver locations are shown on Figure 1.
[2] Distances scaled from waste disposal station to a given receiver using site plans and Butte County GIS viewer.
[3] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: BAC 2023.

Table 22 data indicate that sewage waste disposal station activity noise (i.e., vacuum pump truck operations) is predicted to comply with the applicable Butte County daytime, evening, and nighttime hourly average (L_{eq}) exterior noise level standards at residential receivers 1-5 by a wide margin.

Using the lowest average measured hourly daytime, evening and nighttime ambient noise levels presented in Table 2, and the assigned ambient noise levels as discussed in a previous section of this report, ambient plus project sewage waste disposal station activity noise level increases were calculated at receivers 1-5. The results of those calculations indicate that the ambient noise level increases associated with waste disposal activities would be less than 0.1 dB L_{eq} at receivers 1-5 during daytime, evening, and nighttime hours. The calculated range of ambient plus project noise level increases at receivers 1-5 is well below the applied FICON increase significance criterion of 5 dB.

Because noise exposure from project sewage waste disposal station operations is predicted to satisfy applicable Butte County exterior noise level standards at the nearest existing residential uses, and because noise exposure from those activities is not calculated to significantly increase ambient noise levels at those uses, this impact is identified as being ***less than significant***.

Impact 9: Cumulative Operations Noise at Existing Residential Uses

The calculated cumulative (combined) hourly average (L_{eq}) and highest predicted maximum (L_{max}) noise levels from analyzed on-site noise sources at residential receivers 1-5 is presented in Tables 23 and 24. It should be noted that due to the logarithmic nature of the decibel scale, the sum of two noise values which differ by 10 dB equates to an overall increase in noise levels of 0.4 dB. When the noise sources are equivalent, the sum would result in an overall increase in noise levels of 3 dB.

Table 23
Calculated Cumulative Operations Noise Levels at Existing Residential Uses – Hourly L_{eq}

	Predicted Noise Levels, L_{eq} (dB)						Calculated	Applied County Standard, L_{eq} (dB)[2]		
Rec	Truck Circ.	Truck Delivery	Vehicle Circ.	Parking Lot	HVAC	Waste Station	Cumulative, L_{eq} (dB)[1]	Day	Evening	Night
1	<20	<20	<20	<20	<20	<20	<20	**50**	**45**	**40**
2	<20	<20	<20	<20	<20	<20	<20	**50**	**45**	**40**
3	<20	<20	22	<20	<20	<20	24	**50**	**45**	**40**
4	<20	<20	26	<20	<20	<20	27	**55**	**50**	**45**
5	<20	<20	23	<20	<20	<20	24	**55**	**50**	**45**

[1] Calculated cumulative hourly average noise levels presented in this report.
[2] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: BAC 2023.

Table 24
Highest Predicted Operations Noise Levels at Existing Residential Uses – Maximum L_{max}

	Predicted Noise Levels, L_{max} (dB)						Highest	Applied County Standard, L_{max} (dB)[2]		
Rec	Truck Circ.	Truck Delivery	Vehicle Circ.	Parking Lot	HVAC	Waste Station	Predicted, L_{max} (dB)[1]	Day	Evening	Night
1	20	<20	26	<20	--	--	26	**60**	**55**	**50**
2	22	20	28	<20	--	--	28	**60**	**55**	**50**
3	31	27	32	21	--	--	32	**60**	**55**	**50**
4	32	29	36	23	--	--	36	**70**	**60**	**55**
5	28	25	33	<20	--	--	33	**70**	**60**	**55**

[1] Highest predicted noise levels presented in this report.
[2] Applicable County exterior noise levels standards for "non-urban" and "urban" areas.

Source: BAC 2023.

BAC recognizes that the development's future commercial tenants would likely have different hours of operation and would be subject to the associated County noise level criteria during daytime, evening, and nighttime hours as applicable. Nonetheless, the data presented in Tables 23 and 24 indicate that cumulative (and highest) noise levels from on-site operations would comply with the applicable Butte County daytime, evening, and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at residential receivers 1-5 by a wide margin.

Using the lowest average measured hourly daytime, evening and nighttime ambient noise levels presented in Table 2, and the assigned ambient noise levels as discussed in a previous section of this report, ambient plus cumulative project noise level increases were calculated at receivers 1-5. The results of those calculations indicate that increases in ambient noise levels from combined (or highest) project on-site operations would range from less than 0.1 to 0.3 dB L_{eq} and from less than 0.1 to 0.2 dB L_{max} at receivers 1-5 during daytime, evening, and nighttime hours.

The calculated range of ambient plus cumulative project noise level increases at receivers 1-5 is well below the applied FICON increase significance criterion of 5 dB.

Because the calculated cumulative (combined or highest) noise exposure from project on-site operations would satisfy applicable Butte County exterior noise level standards at the nearest existing residential uses, and because cumulative noise exposure from those activities is not calculated to significantly increase ambient noise levels at those uses, this impact is identified as being ***less than significant***.

Noise Impacts Associated with Project Construction Activities

Impact 10: Project Construction Noise Levels at Existing Residential Uses

During project construction, heavy equipment would be used for grading excavation, paving, and building construction, which would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained. Noise exposure at any single point outside the project work area would also vary depending upon the proximity of equipment activities to that point.

Table 25 includes the range of maximum noise levels for equipment commonly used in general construction projects at full-power operation at a distance of 50 feet. Not all of these construction activities would be required of this project. The Table 25 data also include predicted maximum equipment noise levels at residential receivers 1-5, which assumes a standard spherical spreading loss of 6 dB per doubling of distance. Predicted construction equipment noise levels at receivers 1-3 include consideration of screening that would be provided by intervening topography and have been adjusted by -10 dB.

Table 25
Construction Equipment Reference and Predicted Noise Levels Noise Levels

Equipment Description	Reference Noise Level at 50 Feet, L_{max} (dB)	Predicted Noise Level at Receiver, L_{max} (dB)[1]				
		Receiver 1 (4,800 ft)	Receiver 2 (3,900 ft)	Receiver 3 (2,400 ft)	Receiver 4 (4,800 ft)	Receiver 5 (8,600 ft)
Air compressor	80	30	32	36	40	35
Backhoe	80	30	32	36	40	35
Ballast equalizer	82	32	34	38	42	37
Ballast tamper	83	33	35	39	43	38
Compactor	82	32	34	38	42	37
Concrete mixer	85	35	37	41	45	40
Concrete pump	82	32	34	38	42	37
Concrete vibrator	76	26	28	32	36	31
Crane, mobile	83	33	35	39	43	38
Dozer	85	35	37	41	45	40
Excavator	85	35	37	41	45	40
Generator	82	32	34	38	42	37
Grader	85	35	37	41	45	40
Impact wrench	85	35	37	41	45	40
Loader	80	30	32	36	40	35
Paver	85	35	37	41	45	40
Pneumatic tool	85	35	37	41	45	40
Pump	77	27	29	33	37	32
Saw	76	26	28	32	36	31
Scarifier	83	33	35	39	43	38
Scraper	85	35	37	41	45	40
Shovel	82	32	34	38	42	37
Spike driver	77	27	29	33	37	32
Tie cutter	84	34	36	40	44	39
Tie handler	80	30	32	36	40	35
Tie inserter	85	35	37	41	45	40
Truck	84	34	36	40	44	39
	Low	26	28	32	36	31
	High	35	37	41	45	40
	Average	33	34	39	43	37

[1] Distances scaled from closest point in project area where construction activities would likely occur to receiver using provided site plans and Butte County GIS viewer.

Source: 2020 Federal Transit Administration Noise and Vibration Impact Assessment Manual, Table 7-1.

It should be noted that Bute County Code Section 41A-9 exempts noise sources associated with construction activities that occur within 1,000 feet of residential uses provided such activities do not occur between specific hours and day outlined in the text. Although existing residential uses are not identified within 1,000 feet of where construction activities would occur in the project area, it is reasonably assumed for the purposes of this analysis that all noise-generating project construction equipment and activities would occur pursuant to County Code Section 41A-9 and would thereby be exempt from County noise level criteria.

However, noise from heavy equipment operations during on-site construction activities would add to the noise environment in the immediate vicinity of the work area. In terms of determining the temporary noise increase due to project-related construction activities, an impact would occur if construction activity would noticeably increase ambient noise levels above background levels. The threshold of perception of the human ear is approximately 3 to 5 dB – a 5 dB change is considered to be clearly noticeable. For this analysis, a noticeable increase in ambient noise levels is assumed to occur where noise levels increase by 5 dB or more over existing ambient noise levels.

Using the lowest average measured hourly daytime, evening and nighttime ambient noise levels presented in Table 2, the assigned ambient noise levels as discussed in a previous section of this report, and the highest predicted construction equipment maximum noise levels shown in Table 25, ambient plus project construction equipment noise level increases were calculated at receivers 1-5. The results of those calculations indicate that increases in ambient noise levels from project construction activities would range from less than 0.1 to 0.2 dB L_{max} at receivers 1-5 during daytime hours. The calculated range of ambient plus project noise level increases at receivers 1-5 is well below the applied FICON increase significance criterion of 5 dB.

Based on the discussion and analysis provided above, this impact is identified as being ***less than significant***. Nonetheless, to reduce the potential for annoyance at nearby noise-sensitive uses, the following measures should be incorporated into project on-site construction operations:

- All on-site noise-generating construction activities should occur between the hours and days specified in Butte County Code Section 41A-9.
- The construction noise control measures specified in Butte County General Plan Policy HS-P1.9 shall be implemented.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses.
- Work area speed limits shall be established and enforced during the construction period.

Vibration Impacts Associated with On-Site Project Activities

Impact 11: Vibration Generated by Project Construction and Proposed Uses

During on-site construction, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of the construction. The nearest existing sensitive structure has been identified as a residence (receiver 3), located approximately 2,400 feet from where construction activities would occur within the project area.

Table 26 includes the range of vibration levels for equipment commonly used in general construction projects at a distance of 25 feet. The Table 26 data also include projected equipment vibration levels at receiver 3 located approximately 2,400 feet away.

Table 26
Reference and Projected Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV at 25 Feet (in/sec)[1]	Projected PPV at Nearest Receptor (in/sec) Receiver 3 (2,400 Feet)
Vibratory roller	0.210	<0.001
Hoe ram	0.089	<0.001
Large bulldozer	0.089	<0.001
Caisson drilling	0.089	<0.001
Loaded trucks	0.076	<0.001
Jackhammer	0.035	<0.001
Small bulldozer	0.003	<0.001

[1] PPV = Peak Particle Velocity

Source: 2020 FTA Transit Noise and Vibration Impact Assessment Manual (Table 7-4) and BAC calculations.

The Table 26 data indicate that vibration levels generated from construction activities within the project area at the nearest existing residence located approximately 2,400 feet away are predicted to be well below the Caltrans thresholds for damage to residential structures of 0.5 in/sec PPV shown in Table 5 (building structure vibration criteria). In addition, the projected equipment vibration levels in Table 26 are well below a "barely/slightly perceptible" human response as defined by Caltrans in Table 6 (vibration annoyance potential threshold criteria). Based on the analysis provided above, on-site construction within the project area is not expected to result in excessive groundborne vibration levels at the nearest existing residential structures.

Results from the ambient vibration level monitoring within the project area (Table 3) indicate that measured average vibration levels were below the strictest Caltrans thresholds for damage to structures and thresholds for annoyance. Therefore, it is expected that the project would not result in the exposure of persons to excessive groundborne vibration levels at proposed uses of the project.

Finally, the project consists of the development of a residential and commercial uses. It is the experience of BAC these uses do not typically have equipment that generates appreciable vibration. Further, it is our understanding that the project does not propose equipment that will produce appreciable vibration.

Because vibration levels due to and upon the proposed project are expected to satisfy the applicable Caltrans groundborne impact vibration criteria, this impact is identified as being ***less than significant***.

Noise Impacts Upon the Development

The California Supreme Court issued an opinion in *California Building Industry Association v. Bay Area Air Quality Management District (2015)* holding that CEQA is primarily concerned with the impacts of a project on the environment and generally does not require agencies to analyze the

impact of existing conditions on a project's future users or residents. Nevertheless, Butte County has policies that address existing/future conditions affecting the proposed project, which are discussed in the following section.

Future Traffic Noise Levels at the Project Site

Issue 1: Future Exterior Traffic Noise Levels at Proposed Residential Uses

The FHWA model was used with future traffic data to predict future Skyway traffic noise levels at the proposed development. Specifically, future average daily traffic volumes (ADT) were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour turning movements for Cumulative Plus Project conditions, which were received from the project transportation consultant (Fehr & Peers). Predicted future Skyway traffic noise levels at the nearest proposed noise-sensitive uses of the development (residential) are summarized in Table 27. A complete listing of the FHWA model inputs and results are provided in Appendix F.

Table 27
Predicted Future Exterior Traffic Noise Levels at Proposed Residential Uses[1]

Roadway	Receiver Description	Offset (dB)[2]	Future Exterior DNL (dB)
Skyway	Nearest backyards		62
	Nearest first-floor building facades		61
	Nearest upper-floor building facades	+2	63

[1] A complete listing of FHWA model inputs is provided as Appendix F.
[2] A +2 dB offset was applied at upper-floors for reduced ground absorption at elevated locations.

Source: BAC 2022.

As indicated in Table 27, future Skyway traffic noise level exposure at the nearest residential outdoor activity areas (backyards) is predicted to exceed the Butte County General Plan 60 dB DNL exterior noise level standard for residential uses. To reduce future Skyway traffic noise level exposure a state of compliance with the General Plan 60 dB DNL exterior noise level standard at the project site, the following design measure would be required:

1. The construction of 6' traffic noise barriers at the locations shown on Figure 4. The construction of 6' noise barriers at the locations on Figure 4 is calculated to reduce future Skyway traffic noise level exposure to approximately 56 dB DNL or less at the nearest proposed backyards to the roadway, which would satisfy the applicable General Plan 60 dB DNL exterior noise level standard. The traffic noise barriers could take the form of a masonry wall, earthen berm, or combination of the two. Other materials may be acceptable but should be reviewed by an acoustical consultant prior to construction.

   It should be noted that lot grading plans were not available at the time of preparing this report. The recommended 6' barrier height assumes that the difference in elevations between the Skyway and proposed nearest adjacent residential lots are within ± 2 feet. Should differences in elevations be greater than ± 2 feet, an additional analysis would be warranted. Nonetheless, the 6' barrier height is relative to lot or roadway elevation, whichever is greater.

Legend

Recommended 6' Traffic Noise Barriers (Traffic Noise)

N

Scale (Feet)

0 250 500

Tuscan Ridge Development
Butte County, California

General Plan Compliance (60 dB DNL)
6' Noise Barriers

Figure 4

BOLLARD Acoustical Consultants

Issue 2: Future Interior Traffic Noise Levels at Proposed Residential Uses

After implementation of the 6' traffic noise barriers needed to satisfy the Butte County General Plan 60 dB DNL exterior noise level standard at the project site (discussed in **Issue 1**), future Skyway traffic noise levels are predicted to be approximately 57 dB DNL or less at the first-floor exterior facades of the residences constructed nearest to the roadway. Due to reduced ground absorption at elevated positions and lack of shielding by the noise barriers, future traffic noise levels are predicted to be approximately 63 dB DNL at the upper-floor facades of those nearest residences. To satisfy the Butte County General Plan 45 dB DNL interior noise level standard, minimum noise reductions of 12 dB and 18 dB would be required of the first- and upper-floor building facades (respectively) of the residences constructed adjacent to the Skyway.

Standard building construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), typically results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. Therefore, standard construction practices would be adequate for residences constructed nearest to the Skyway. Nonetheless, mechanical ventilation (air conditioning) should be provided to all residences of the development allow the occupants to close doors and windows as desired for additional acoustical isolation.

On-Site Operations Noise Levels at Proposed Residential Uses

As mentioned previously, the commercial operations analyzed in this assessment include on-site truck circulation, truck delivery activities, on-site passenger vehicle circulation, parking area movements, and HVAC equipment. Additionally, an impact discussion for noise associated with a proposed sewage waste disposal station is also included in this assessment. An analysis of each identified project-related noise source at the nearest proposed on-site residential uses of the development follows. An enlarged view of the shopping center areas with adjacent proposed residential uses are shown in Figure 5.

For noise generated by on-site commercial activities, the County's exterior noise level standards for "urban" areas shown in Table 9 were applied and assessed at proposed residential uses. The County's exterior noise limits are to be applied at the property line of a parcel in "urban" areas.

Legend

Recommended 8' Solid Noise Barrier (Commercial Noise)

Scale (Feet)

0 100 200

Tuscan Ridge Development
Butte County, California

Commercial Shopping Center
& Adjacent Residential Uses

Figure 5

BOLLARD Acoustical Consultants

Issue 3: Commercial On-Site Truck Circulation Noise at Proposed Residential Uses

An analysis of commercial on-site truck circulation noise exposure at existing residential receivers was presented in **Impact 3**. Using the same methodology identified in **Impact 3**, commercial on-site truck circulation noise levels were predicted at the nearest proposed residential uses of the development. The results of that analysis are provided below in Tables 28 and 29.

Table 28
Predicted On-Site Truck Circulation Noise Levels at Proposed Residential Uses – Hourly L_{eq}

Nearest Receiver[1]	Component	Distance from Truck Route (ft)[2]	Predicted Noise Level, L_{eq} (dB)[3]	County Noise Standards, L_{eq} (dB)[4]		
				Daytime	Evening	Nighttime
Res-S	C-Store/Gas Station	80	45	**55**	**50**	**45**
	Shopping Plaza-S	140	37	**55**	--	--
Res-N	Shopping Plaza-N	175	30	**55**	--	--

[1] Locations of receivers and shopping area components are identified in Figure 5.
[2] Distances scaled from component on-site truck route to receiver property lines using provided development plan.
[3] Predicted noise levels include a -5 dB offset in cases where proposed intervening structures would provide screening of truck circulation route.
[4] County exterior noise level standards for "urban" areas. Applied noise level standards based on assumed hours of operations for shopping center components, as discussed in this report.

Source: BAC 2024.

Table 29
Predicted On-Site Truck Circulation Noise Levels at Proposed Residential Uses – Maximum L_{max}

Nearest Receiver[1]	Component	Distance from Truck Route (ft)[2]	Predicted Noise Level, L_{max} (dB)[3]	County Noise Standards, L_{max} (dB)[4]		
				Daytime	Evening	Nighttime
Res-S	C-Store/Gas Station	80	70	**70**	**60**	**55**
	Shopping Plaza-S	140	65	**70**	--	--
Res-N	Shopping Plaza-N	175	58	**70**	--	--

[1] Locations of receivers and components are identified in Figure 5.
[2] Distances scaled from component on-site truck route to receiver property lines using provided development plan.
[3] Predicted noise levels include a -5 dB offset in cases where proposed intervening structures would provide screening of circulation route.
[4] County exterior noise level standards for "urban" areas. Applied noise level standards based on assumed hours of operations for components, as discussed in this report.

Source: BAC 2024.

As indicated in Table 28, commercial on-site truck circulation noise level exposure is predicted to satisfy the Butte County exterior daytime, evening, and nighttime hourly average (L_{eq}) noise level standards (as applied) at the nearest proposed residential uses. However, as shown in Table 29, commercial on-site truck circulation noise level exposure associated with the C-Store/Gas Station component is predicted to exceed the applied Butte County exterior evening and nighttime maximum (L_{max}) noise level standards at the nearest proposed residential uses to the south of the main entry road (receiver Res-S).

Based on the analysis and results presented above, the following two measures are recommended for the project:

1. To avoid the potential for an exceedance of the Butte County exterior evening and nighttime maximum (L_{max}) noise level standard, all on-site commercial truck circulation should be limited to daytime hours only (7:00 a.m. to 7:00 p.m.).

2. To reduce the potential for an exceedance of the Butte County exterior daytime maximum (L_{max}) noise level limit at the closest proposed residential uses, the project design should include the construction of an 8' solid noise barrier at the location shown on Figure 6.

Issue 4: Commercial Truck Delivery Noise at Proposed Residential Uses

An analysis of commercial truck delivery noise exposure at existing residential receivers was presented in **Impact 4**. Using the same methodology identified in **Impact 4**, commercial on-site truck delivery noise levels were predicted at the nearest proposed residential uses of the development. The results of that analysis are presented in Tables 30 and 31.

Table 30
Predicted Truck Delivery Noise Levels at Proposed Residential Uses – Hourly L_{eq}

Nearest Receiver[1]	Component	Distance from Delivery Area (ft)[2]	Predicted Noise Level, L_{eq} (dB)[3]	County Noise Standards, L_{eq} (dB)[4]		
				Daytime	Evening	Nighttime
Res-S	C-Store/Gas Station	130	43	**55**	**50**	**45**
	Shopping Plaza-S	150	37	**55**	**--**	**--**
Res-N	Shopping Plaza-N	200	34	**55**	**--**	**--**

[1] Locations of receivers and components are identified in Figure 5.
[2] Distances scaled from component delivery area to receiver property lines using provided development plan.
[3] Predicted noise levels include a -5 dB offset in cases where proposed intervening structures would provide screening of delivery areas.
[4] County exterior noise level standards for "urban" areas. Applied noise level standards based on assumed hours of operations for components, as discussed in this report.

Source: BAC 2024.

Table 31
Predicted Truck Delivery Noise Levels at Proposed Residential Uses – Maximum L_{max}

Nearest Receiver[1]	Component	Distance from Delivery Area (ft)[2]	Predicted Noise Level, L_{max} (dB)[3]	County Noise Standards, L_{max} (dB)[4]		
				Daytime	Evening	Nighttime
Res-S	C-Store/Gas Station	130	63	**70**	**60**	**55**
	Shopping Plaza-S	150	56	**70**	**--**	**--**
Res-N	Shopping Plaza-N	200	54	**70**	**--**	**--**

[1] Locations of receivers and components are identified in Figure 5.
[2] Distances scaled from component delivery area to receiver property lines using provided development plan.
[3] Predicted noise levels include a -5 dB offset in cases where proposed intervening structures would provide screening of delivery areas.
[4] County exterior noise level standards for "urban" areas. Applied noise level standards based on assumed hours of operations for components, as discussed in this report.

Source: BAC 2024.

The Table 30 data indicate that commercial truck delivery activity noise level exposure is predicted to satisfy the Butte County exterior daytime, evening, and nighttime hourly average (L_{eq}) noise level standards (as applied) at the nearest proposed residential uses. However, the Table 31 data indicate that truck delivery activity noise level exposure associated with the C-Store/Gas Station component is predicted to exceed the applied Butte County exterior evening and nighttime maximum (L_{max}) noise level standards at the nearest proposed residential uses to the south of the main entry road, represented as receiver Res-S.

Based on the analysis and results presented above, the following measure is recommended for the project:

1. To avoid the potential for an exceedance of the Butte County exterior evening and nighttime maximum (L_{max}) noise level standard, all on-site commercial truck delivery activities should be limited to daytime hours only (7:00 a.m. to 7:00 p.m.).

Issue 5: Commercial On-Site Passenger Vehicle Noise at Proposed Residential Uses

An analysis of commercial on-site passenger vehicle circulation noise exposure at existing residential receivers was presented in **Impact 5**. That analysis utilized the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) with trip generation estimates prepared by the project traffic consultant (Fehr & Peers).

To quantify commercial on-site passenger vehicle circulation noise exposure at the proposed residential uses of the development, it was assumed that 50% of worst-case estimated peak hour vehicle trips for the shopping center component of the project (C-Store/Gas station and Shopping Plaza – 345 PM peak hour vehicle trips) could occur within either of the shopping center areas north and south of the main entry road. For the Mini-Storage facility use, it was assumed that all worst-case peak hour vehicle trips (8 PM peak hour trips) would reasonably occur at the northeast access point to the development located nearest to the facility. Based on the peak hour trip data above, and assuming an on-site vehicle speed of less than 25 mph, commercial- on-site

passenger vehicle circulation noise exposure was predicted at the nearest proposed residential uses of the development. The results of that analysis are presented below in Tables 32 and 33.

Table 32
Predicted On-Site Vehicle Circulation Noise Levels at Proposed Residential Uses – Hourly L_{eq}

Nearest Receiver[1]	Component	Distance from Circ. Route (ft)[2]	Predicted Noise Level, L_{eq} (dB)[3]	County Noise Standards, L_{eq} (dB)[4]		
				Daytime	Evening	Nighttime
Res-S	C-Store/Gas Station	125	42	**55**	**50**	**45**
	Shopping Plaza-S			**55**	--	--
Res-N	Shopping Plaza-N	200	39	**55**	--	--
Nearest Res	Mini-Storage	240	28	**55**	**50**	**45**

[1] Locations of receivers and commercial components are identified in Figure 5.
[2] Distances scaled from component circulation route to receiver property lines using provided development plan.
[3] Predicted c-store/gas station and shopping plaza uses Leq utilizes 345 vehicle trips per hour (50% of estimated 689 PM peak hour trips). Predicted mini-storage facility use Leq utilizes 8 vehicle trips per hour (estimated 8 PM peak hour trips).
[4] County exterior noise level standards for "urban" areas. Applied noise level standards based on assumed hours of operations for commercial components, as discussed in this report.

Source: BAC 2024.

Table 33
Predicted On-Site Vehicle Circulation Noise at Proposed Residential Uses – Maximum L_{max}

Nearest Receiver[1]	Commercial Component	Distance from Circ. Route (ft)[2]	Predicted Noise Level, L_{max} (dB)[3]	County Noise Standards, L_{max} (dB)[4]		
				Daytime	Evening	Nighttime
Res-S	C-Store/Gas Station	125	52	**70**	**60**	**55**
	Shopping Plaza-S			**70**	--	--
Res-N	Shopping Plaza-N	200	49	**70**	--	--
Nearest Res	Mini-Storage	240	38	**70**	**60**	**55**

[1] Locations of receivers and commercial components are identified in Figure 5.
[2] Distances scaled from component circulation route to receiver property lines using provided development plan.
[3] Predicted maximum Lmax conservatively assumed to be 10 dB higher than predicted hourly Leq.
[4] County exterior noise level standards for "urban" areas. Applied noise level standards based on assumed hours of operations for commercial components, as discussed in this report.

Source: BAC 2024.

As shown in Tables 32 and 33, commercial on-site passenger vehicle circulation noise level exposure is predicted to satisfy the Butte County exterior daytime, evening, and nighttime hourly average (L_{eq}) and maximum (L_{max}) noise level standards (as applied) at the nearest proposed residential uses. Based on the analysis and results presented above, additional consideration of noise attenuating design measures would not be warranted for this aspect of the project for compliance with applicable Butte County noise level criteria.

It should be noted that this assessment does not include an impact discussion on noise from residential component on-site passenger vehicle circulation at proposed residential uses. However, based on trip generation estimates contained in the project traffic impact analysis

prepared by Fehr & Peers, residential component on-site passenger vehicle circulation within the internal roadway network is not expected to result in noise impacts at proposed residential uses.

Issue 6: Commercial Parking Area Noise at Proposed Residential Uses

An analysis of commercial parking area noise exposure at existing residential receivers was presented in **Impact 6**. Using the same methodology identified in **Impact 6**, commercial parking area noise levels were predicted at the nearest proposed residential uses of the development. The results of that analysis are presented below in Tables 34 and 35.

Table 34
Predicted Parking Area Noise Levels at Proposed Residential Uses – Hourly L_{eq}

Nearest Receiver[1]	Commercial Component	Distance from Parking Area (ft)[2]	Predicted Noise Level, L_{eq} (dB)[3,4]	County Noise Standards, L_{eq} (dB)[5]		
				Daytime	Evening	Nighttime
Res-S	C-Store/Gas Station	55	44	**55**	**50**	**45**
	Shopping Plaza-S	125	36	**55**	**--**	**--**
Res-N	Shopping Plaza-N	140	35	**55**	**--**	**--**
Nearest Res	Mini-Storage	400	21	**55**	**50**	**45**

[1] Locations of receivers and commercial components are identified in Figure 5.
[2] Distances scaled from component's nearest parking area to receiver property lines using development plan.
[3] Predicted Leq include a -5 dB offset in cases where proposed intervening structures (buildings or sound walls) would provide screening of parking areas.
[4] Predicted Leq from mini-storage facility parking area based on 10 stalls.
[5] County exterior noise level standards for "urban" areas. Applied noise level standards based on assumed hours of operations for commercial components, as discussed in this report.

Source: BAC 2024.

Table 35
Predicted Parking Area Noise Levels at Proposed Residential Uses – Maximum L_{max}

Nearest Receiver[1]	Commercial Component	Distance from Parking Area (ft)[2]	Predicted Noise Level, L_{max} (dB)[3]	County Noise Standards, L_{max} (dB)[4]		
				Daytime	Evening	Nighttime
Res-S	C-Store/Gas Station	55	64	**70**	**60**	**55**
	Shopping Plaza-S	125	52	**70**	**--**	**--**
Res-N	Shopping Plaza-N	140	51	**70**	**--**	**--**
Nearest Res	Mini-Storage	400	42	**70**	**60**	**55**

[1] Locations of receivers and commercial components are identified in Figure 5.
[2] Distances scaled from component's nearest parking area to receiver property lines using development plan.
[3] Predicted noise levels include a -5 dB offset in cases where proposed intervening structures (buildings or sound walls) would provide screening of parking areas.
[4] County exterior noise level standards for "urban" areas. Applied noise level standards based on assumed hours of operations for commercial components, as discussed in this report.

Source: BAC 2024.

The Table 34 data indicate that commercial parking area noise level exposure is predicted to satisfy the Butte County exterior daytime, evening, and nighttime hourly average (L_{eq}) noise level

standards (as applied) at the nearest proposed residential uses. However, the Table 35 data indicate that commercial parking area noise level exposure from the C-Store/Gas Station component is predicted to exceed the applied Butte County exterior evening and nighttime maximum (L_{max}) noise level standards at the nearest proposed residential uses to the south of the main entry road (receiver Res-S).

Based on the analysis and results presented above, the following two measures are recommended for the project:

1. To avoid the potential for an exceedance of the Butte County exterior nighttime maximum (L_{max}) noise level standard, the hours of operation for all commercial uses of the development should be restricted during nighttime hours (10:00 p.m. to 7:00 a.m.).

2. To satisfy the Butte County exterior evening maximum (L_{max}) noise level standard at the closest proposed residential uses, the project design should include the construction of an 8' solid noise barrier at the location shown on Figure 6.

Issue 7: Commercial HVAC Noise at Proposed Residential Uses

An analysis of commercial HVAC equipment noise exposure at existing residential receivers was presented in **Impact 7**. That impact discussion included an analysis of the combined noise exposure from HVAC equipment at all commercial buildings proposed within the nearest shopping center area (i.e., north or south of the main entry road) to a given receiver, which were located in excess of 2,700 away. However, given the closer distances to proposed residential receivers, and based on a review of the building layout shown in the development plan, this impact discussion more appropriately includes an analysis of the combined HVAC equipment noise exposure from the closest two commercial buildings proposed within the shopping center area to a given receiver. Based on the methodology discussed above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), commercial HVAC equipment noise exposure was predicted at the nearest proposed residential uses of the development. The results of that analysis are presented in Table 36.

Table 36
Predicted HVAC Equipment Noise Levels at Proposed Residential Uses – Hourly L_{eq}

Nearest Receiver[1]	Component	Distance from Buildings (ft)[2]	Predicted Noise Level, L_{eq} (dB)[3]	County Noise Standards, L_{eq} (dB)[4]		
				Daytime	Evening	Nighttime
Res-S	C-Store/Gas Station	100	40	**55**	**50**	**45**
	Shopping Plaza-S	60	44	**55**	**--**	**--**
Res-N	Shopping Plaza-N	100	40	**55**	**--**	**--**

[1] Locations of receivers and components are identified in Figure 5.
[2] Distances scaled from nearest 2 buildings of component (where appropriate) to receiver property lines using development plan.
[3] Predicted combined equipment noise level exposure from nearest 2 buildings (where appropriate).
[4] County exterior noise level standards for "urban" areas. Applied noise level standards based on assumed hours of operations for components, as discussed in this report.

Source: BAC 2024.

As indicated in Table 36, commercial noise level exposure is predicted to satisfy the Butte County exterior daytime, evening, and nighttime hourly average (L_{eq}) noise level standards (as applied) at the nearest proposed residential uses. However, mechanical plans for the proposed commercial buildings were not available at the time of writing this report. Further, should the future commercial uses involve food cold storage, additional mechanical equipment would be required of those uses. This equipment is typically located on the roof of the building, within a mechanical equipment room inside the building, or at ground-level outside the building. Thus, depending upon the location and equipment configuration, noise exposure from commercial HVAC equipment could exceed the County's daytime, evening, and nighttime noise standards at the nearest proposed residential uses to those uses.

Based on the analysis and discussion presented above, the following measure is recommended for the project:

1. Should the project include mechanical equipment for the cold storage of food which is not proposed within a mechanical equipment room which would contain the noise generated by that equipment (i.e., rooftop of commercial buildings or at unshielded exterior ground floor locations), a site-specific noise impact study that addresses commercial HVAC equipment shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of commercial HVAC equipment noise exposure at the nearest proposed residential uses of the development. The analysis shall include associated mitigation measures (as appropriate) to reduce commercial HVAC equipment noise levels to a state of compliance with applicable Butte County General Plan exterior noise level limits at nearby proposed residential uses. Such measures could include, but are not limited to, the use of building parapets to screen HVAC equipment from nearby sensitive uses, locating HVAC equipment within isolated mechanical equipment rooms, or relocating HVAC equipment as far as feasible from proposed noise-sensitive receptors.

Issue 8: Sewage Waste Disposal Station Noise at Proposed Residential Uses

An analysis of project sewage waste disposal station noise exposure at existing residential receivers was presented in **Impact 8**. Using the same methodology identified in **Impact 8**, project sewage waste disposal station noise levels were predicted at the nearest proposed residential uses of the development. The results of that analysis are presented below in Table 37.

Table 37
Predicted Sewage Waste Disposal Activity Noise Levels at Existing Residential Uses – Hourly L_{eq}

Receiver[1]	Distance from Station (ft)[2]	Predicted Noise Level, L_{eq} (dB)[2]	Applied County Standards, L_{eq} (dB)[3]		
			Day	Evening	Night
Nearest Proposed Res	230	38	**50**	**45**	**40**

[1] Distance scaled from disposal station to property line of nearest proposed residential use using development plan.
[2] Predicted noise level includes a -5 dB offset to account for a 6' intervening sound wall at the location in Figure 2.
[3] County exterior noise level standards for "urban" areas.

Source: BAC 2023.

Table 37 data indicate that project sewage waste disposal activity noise level exposure is predicted to satisfy the Butte County exterior daytime, evening, and nighttime hourly average (L_{eq}) noise level standards (as applied) at the nearest proposed residential uses. Based on the analysis and results presented above, additional consideration of noise attenuating design measures would not be warranted for this aspect of the project for compliance with applicable Butte County noise level criteria.

Existing Recreational Use Noise Levels at Proposed Residential Uses

Issue 9: Paradise Rod & Gun Club Noise at Proposed Residential Uses

The Paradise Rod & Gun Club (PRGC) is a recreational shooting range for the general public and PRGC members. The PRGC holds events that include shooting matches and various trainings for local law enforcement, youth, and citizens. According to the PRGC website, the facility operates seven days a week from 9:00 a.m. to an hour before sunset. The PRGC is located immediately adjacent (northeast) to the Tuscan Ridge development project area, as identified on Figures 1 and 2.

To quantify noise level exposure associated with the PRGC range activities at the project site, BAC utilized sound level data obtained from BAC measurements of PRGC shooting activities previously conducted at the PRGC facility. Specifically, BAC conducted noise level measurements at various locations and distances during a scheduled simulation at the facility in June of 1998, which consisted of 11 firearm types including handguns, shotguns, and rifles. Based on BAC file data, the firearm that was consistently measured to be the loudest during the simulation was a black powder rifle, measured to be approximately 88 dB L_{max} at a distance of 250' to the southwest of the firing range (i.e., towards the direction of the project area).

The BAC reference noise measurement level identified above was then utilized with SoundPLAN Version 8.2 noise prediction model to project firearm noise level exposure from the PRGC range to the nearest proposed residential use of the Tuscan Ridge development. The SoundPLAN projections were calculated using a standard spherical spreading loss of -6 dB per doubling of distance from a stationary source. Elevation data for the entire study area was input to the SoundPLAN model to create a 3-dimensional base map. Using aerial imagery and the project development plan, the SoundPLAN model inputs for both hard surfaces, soft surfaces, and vegetated areas were applied. The modeling also included consideration of proposed sound walls of the development, assumed to be 6' in height. The locations of the proposed sound walls are illustrated in Figure 2.

The results from the SoundPLAN model projections at the nearest proposed residential use of the development is shown graphically in Figure 6. As indicated in Figure 6, the property line of the nearest proposed residential use of the development is located outside of the modeled 65 dB L_{max} noise contour for the loudest measured firearm during the BAC monitoring (black powder rifle). Based on the modeling results and project site design, maximum noise levels associated with PRGC range activities are expected to be below the Butte County 70 dB L_{max} exterior daytime noise level standard at the nearest proposed residential property line.

Additionally, Section 41A-9(l) of the Butte County Code of Ordinances exempts noise associated with private recreational activities including gunfire occurring during target practice consistent with all state laws on private property, that occurs during daytime hours (9:00 am to sunset) and that does not exceed an L_{eq} of 65 dB when measured at any point on the property line over any 30-minute period. As mentioned previously, the PRGC facility reportedly operates during daytime hours only (i.e., 9:00 a.m. to an hour before sunset). Given a projected PRGC firearm maximum noise level of 65 dB L_{max} at the property line of the nearest proposed noise-sensitive use of the development, the calculated hourly average (L_{eq}) noise level would be well below 65 dB at that location. Based on the facility operations information and the results from the firearms noise modeling discussed above, noise from target shooting at the PRGC facility would be exempt at the nearest proposed residential use of the development.

Although noise level exposure from PRGC shooting activities is expected to comply with applicable Butte County exterior noise level criteria at the nearest proposed noise-sensitive uses of the development, the following measure is recommended for the project:

1. Disclosure statements should be provided to future residences of the Tuscan Ridge development notifying them of the audibility of PRGC shooting activities and potential for elevated noise levels during range hours of operation (i.e., daytime hours).

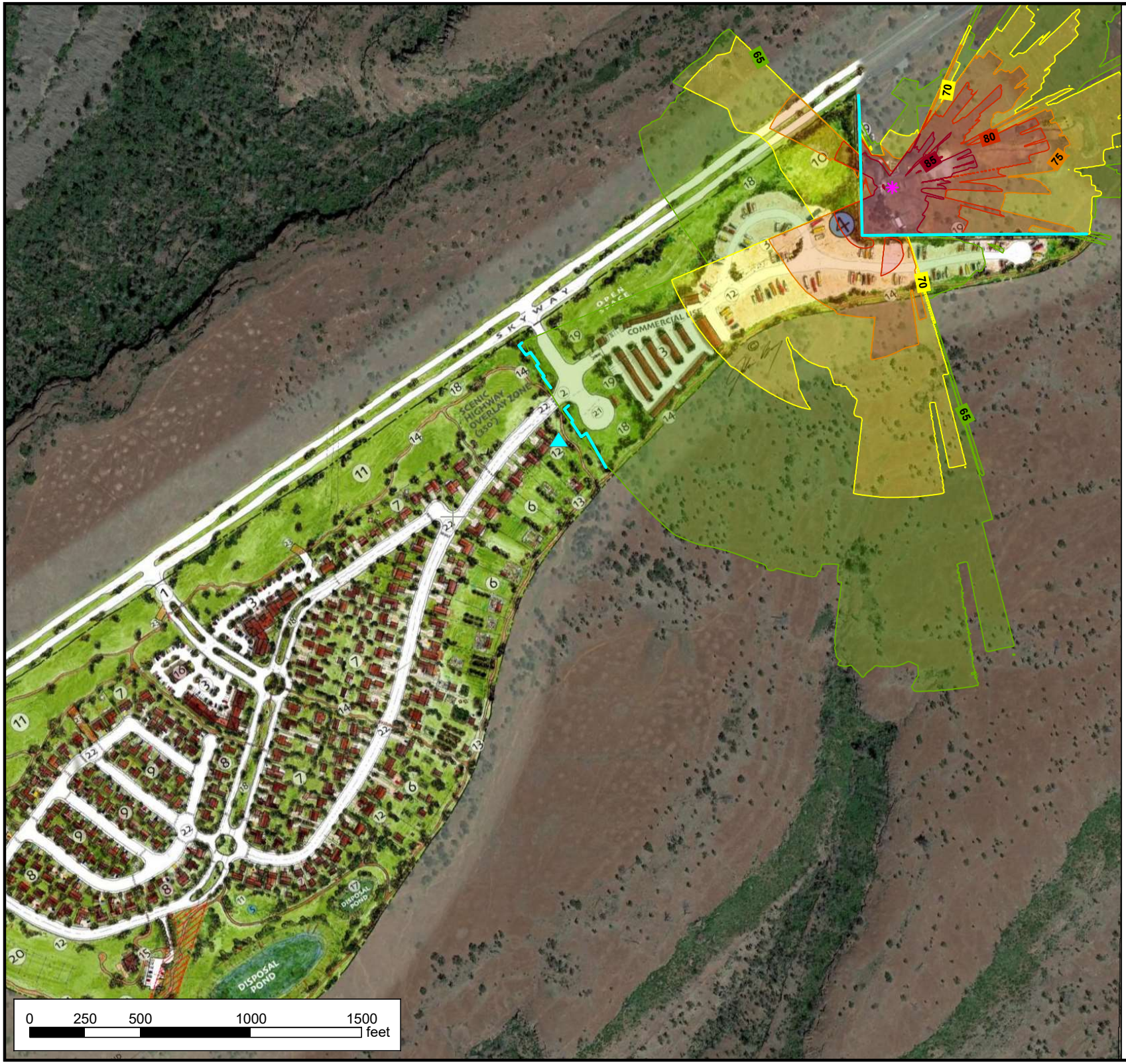


Figure 6

Tuscan Ridge Development
Paradise Rod & Gun Club
Maximum Noise Contours (L_{max}) for Black Powder Rifle

Legend

L_{max} [dBA]

>=	85
80 -	85
75 -	80
70 -	75
65 -	70

Black Powder Rifle

Nearest Proposed Residential Use

Proposed Sound Wall

N

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This concludes BAC's noise and vibration assessment for the Tuscan Ridge Development in Butte County, California. Please contact BAC at (530) 537-2328 or dariog@bacnoise.com if you have any comments or questions regarding this report.

Appendix A
Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

IIC Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.

L_{dn} Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

L_{eq} Equivalent or energy-averaged sound level.

L_{max} The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.

RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

STC Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.

Appendix B-1
FHWA Highway Traffic Noise Prediction Model Data Inputs
Tuscan Ridge Development
File Name: 2021-199 01 Existing
Model Run Date: 10/5/2022

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	(1) Honey Run Rd / Skyway	North	170	80	20	2	1	45	100
2		South							
3		East	14,165	80	20	2	1	50	100
4		West	14,155	80	20	2	1	50	100
5	(2) Bruce Rd / Skyway	North	6,350	80	20	2	1	45	100
6		South	1,485	80	20	2	1	35	100
7		East	14,155	80	20	2	1	45	100
8		West	13,770	80	20	2	1	45	100
9	(3) Notre Dame Blvd / Skyway	North	10,140	80	20	2	1	35	100
10		South	7,235	80	20	2	1	35	100
11		East	17,290	80	20	2	1	45	100
12		West	27,155	80	20	2	1	45	100

Note: Blank cells = no traffic data provided

Appendix B-2
FHWA Highway Traffic Noise Prediction Model Data Inputs
Tuscan Ridge Development
File Name: 2021-199 02 Existing+Project
Model Run Date: 10/5/2022

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	(1) Honey Run Rd / Skyway	North	170	80	20	2	1	45	100
2		South							
3		East	18,665	80	20	2	1	50	100
4		West	18,655	80	20	2	1	50	100
5	(2) Bruce Rd / Skyway	North	7,115	80	20	2	1	45	100
6		South	1,630	80	20	2	1	35	100
7		East	18,655	80	20	2	1	45	100
8		West	17,360	80	20	2	1	45	100
9	(3) Notre Dame Blvd / Skyway	North	10,195	80	20	2	1	35	100
10		South	7,235	80	20	2	1	35	100
11		East	20,595	80	20	2	1	45	100
12		West	30,405	80	20	2	1	45	100

Note: Blank cells = no traffic data provided

Appendix B-3
FHWA Highway Traffic Noise Prediction Model Data Inputs
Tuscan Ridge Development
File Name: 2021-199 03 Cumulative
Model Run Date: 10/5/2022

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	(1) Honey Run Rd / Skyway	North	400	80	20	2	1	45	100
2		South							
3		East	23,400	80	20	2	1	50	100
4		West	23,400	80	20	2	1	50	100
5	(2) Bruce Rd / Skyway	North	11,800	80	20	2	1	45	100
6		South	2,350	80	20	2	1	35	100
7		East	24,675	80	20	2	1	45	100
8		West	23,875	80	20	2	1	45	100
9	(3) Notre Dame Blvd / Skyway	North	13,625	80	20	2	1	35	100
10		South	8,975	80	20	2	1	35	100
11		East	26,935	80	20	2	1	45	100
12		West	39,785	80	20	2	1	45	100

Note: Blank cells = no traffic data provided

Appendix B-4
FHWA Highway Traffic Noise Prediction Model Data Inputs
Tuscan Ridge Development
File Name: 2021-199 04 Cumulative+Project
Model Run Date: 10/5/2022

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	(1) Honey Run Rd / Skyway	North	400	80	20	2	1	45	100
2		South							
3		East	27,900	80	20	2	1	50	100
4		West	27,900	80	20	2	1	50	100
5	(2) Bruce Rd / Skyway	North	12,565	80	20	2	1	45	100
6		South	2,495	80	20	2	1	35	100
7		East	29,175	80	20	2	1	45	100
8		West	27,465	80	20	2	1	45	100
9	(3) Notre Dame Blvd / Skyway	North	13,680	80	20	2	1	35	100
10		South	8,975	80	20	2	1	35	100
11		East	30,240	80	20	2	1	45	100
12		West	43,035	80	20	2	1	45	100

Note: Blank cells = no traffic data provided

Legend

- A — Noise measurement location facing northwest towards the Skyway
- B — Noise measurement location facing east towards the project site
- C — Vibration measurement location facing north towards the Skyway
- Microphone

Tuscan Ridge Development

Butte County, California

Noise & Vibration Survey Locations

Appendix C

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Appendix D-1
Long-Term Ambient Noise Monitoring Results - Site 1
Tuscan Ridge Development - Butte County, California
1/19/2022 - 1/20/2022

Hour	Leq	Lmax	L50	L90
1:00 PM	67	78	64	54
2:00 PM	67	81	65	56
3:00 PM	68	89	66	59
4:00 PM	68	77	67	59
5:00 PM	68	80	66	57
6:00 PM	65	80	62	51
7:00 PM	63	83	58	46
8:00 PM	62	82	54	42
9:00 PM	59	78	49	40
10:00 PM	57	76	46	38
11:00 PM	55	72	40	29
12:00 AM	54	75	33	26
1:00 AM	53	76	30	25
2:00 AM	51	73	28	25
3:00 AM	52	72	32	25
4:00 AM	56	72	39	29
5:00 AM	62	76	55	38
6:00 AM	67	82	63	53
7:00 AM	68	78	67	58
8:00 AM	67	82	65	54
9:00 AM	66	83	63	50
10:00 AM	66	84	63	50
11:00 AM	66	83	63	50
12:00 PM	66	79	63	51

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	68	65	67	63	59	62	67	51	60
Lmax (Maximum)	89	77	81	83	78	81	82	72	75
L50 (Median)	67	62	64	58	49	54	63	28	41
L90 (Background)	59	50	54	46	40	43	53	25	32

Computed CNEL, dB	68
% Daytime Energy	83%
% Evening Energy	6%
% Nighttime Energy	11%

GPS Coordinates	37°35'12.85"N
	122°21'12.26"W

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Appendix D-2
Long-Term Ambient Noise Monitoring Results - Site 1
Tuscan Ridge Development - Butte County, California
1/20/2022 - 1/21/2022

Hour	Leq	Lmax	L50	L90
1:00 PM	67	83	64	52
2:00 PM	67	83	64	53
3:00 PM	68	84	66	56
4:00 PM	69	85	67	58
5:00 PM	68	80	66	57
6:00 PM	66	89	62	51
7:00 PM	64	78	59	46
8:00 PM	61	78	53	44
9:00 PM	60	77	51	40
10:00 PM	57	77	44	33
11:00 PM	56	80	41	32
12:00 AM	53	72	37	29
1:00 AM	49	70	37	31
2:00 AM	52	73	39	34
3:00 AM	50	69	39	34
4:00 AM	56	72	44	36
5:00 AM	62	78	54	41
6:00 AM	66	79	63	51
7:00 AM	67	79	66	57
8:00 AM	68	79	66	58
9:00 AM	66	77	64	54
10:00 AM	66	84	64	54
11:00 AM	67	83	64	55
12:00 PM	67	79	65	56

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	69	66	67	64	60	62	66	49	59
Lmax (Maximum)	89	77	82	78	77	77	80	69	74
L50 (Median)	67	62	65	59	51	54	63	37	44
L90 (Background)	58	51	55	46	40	43	51	29	36

Computed CNEL, dB	68
% Daytime Energy	85%
% Evening Energy	6%
% Nighttime Energy	9%

GPS Coordinates	37°35'12.85"N
	122°21'12.26"W

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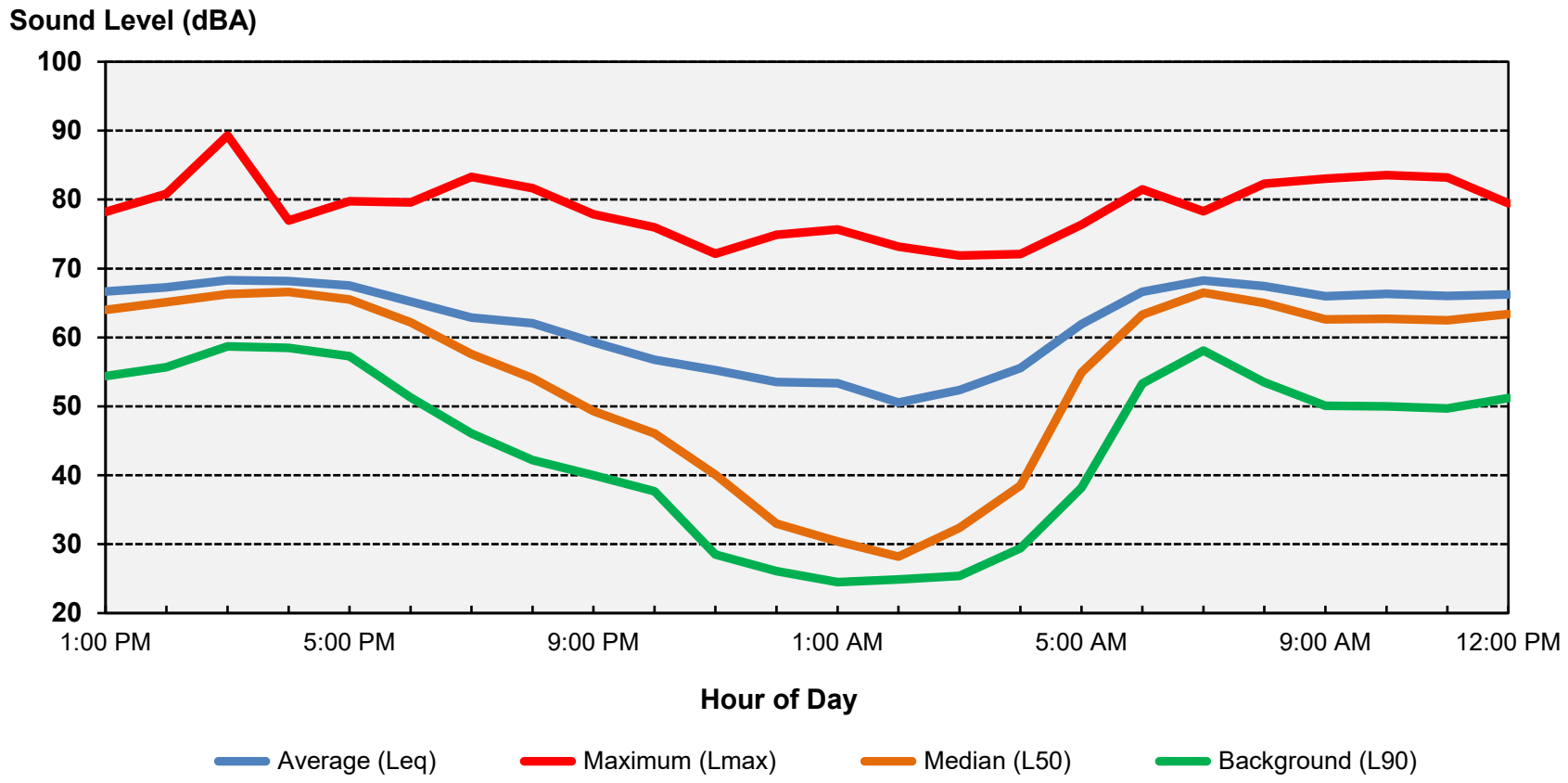
Appendix E-1
Long-Term Ambient Noise Monitoring Results - Site 1
Tuscan Ridge Development - Butte County, California
1/19/2022 - 1/20/2022



CNEL: 68 dB

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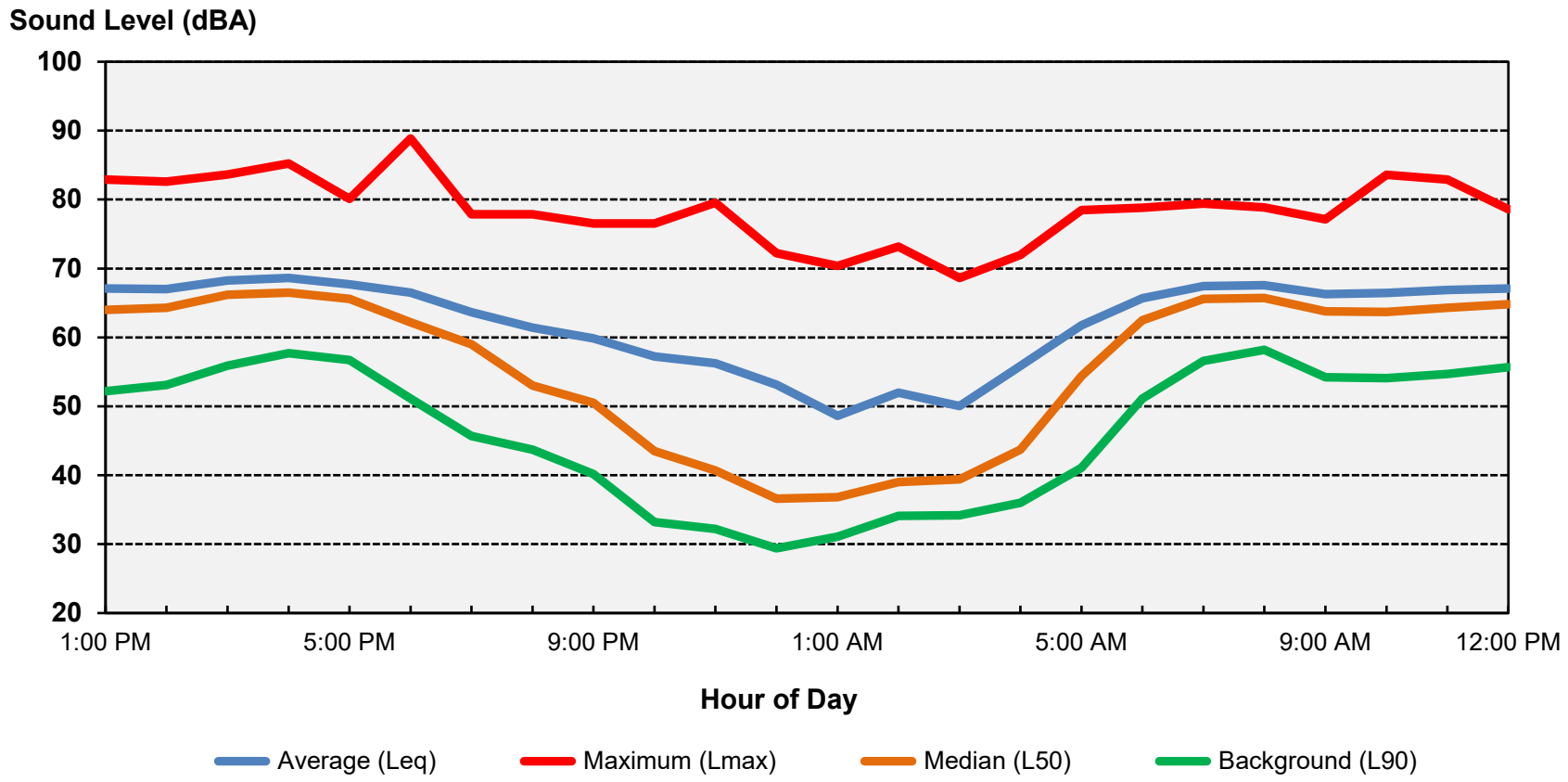
Appendix E-2
Long-Term Ambient Noise Monitoring Results - Site 1
Tuscan Ridge Development - Butte County, California
1/20/2022 - 1/21/2022



CNEL: 68 dB

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Appendix F
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

BAC Job Number: 2021-199
Project Name: Tuscan Ridge Development
Roadway Name: The Skyway

Traffic Data:

Year: Future (Cumulative Plus Project)
Daily Traffic Volume: 27,900
Percent Daytime Traffic: 84
Percent Nighttime Traffic: 16
Percent Medium Trucks (2 axle): 2
Percent Heavy Trucks (3+ axle): 2
Assumed Vehicle Speed (mph): 55
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				DNL (dB)			
Location	**Receiver Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
	Nearest backyards	350		60	51	55	62
Residential	Nearest first-floor facades	390		60	50	54	61
	Nearest upper-floor facades	390	2	62	52	56	63

Traffic Noise Contours (No Calibration Offset):

DNL Contour, dB	Distance from Centerline, (ft)
75	46
70	99
65	213
60	460

Notes:
1. Future (Cumulative Plus Project) ADT for roadway was conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour turing movements. Traffic data prepared by Fehr & Peers.
2. An offset of +2 dB was applied at upper-floor facades due to reduced ground absorption of sound at elevated positions.

Appendix I

Memorandum

Date: April 14, 2023

To: Butte County Public Works

From: Nina Price, Sonia Anthoine, and Erin Ferguson, PE, RSP_{2I}, Fehr & Peers

Subject: Tuscan Ridge Safety Assessment and Intersection Control Evaluation Summary - Updated

RS21-4133

Study Purpose & Context

Butte County ("County") is interested in addressing the transportation issues that may arise upon development of the Tuscan Ridge subdivision. The County contracted Fehr & Peers to study and provide recommendations for intersection controls that may accommodate the transportation needs of the proposed development considering the County's expectations for access and intersection performance. This memorandum summarizes relevant traffic data and field observations and presents evaluation criteria for the safety, operations, and evacuation impacts of potential intersection designs. The existing intersection of Skyway / Santa Rosa Road and three alternative designs of the primary access intersection are evaluated based upon the set criteria. The memo also includes evaluation for the northeast secondary access intersection.

The proposed Tuscan Ridge project is located along Skyway in unincorporated Butte County between Chico and Paradise. Skyway is a 4-lane expressway with wide median separation. The intersection of Skyway / Santa Rosa Road ("Intersection") previously provided access to the Tuscan Ridge Golf Club and would provide primary access to the proposed Tuscan Ridge subdivision.

Data Collection

Historic traffic count data, speed surveys, and collision data are considered for the intersection control evaluation. Traffic count data, wrong-way traffic incidents, and speed data along Skyway collected in March 2022 were provided by Butte County Public Works. A secondary speed survey was conducted by Fehr & Peers staff in March 2023. Both data sets are in **Appendix A**. Collision data was obtained from UC Berkely SafeTREC's Traffic Injury Mapping System (TIMS).

Traffic Count and Speed Data

Traffic counts from March 2022 along Skyway between Chico and Paradise show daily traffic volumes of approximately 14,000-15,000 vehicles, with more volume traveling westbound than eastbound. See **Table 1** for details.

Table 1: Average Daily Traffic (ADT) Volume on Skyway

Location	Eastbound ADT	Westbound ADT	Total ADT
Skyway east of Honey Run Road	7,360	7,783	15,143
Skyway west of Skyway Crossroad	6,787	7,259	14,046

Source: Butte County Public Works. Data collected in March 2022, in Appendix A.

County staff reported observing wrong-way traffic on Skyway. Data collected in March 2022 verified the occurrence of wrong-way driving, showing four vehicles traveling the wrong way near Skyway Crossroad and Bay Tree Drive during the three-day data collection period (March 14 to March 17, 2022).

Vehicular travel speeds on Skyway also have been observed to regularly exceed the posted speed limit of 55 miles per hour (MPH). As seen in **Table 2**, a speed survey conducted in March 2023 along the project frontage under free-flow conditions had a median speed of roughly 65 MPH and 85th percentile speed of roughly 70 MPH (see **Appendix A** for speed surveys performed in several locations along Skyway in March 2022 and March 2023). This data demonstrates that speeds are consistently well above 50 MPH, the threshold by which AASHTO and FHWA define "High Speed Roadways."

Table 2: Traffic percentile speeds by direction of travel on Skyway

Direction	Median Speed	85th Percentile Speed
Eastbound	64 MPH	70 MPH
Westbound	66 MPH	71 MPH

Source: Fehr & Peers. Data collected at Skyway & Santa Rosa Road in Butte County on March 16, 2023. Observations from the speed survey located in Appendix A.

Collision Data

Data for collisions resulting in injury along Skyway extending 1,000 feet beyond the eastern and western edge of proposed development, totaling approximately 1.7 miles of Skyway, were analyzed to identify crash trends and patterns. Collision data was collected for two five-year periods, considering before and after the closure of the Tuscan Ridge Golf Club at the end of 2016.

- Open Tuscan Ridge Golf Club analysis period: January 1, 2012, through December 31, 2016
- Closed Tuscan Ridge Golf Club analysis period: January 1, 2017, through December 31, 2021

Review of the available collision data along the study segment shows there were 18 reported collisions that resulted in injury between 2012 and 2021, of which one caused severe injury. **Table 3** summarizes collision statistics for the two time periods.

In comparing the periods before and after the Tuscan Ridge Golf Club was in operation, the crash profiles remain consistent. There were nominal changes in injury collisions per year, primary collision factors, and collision types. When comparing these time periods, one should keep in mind the ongoing

effects of the Camp Fire (November 2018) and the COVID-19 pandemic (declared in March 2020). Both have resulted in different levels and patterns of travel.

Table 3: Injury collision characteristics along Skyway within 1,000 feet of Tuscan Ridge, 2012-2021

Collision Characteristics	2012-2016	2017-2021[1]	2012-2021
Total Collisions resulting in injury	9	9	18
Road Accident Rate[2] (accidents per million vehicle mile)	0.153	0.181	0.175
Primary Collision Factor			
Improper Turning	6 (66.7%)	5 (55.6%)	12 (63%)
Unsafe Speed	2 (22.2%)	2 (22.2%)	4 (21%)
Driving Under the Influence	1 (11.1%)	2 (22.2%)	3 (16%)
Collision Type			
Overturned	4 (44.4%)	4 (44.4%)	8 (42%)
Hit Object	3 (33.3%)	3 (33.3%)	7 (37%)
Rear End	2 (22.2%)	2 (22.2%)	4 (21%)

(1) 2021 data is provisional and subject to change.
(2) Road Accident Rate calculation shown in Appendix B.
Source: UC Berkely SafeTREC Traffic Injury Mapping System, 2022. Fehr & Peers, 2023.

As shown in Table 3, though the number of injury collisions is equal for both analysis periods, the lower average daily traffic (ADT) in the 2017 – 2021 period causes the road accident rate to be higher than in the 2012- 2016 period. Notably, three (3) of the nine (9) collisions that occurred between 2017 and 2021 occurred after the Camp Fire in November 2018, indicating a decrease in injury collisions corresponding to the decrease in traffic volume after the event. The full calculation can be found in **Appendix B**.

The most common types of violations in both periods were improper turning, unsafe speed and driving under the influence. The major collision types were overturned vehicles, hit object, and rear end.

Several other notable observations and trends from the collision data analyzed include:

- One collision at the Skyway & Santa Rosa Road intersection was recorded between 2012 and 2021, which occurred in 2019 after the closure of the Golf Club.
- For the whole 2012 to 2021 period, Saturday afternoon between noon to 4pm included the most collisions of any day of the week or time frame.

Notably, a fatal, head-on collision occurred in 2014 approximately 4,000 feet east of the project site. While the proposed development would generate more vehicle traffic in the area of the collision, it does not propose any physical changes to Skyway beyond the project frontage.

For the same analysis period (January 2012 through December 2021), collision data at several comparable residential intersections on Skyway between Chico and Paradise were analyzed, as shown in **Table 4**. Intersections along Skyway were selected based on their proximity to residences and similarity to the proposed project. For the intersections listed, the collisions represent all injury collisions within 200 feet between 2012 and 2021.

Table 4. Comparable Residential Intersection Collision History

Location	Date	Primary Collision Factor	Collision Type	Injury Severity
Skyway & Oak Ridge Drive	December 2019	Unsafe speed	Hit object	Complaint of pain
Skyway & Rocky Bluff Drive	July 2016	Improper turning	Overturned	Suspected minor injury
	December 2020	Improper turning	Hit object	Complaint of pain
	October 2021	Unsafe speed	Hit object	Suspected serious injury
Skyway & Russell Drive	November 2015	Wrong side of the road	Hit object	Complaint of pain
	March 2016	Unsafe lane change	Ran off road	Complaint of pain
	May 2020	Unsafe lane change	Broadside	Complaint of pain
	October 2020	Animal	Hit object	Complaint of pain
Skyway & Bay Tree Drive	January 2016	Unsafe speed	Sideswipe	Complaint of pain
	March 2017	Wrong side of the road	Hit object	Suspected minor injury

2021 data is provisional and subject to change.
Source: UC Berkely SafeTREC Traffic Injury Mapping System, 2022.

Primary collision factors for nearby residential roads on Skyway were similar to those closer to the Tuscan Ridge site, reported as improper turning and unsafe speed. Near the Skyway Crossroads, wrong way collisions were also cited. Collisions near these residential access streets on Skyway typically involved hitting objects or animals rather than other vehicles.

Field Observations

Visits to the study area by Fehr & Peers staff revealed that average vehicle speeds were perceived to be higher than the posted speed limit. While most vehicles were passenger sedans and SUVs, there were also vans and trucks with trailers on the route. A slight uphill grade is present going eastbound towards Paradise, as well as a northerly grade to Skyway from the project site. Rock walls on either side of the project driveway are set back far enough that they did not block driver views of traffic when stopped before entering Skyway.

According to the *Butte County 2030 General Plan*, Skyway is classified as an expressway while Santa Rosa Road is a rural local road. Based on the roadway classification hierarchy outlined in the *General Plan*,

local roads typically should not connect directly to arterials, rather utilizing a collector road to make the connection, to minimize the number of intersection interferences along Skyway.

Documentation of the roadway geometry and signage is shown in Images 1 through 3 below.

Image 1: Eastbound approach on Skyway

Image 2: Westbound approach on Skyway

Image 3: Northbound approach departing project site

Image 4: Aerial view of the Skyway / Santa Rosa Road intersection

Alternatives Evaluation Criteria

This section describes the criteria used to evaluate the various alternatives. The criteria are categorized as either a safety or operational item.

Safety

Traffic Safety

This criterion evaluates the anticipated road safety performance of the intersection based on available resources from the American Association of State Highway and Transportation Officials (AASHTO) *Highway Safety Manual* and the Federal Highway Administration (FHWA) *Intersection Control Evaluation guidance*. The safety evaluation includes anticipated vehicle speeds, conflicting movements that could lead to a collision (e.g., an uncontrolled westbound left turn conflicts with an uncontrolled eastbound through movement), and perceived clarity to drivers.

Consistency with Evacuation Needs & Policy

This criterion reviews policies related to ingress/egress needs for evacuations utilizing Skyway and qualitatively describes the extent to which a control type is consistent with those needs.

The *Butte County 2030 General Plan* Health & Safety Element (Butte County, 2018) includes policies guiding emergency access for new development. Policy HS-P11.4 states "New development projects shall meet current fire safe ordinance standards for… emergency vehicle access, signage, evacuation routes, …and wildfire preparedness." The Tuscan Ridge project site and Intersection are also within the State Responsibility Area[1] (SRA) which has minimum wildfire protection standards in conjunction with building, construction, and development. Developments in State Responsibility Areas need to provide for basic emergency access as specified in Public Resource Code 4290, which include measures for emergency access, signing, and building numbering. The Intersections will be evaluated for their ability to meet the evacuation and emergency access policies set forth by the County and State.

Operations

Delay & Level of Service

This criterion measures the delay that a motorist experiences during the peak hour of traffic volumes. There is a delay associated with each approach, as well as with the entire intersection. Delay is measured in seconds, and a corresponding level of service value is given based on the overall intersection delay.

Queues

This criterion measures the length of queues along each movement. The queue length is highly correlated with the approach delay and for specific movements can indicate if and/or what length of turn lanes or pockets would be beneficial for intersection operations.

[1] California Board of Forestry and Fire Protection, State Responsibility Area Map: https://bof.fire.ca.gov/projects-and-programs/state-responsibility-area-viewer/

Alternatives

Fehr & Peers evaluated three intersection design alternatives at Skyway and Santa Rosa Road: traffic signal, roundabout, and restricted crossing U-turn (RCUT). These alternatives were selected based on their ability to accommodate the forecasted travel demand at the intersection, reduce collision risks at the intersection compared to the existing condition, and feasibility given the existing roadway geometry and right-of-way. A grade-separated diamond interchange alternative was also considered but was deemed to be infeasible from a cost perspective due to area geology and general construction costs, and would not provide benefits commensurate to the cost.

Travel demand calculations for the analysis are described in an upcoming *Tuscan Ridge Intersection Operations Memorandum*. Concept figures (shown below and in Appendix C) show approximated changes to geometry and intersection controls to convey the general design changes.

Existing Primary Project Access

The existing Santa Rosa Road & Skyway intersection is side-street stop-controlled with uncontrolled movements for eastbound and westbound traffic on Skyway. Skyway is currently a separated 4-lane expressway with a roughly 40-foot median. On eastbound Skyway, a right-turn lane is present on approach to the intersection and an acceleration lane is present past the intersection. On westbound Skyway, a left-turn lane and acceleration lane are also present.

Alternative 1: Traffic Signal

Alternative 1 installs a traffic signal at the intersection. This would maintain the existing lane configuration on Skyway, with two through lanes and one turn storage lane in either direction. Given the timed control, the acceleration lanes would be eliminated. Additionally, separate left and right turn lanes would be provided at the Tuscan Ridge entryway to better serve egressing project trips.

Fehr & Peers conducted a signal warrant analysis for the Intersection using the California MUTCD 2014 edition Signal Warrant 3A and 3B. PM peak hour traffic volumes were estimated using counts collected by National Data and Surveying (NDS) and project generated trips. Using these volumes, the intersection meets Signal Warrant 3A and 3B in the PM peak hour. **Appendix B** contains the Signal Warrant. (More information on trip generation and trip distribution will be available in the full Entitlement Review/Intersection Operations Technical Memorandum).

Given the high speeds along Skyway, right-turns on red for vehicles exiting the project site from Santa Rosa Road should be prohibited. Appropriate advanced warning signage, pavement markings, and intersection lighting should be installed along Skyway to increase the visibility of the signal and notify need to reduce speeds upon approach, in compliance with the California Highway Design Manual and the California Manual on Uniform Traffic Control Devices.

Future detailed design evaluation of the signalized intersection will determine the specific needs for signal phasing, sight line considerations, and storage lengths for turning movements. **Figure 1** shows a conceptual design of Alternative 1.

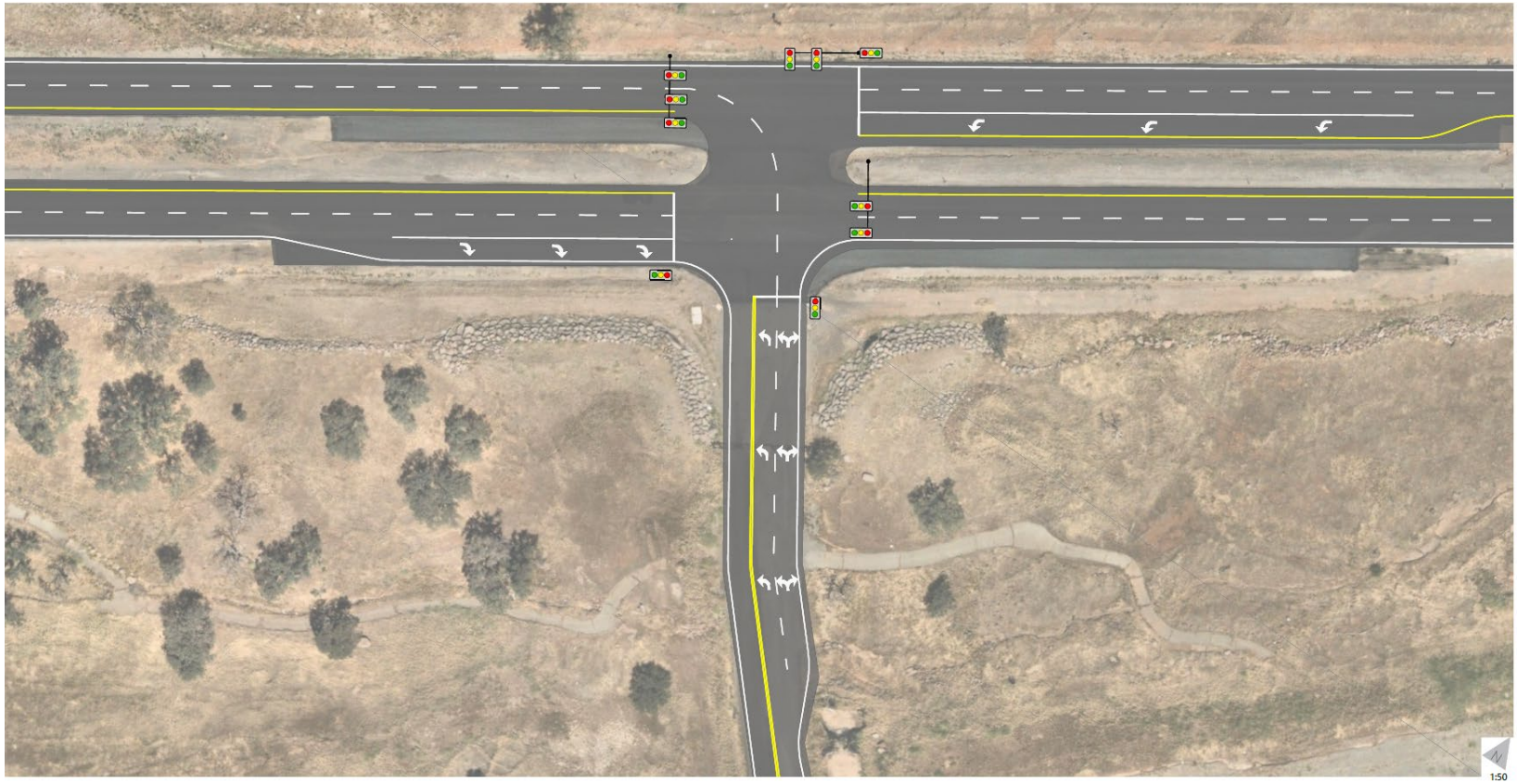


Figure 1: Primary Access Alternative 1 - Conceptual Traffic Signal

Alternative 2: Two-Lane Roundabout

Alternative 2 implements a two-lane roundabout at the Intersection. Roundabouts slow vehicles at the intersection by introducing curvature in road geometry that requires speed reduction to maneuver into the roundabout and around the central island.

The diameter, entry radii, and exit radii of the roundabout concept, shown in **Figure 2**, were determined using NCHRP Report 672 guidance[2] with consideration for the vehicle speeds along Skyway and accommodation of large vehicles.

The proposed roundabout concept introduces a forced exit for the outermost circulating road onto Skyway for both north and southbound vehicles to reduce the conflicts between the primary through movements. The concept also shows a truck apron (in orange) around the center island to help large vehicles navigate the roundabout. Additional advanced warning signage should be installed along Skyway to increase the visibility of the roundabout and notify drivers of the need to reduce speeds upon approach, in compliance with the California Highway Design Manual and the California Manual on Uniform Traffic Control Devices. Additionally, intersection lighting should be installed to increase visibility of the roundabout and other motorists at night.

Future detailed design evaluation of the roundabout may consider decreasing the diameter of the central island and modifying entry alignment to reduce potential path overlap of entering vehicles. "Fastest Path" analysis and 85th percentile circulation speeds should be used to determine the appropriate geometry for the intersection. Consideration may also be given to introducing a second entry lane from Santa Rosa Road depending on the need for higher capacity.

Designs that prioritize Skyway traffic could incorporate a higher-speed/lower deflection roundabout or the creation of a westbound through bypass lane. A westbound bypass lane would require construction of a raised concrete median. While higher speeds may improve operations and evacuation accommodations, they are also associated with an increase in vehicle collision severity. Additionally, increasing the speed differential between the project road (Santa Rosa Road) and Skyway may increase the number of collisions.

If a westbound bypass through lane is incorporated in the roundabout design, downhill speeds may only be slightly affected. Several examples of higher-speed and roundabouts with bypass lanes are located in **Appendix D**.

[2] National Cooperative Highway Research Program (NCHRP) Report 672, *Roundabouts: An Informational Guide*, 2nd Edition: https://nacto.org/docs/usdg/nchrprpt672.pdf

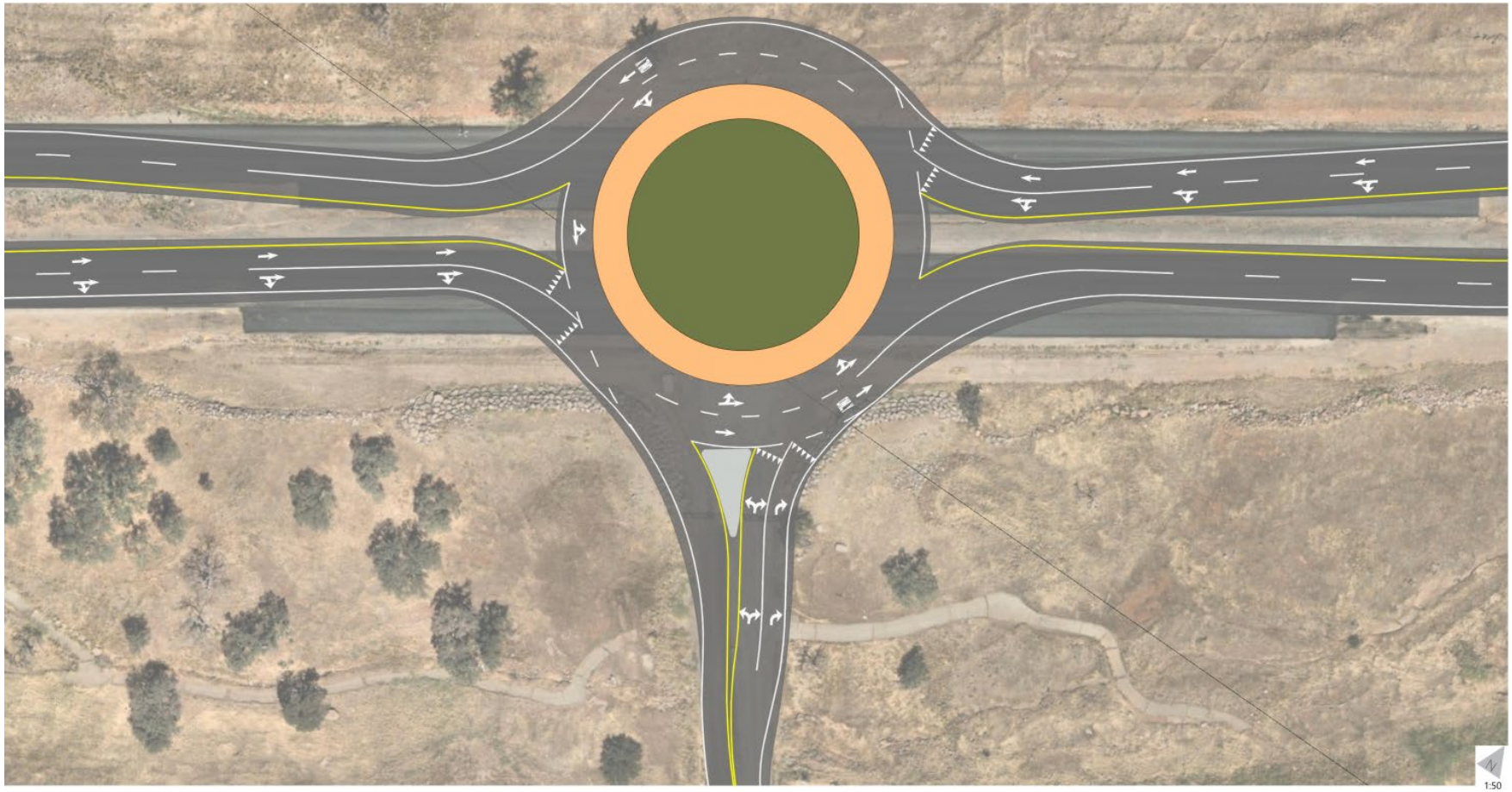


Figure 2: Primary Access Alternative 2 – Conceptual Two-Lane Roundabout

Alternative 3: Restricted Crossing U-turn

Alternative 3 removes left-turn movements to/from the Tuscan Ridge project site. Approximately 750 feet upstream and downstream of the Intersection, restricted crossing U-turns (RCUT) would be installed, which allows U-turns to access the opposite flow of traffic. This restricted crossing U-turn treatment introduces geometry that prohibits all left-turn movements, removing the left-turn conflict from the high-speed expressway and potentially reducing the likelihood of head-on and broadside collisions.

The width of the median for the U-turn movement, right turn storage lane lengths, radii for the turning movements, and other geometric features of the RCUT intersections were determined based on FHWA design guidelines[3], with consideration given to vehicle speeds along Skyway and the accommodation of large vehicles (e.g. RVs). **Figures 3a through 3c** show a conceptual design of Alternative 3. The acceleration lanes that allow vehicles to merge onto Skyway from the U-Turn crossings match existing acceleration lane lengths for the left-turn movement from Santa Rosa Road. The right-turn deceleration lane from Skyway onto Santa Rosa Road also matches the existing lengths.

Future detailed design evaluation of the RCUT intersections may consider the necessity, placement, and length of the acceleration and deceleration lanes. Additionally, a triangular raised island could be constructed between the right-turn deceleration lane and acceleration lanes at the project entrance to prevent passenger vehicles from making through and left turn movements. A cut-out in the median of Skyway could be paved for emergency vehicle access from Skyway, as shown in **Figure 3b**. Additionally, the triangular island at the project entrance could have mountable curbs for emergency vehicles.

[3] Federal Highway Administration, Alternative Intersections/Interchanges Report: https://www.fhwa.dot.gov/publications/research/safety/09060/

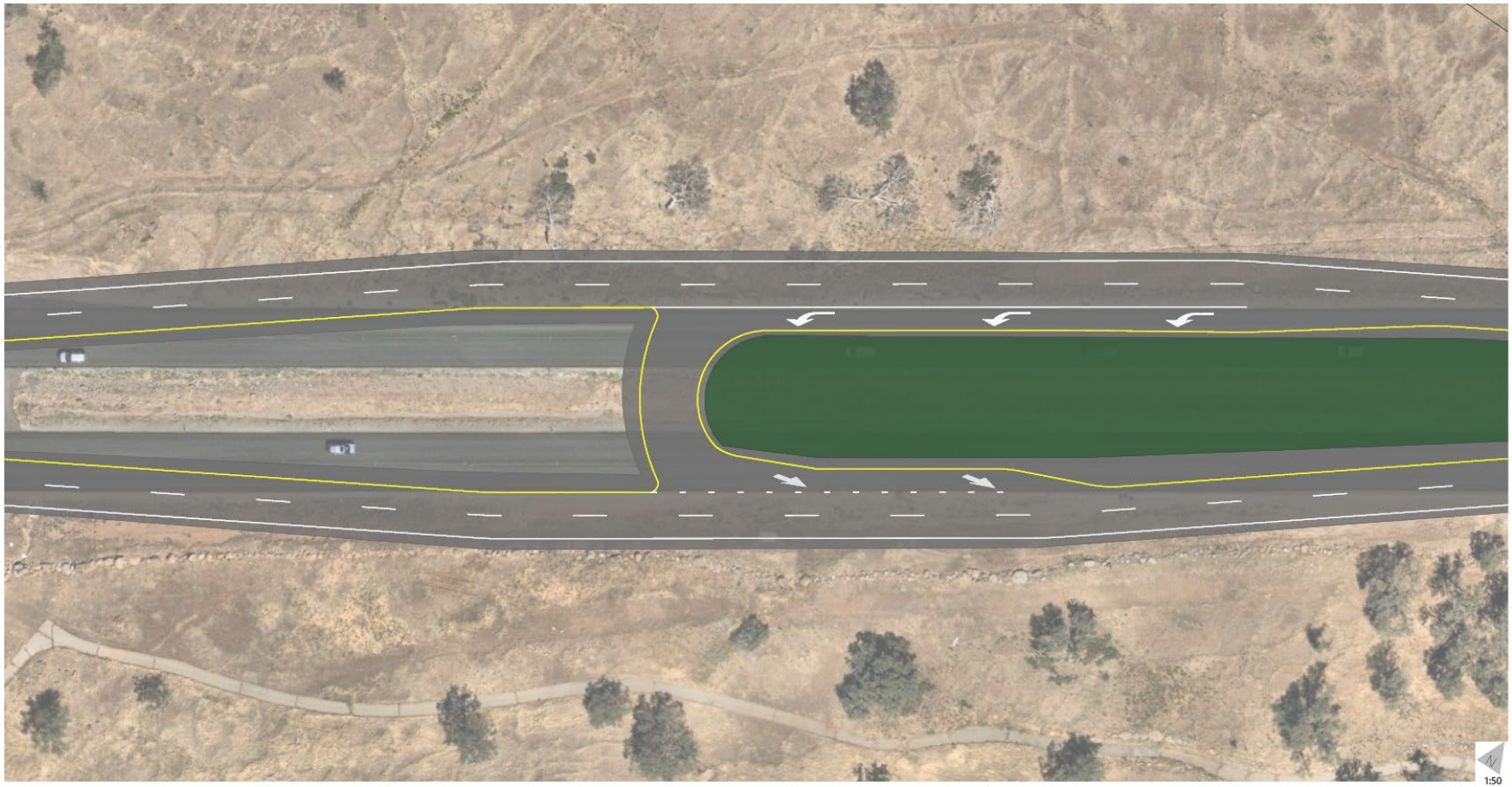


Figure 3a: Primary Access Alternative 3 – Conceptual Restricted Crossing U-turn – West Segment

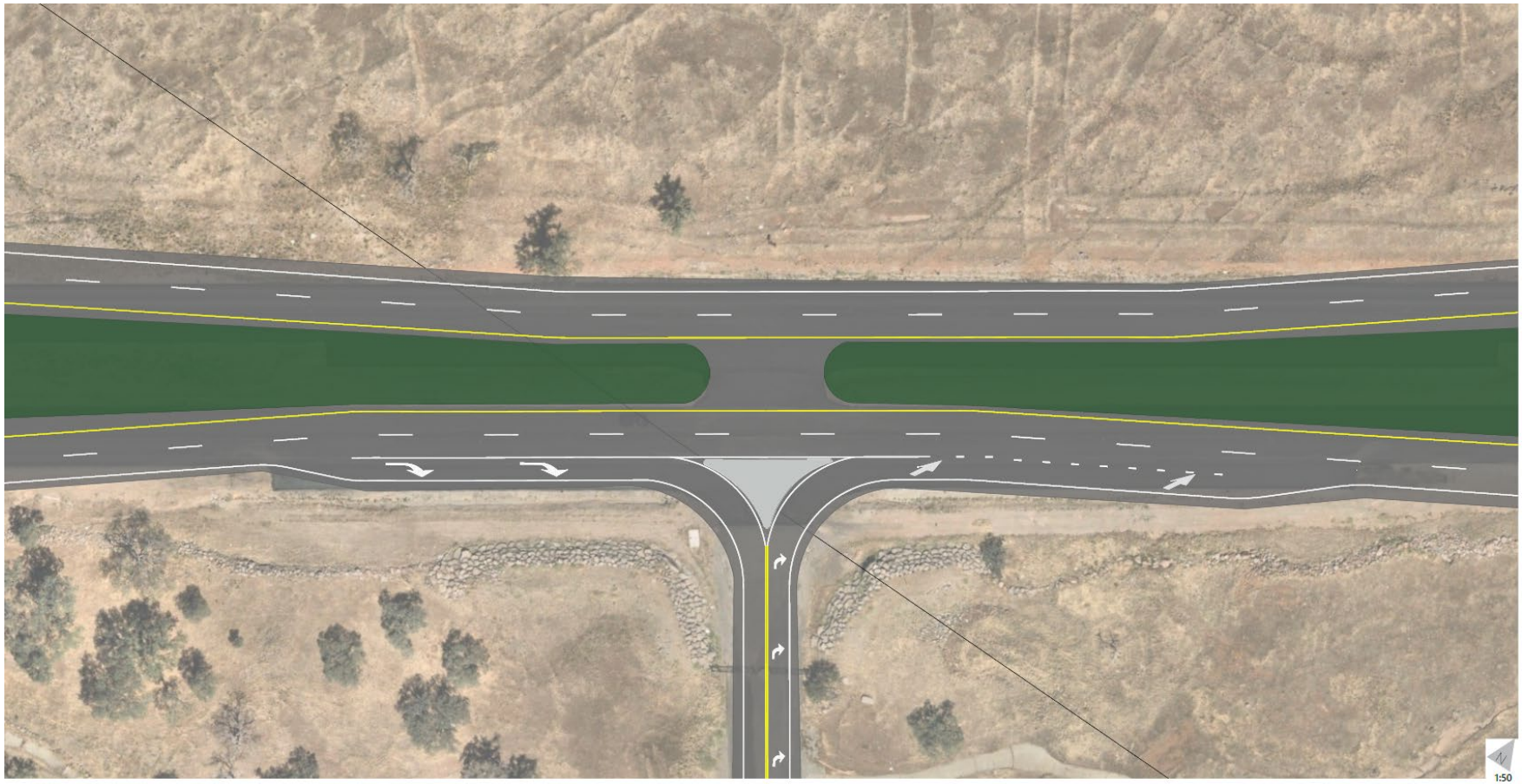


Figure 3b: Primary Access Alternative 3 – Conceptual Restricted Crossing U-turn – Center Segment

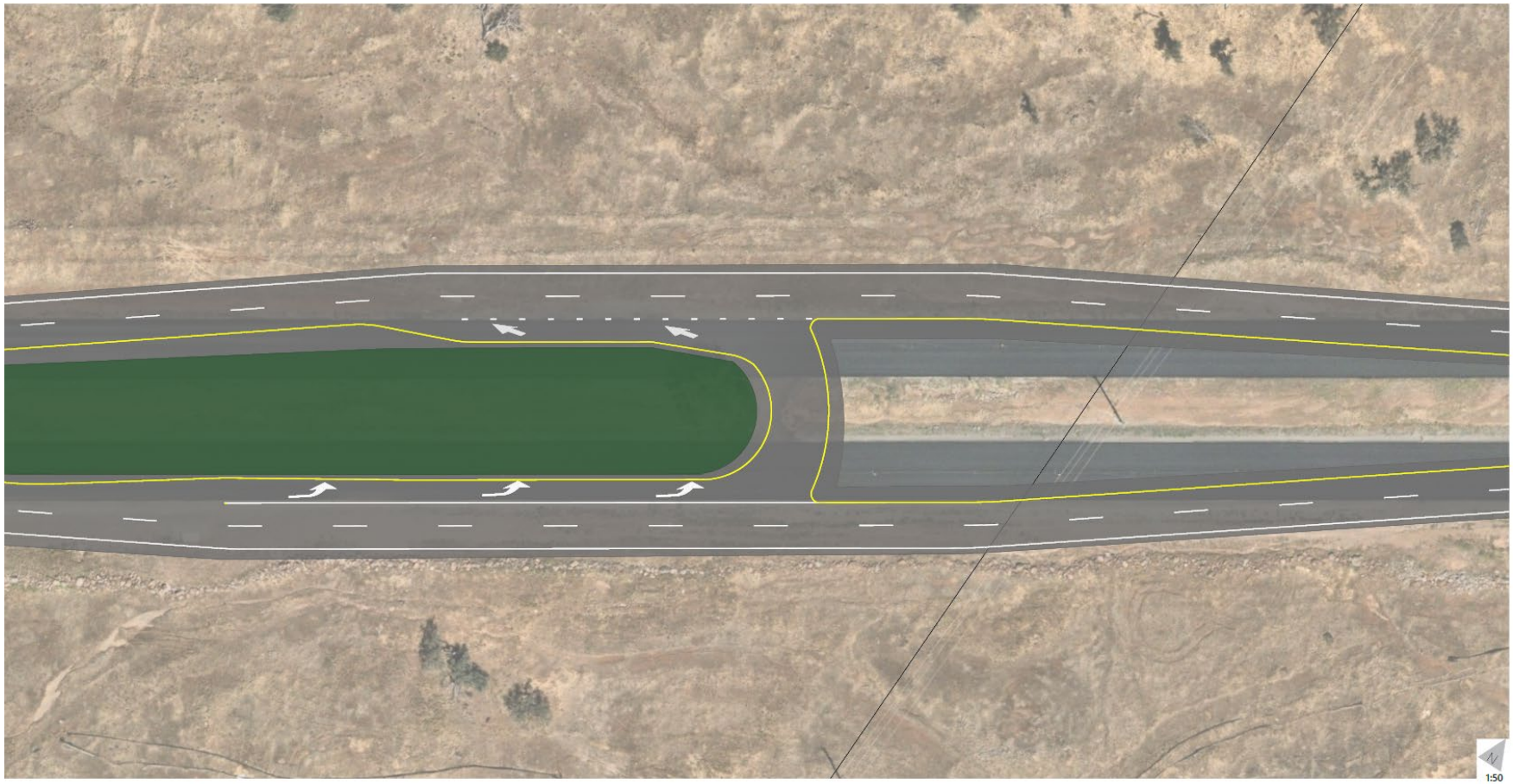


Figure 3c: Primary Access Alternative 3 – Conceptual Restricted Crossing U-turn – East Segment

Secondary Project Access

In the most recent *Tuscan Ridge Site Plan* (LACO Associates and Julian Berg Designs, February 2022) a secondary, full-access project access is proposed on Skyway approximately 2,250 feet upstream of the primary access near the proposed main commercial and residential area. The secondary access would primarily serve the sanitary waste disposal station and RV & boat storage facility located on the northeast portion of the project site.

If operations at the primary access meet County design and operational standards, then full access is unnecessary at the secondary location. If full access was prohibited at this secondary access location and right-in/right-out access provided instead, all drivers desiring to enter or exit the site to or from westbound Skyway would need to utilize the primary project intersection. Full access intersections create more opportunity for collisions, and thus right-in/right-out only access points are expected to have fewer total collisions and fewer collisions of severe outcome.

Figure 5 shows a conceptual, right-turns-only design of this secondary access location with deceleration and acceleration lanes at the project entrance. The concept incorporates a paved emergency vehicle access median cut-out along Skyway. Additionally, the triangular area between the right-turn deceleration lane and acceleration lane includes a contrasting surface treatment (in this case, inlayed red brick, as used in recently built Caltrans facilities in northern California) that delineates space and discourages general traffic from cutting across to westbound Skyway.

Future detailed design evaluation of the secondary project access may consider the placement and length of the acceleration and deceleration lanes as well as appropriate signage.

See the "Emergency Access and Evacuation Evaluation" and "Other Design Considerations" sections below for discussion of emergency access and geometrical considerations at this project access.

Figure 5: Secondary Access Right-in Right-out Concept

Alternatives Evaluation

This section presents the results of the evaluation for four feasible design alternatives at the primary project access intersection.

Safety

Traffic Safety

As described above, traffic safety was considered quantitatively and qualitatively. Crash Modification Factors (CMFs), which estimate a safety countermeasure's ability to reduce crashes and crash severity, are compared to help determine the safety benefits of each control type. CMFs are multiplicative factors that indicates the proportion of crashes that would be expected after implementing a countermeasure. CMFs with a value less than 1.0 indicate an expected decrease in crashes and CMFs greater than 1.0 indicate an expected increase in crashes.

The CMFs for each evaluation are summarized in **Table 5.** Of note, the CMF values reflect best available information in the industry; however, they do not exclusively reflect safety performance at intersections where free flow 85th percentile speeds are 70 MPH.

Table 5: Summary of Safety Evaluation for Primary Access Alternatives

Alternative	Crash Modification Factor Range
Existing Plus Project Conditions	NA
Alt 1: Traffic Signal	0.56
Alt 2: Roundabout	0.29 – 1.10
Alt 3: Restricted Crossing U-turn	0.42 – 0.80

Source: FHWA Intersection Control Evaluation, https://safety.fhwa.dot.gov/intersection/ice/
CMF Clearinghouse, http://www.cmfclearinghouse.org/index.cfm

Existing Configuration (No Improvements)

At a T-intersection where only one approach is stop-controlled, the risks associated with high-speed, uncontrolled intersections remain. Vehicles turning left to/from the project site must navigate two lanes of traffic traveling over 50 mph, requiring drivers to estimate gaps in traffic to maneuver safely. The level of risk associated with human error remains unabated in this configuration, and the increased number of vehicles exiting and entering the project site increases the likelihood of broadside collisions from improper turning. The existing configuration has also been shown to generate confusion on direction of travel for each side of Skyway, and increased travel demand from the project site may cause more incidents of wrong way driving and consequently increase the risk of head-on collisions.

Alternative 1: Traffic Signal

The signal reduces the likelihood of broadside and head-on collisions by isolating conflicting movements but does not eliminate the potential for conflicting movements to occur. The Intersection will maintain the existing eight conflict points between vehicles, including the potential for broadsides that may stem from non-compliance with signal controls. Requiring drivers to stop at the Intersection would likely increase the likelihood of rear-end collisions, especially given the lack of similar intersection control elsewhere on Skyway between Chico and Paradise.

Signalizing the intersection improves the clarity of movements for motorists by clearly designating the time and space for through and turning movements. Signalization may reduce the frequency of wrong-way driving incidents by providing vehicles exiting the project site pavement guides for conducting a left turn onto Skyway. The signal concept reduces the turning radii for right-turn movement from Santa Rosa Road to eastbound Skyway, which helps to reduce speeds.

The efficacy of measures to slow vehicles upon approach to the signal is reliant on compliance; advanced signage, flashing beacons, change of posted speed limit, and improved lighting along the nearby roadway segments and at the intersection should be used to notify drivers that a stop is approaching. A gradual horizontal curvature on approach could be implemented to slow vehicle speeds, requiring modifications to the median. The likelihood of continued high travel speeds on approach to the intersection, while maintaining at-grade intersection conflicts, makes crash reduction factor of the signal less significant than that of other alternatives.

Alternative 2: Roundabout

The proposed concept for the roundabout has ten conflict points for merging, diverging, and crossing traffic. A standard 2-lane roundabout has 24 conflict points for four entry points; however the proposed forced exits for the outside circulating lane and only three approaches reduce the number of conflict points for the study Intersection. While conflicts in a roundabout are still present, they typically occur at lower speeds and at angles with less potential to cause serious for fatal injuries, such as a sideswipe compared to signalized intersections because all vehicles circulate in the same direction. Because of this guided circulation, the design would reduce the risk of wrong-way driving.

According to NCHRP Report 672[2], to improve the function and safety of the roundabout, the maximum differential speed for circulating vehicles should be 12 miles per hour. Santa Rosa Road is a local road with speeds unlikely to exceed 25 mph, while 85th percentile speeds on Skyway are 70 MPH. The roundabout should be designed such that vehicle entry speeds for the eastbound and westbound Skyway approaches to the roundabout are 30-35 miles per hour. Appropriate advanced signage, directional signage, pavement markings, and lighting that increase the visibility of the roundabout and the clarity of movements within the roundabout reduce the likelihood of upstream rear-end collisions and sideswipe collisions. Geometry should enforce gradual speed reduction on approach.

Alternative 3: Restricted Crossing U-Turns

By guiding drivers with signage and geometric constraints, the design also would dissuade wrong-way driving. However, utilizing the RCUT would require merging across the two lanes of traffic on Skyway to get into the U-turn merge lane, which may be difficult given the high speeds along the corridor or during periods of higher traffic volumes. As the traffic control is unconventional and uncommon in northern California, there may be user error. Appropriate advance signage, navigational signage, pavement markings, and lighting would improve the clarity for drivers utilizing the RCUT.

Emergency Access and Evacuation Evaluation

Primary Access Evaluation

The emergency vehicle access requirements from the State and Butte County, such as specific radii for emergency vehicles and signage, are not hindered by any design alternative and should be accommodated independent of intersection control selection.

During evacuations, Skyway operates contraflow movement in which three to four lanes of traffic operate in the same direction. Alternatives 1 and 3 maintain the geometric continuity of Skyway (i.e. straight lanes through the intersection), and thus would likely be favorable during a mass evacuation event. The more significant deflection of a roundabout (Alternative 2) may cause some confusion during evacuation.

Secondary Access Evaluation

At the secondary project access, a paved median cut-out would allow emergency vehicles to take left-turns into the project from westbound Skyway. In the event of an evacuation, general vehicle traffic from Tuscan Ridge could have the option to take left-turns onto westbound Skyway by crossing the triangular contrasting surface treatment at the project entrance (preferably with direction from traffic controllers, given the complexities of evacuation). An evacuation plan could be made available to Tuscan Ridge residents reflecting that the outbound left turn is allowed during evacuation events.

A separate study, *Tuscan Ridge Transportation Impact Study – Wildfire Assessment* (Fehr & Peers, January 2023), was conducted to determine the project's impact on evacuation travel times on Skyway independent of the specific intersection control type selected.

Operations

Table 6 shows the level of service and delay for each of the alternatives by approach. While the existing side-street stop configuration would have a level of service (LOS) of F, each alternative provides an LOS of B or better, improving upon the existing configuration. The traffic signal would create more stops than any other alternative, contributing to the highest delays on Skyway and the highest emissions of all alternatives presented.

Table 6: Level of Service and Delay for Alternatives – Existing Plus Project PM Peak Hour Conditions

Alternative	Intersection	Eastbound	Westbound	Northbound
Existing: Side-Street Stop	*Delay:* ***>120 s*** *LOS:* ***F***	*Delay: 0 s LOS: A*	*Delay: 2 s LOS: A*	*Delay:* ***>600 s*** *LOS:* ***F***
Alt 1: Traffic Signal	*Delay: 13.3 s LOS: B*	*Delay: 15.1 s LOS: B*	*Delay: 8.9 s LOS: A*	*Delay: 19.1 s LOS: B*
Alt 2: Roundabout	*Delay: 9.1 s LOS: A*	*Delay: 8.6 s LOS: A*	*Delay: 8.6 s LOS: A*	*Delay: 11.9 s LOS: B*
Alt 3: Restricted Crossing U-turn (1)	*Delay: 2.7 s LOS: A*	EB U-turn: *Delay: 12.2 s LOS: B*	WB U-turn: *Delay: 13.3 s LOS: B*	*Delay: 12.5 s LOS: B*

Notes: Delay represented as seconds per vehicle.
(1) Intersection should not introduce delay onto Skyway mainline.
Delay and LOS for Existing and Alt 1 calculated using Synchro 11, HCM 6th Edition. Delay and LOS from Alt 2 calculated using SIDRA, HCM 6th Edition. Delay and LOS for Alt 3 calculated using Simtraffic 11, average of 10 runs. All relevant reports for delay and LOS are attached in Appendix E.

Table 7 shows the queues for each of the alternatives by turning movement. Each alternative is estimated to have shorter queue lengths than the existing configuration for northbound trips leaving the Tuscan Ridge site. The addition of a traffic signal and roundabout causes minor queuing on Skyway, though the longest eastbound or westbound queue expected under PM peak hour conditions is approximately three vehicle lengths. The RCUT creates new storage lanes in order to accommodate these small queues.

Table 7: Queues for Alternatives – Existing Plus Project PM Peak Hour Conditions

Alternative	Eastbound		Westbound		Northbound	
	Through	Right	Left	Through	Left	Right
Existing: Side-Street Stop	*0 ft (0 vehicles)*	*0 ft (0 vehicles)*	*25 ft (1.1 vehicles)*	*0 ft (0 vehicles)*	*>300 ft (>12 vehicles)*	*20 ft (0.8 vehicles)*
Alt 1: Traffic Signal	*120 ft (4.7 vehicles)*	*20 ft (0.8 vehicles)*	*65 ft (2.6 vehicles)*	*25 ft (1 vehicle)*	*135 ft (5.4 vehicles)*	*20 ft (0.8 vehicles)*
Alt 2: Roundabout	*80 ft (3.1 vehicles)*		*60 ft (2.3 vehicles)*		*65 ft (2.6 vehicles)*	
Alt 3: Restricted Crossing U-turn	*0 ft (0 vehicles)* [1]	EB U-turn: *145 ft (5.8 vehicles)*	*0 ft (0 vehicles)* [1]	WB U-turn: *105 ft (4 vehicles)*	*NA*	*175 ft (7 vehicles)*

Notes:
(1) Should have no queues for through volumes on Skyway.
95th Percentile Queues for Existing and Alt 1 from Synchro 11, HCM 6th Edition. 95th Percentile Queues from Alt 2 from SIDRA, HCM 6th Edition. 95th Percentile Queues for Alt 3 from Simtraffic 11, average of 10 runs. All relevant reports for Queues are attached in Appendix E.

The secondary access location is estimated to be utilized by under 30 vehicles during peak hour traffic. The low traffic volume and limited access/right-in right out configuration would result in an LOS of A.

Other Design Considerations

Heavy Vehicles

Road geometries of all alternatives were evaluated and designed to accommodate the range of heavy vehicles expected to access the Tuscan Ridge site:

- Deliveries of fuel or goods to the gas station and other commercial uses: intermediate semi-trailer (WB-40)
- Receival of domestic wastes and wastewater: intermediate semi-trailer (WB-40)
- Storage of RVs & boats: 30’ motor home towing a 20’ boat or trailer (AASHTO MH-B).

It is anticipated that an average of 5 to 10 vehicles will use the sewage dump station located near the secondary project access daily. Considering the limited turning movements proposed at the secondary access, some drivers would use a combination of the primary access and local roads to arrive at the dump station. While there are aesthetic issues with this condition, the traffic safety benefits of maintaining only one access point along Skyway likely outweigh the inconvenience. If this is the preferred outcome, internal project roads should be designed to fit an intermediate semi-trailer vehicle.

Bicycle and Pedestrian Facilities

Any alternative should be designed to comply with the planned Class I bicycle facility along Skyway in the *Butte County Bicycle Plan* (Butte County Public Works, June 2011). All alternatives introduced would be able to accommodate appropriate bicycle facilities.

Right-of-Way

Alternatives 2 and 3 would significantly change the geometry of the existing intersection. To properly accommodate the design vehicle and reach other design goals, Alternatives 2 and 3 would require additional right-of-way (ROW).

Summary

Primary Access Location

As the proposed Tuscan Ridge project develops, the number of trips entering and exiting Santa Rosa Road via Skyway would increase commensurate with the level of development activity and occupation of on-site homes and commercial buildings. Exiting the site through the existing side-street stop control would present conflicts between Project traffic and the high-speed traffic along Skyway. The high-speed conflicts are a safety concern even at low volumes that would occur with initial development activity. As more homes and businesses are added over time, the Project traffic through this intersection would deteriorate traffic operations and result in poor level-of-service. The alternatives developed for this study all offer safety and operational enhancements over the existing configuration. Each alternative presents different types of risk for collisions at the intersection due to the high speeds on Skyway. Regardless of the alternative selected, the overall safety performance at the intersection will be heavily influenced by the extent to which the County takes steps to implement other measures to reduce speeds on Skyway. For the selected alternative, additional improvements along each intersection approach will also be necessary to enhance visibility and establish road user expectations.

Secondary Access Location

As results show, traffic operations at Skyway & Santa Rosa Road would be acceptable given limited access at the secondary access point. Therefore, there are no operational or traffic safety reasons to create another full access intersection along Skyway for the Tuscan Ridge project and the secondary access should maintain right-in, right-out operations. This limited access operation can be reinforced through the design of contrasting surface treatments and appropriate signage on Skyway and project roadways. Emergency vehicles would be able to utilize both project access locations via both eastbound and westbound Skyway. In the event of an evacuation, residents could also have the option to egress from either access location.

Disclaimer

Under 23 U.S. Code § 409 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites or hazardous roadway conditions are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

The analysis and recommendations in this technical memorandum are conceptual in nature based upon limited information, and before implementing any changes, or using any of its information for design or construction, Butte County staff should conduct a more detailed analysis and make sure that the design or construction documents reflect specific, detailed, local and field conditions.

This scope of work, including study locations, time frame, and topics, was determined by the client. While it is possible that some locations or issues were not addressed in this report, nothing should be inferred by their omission.

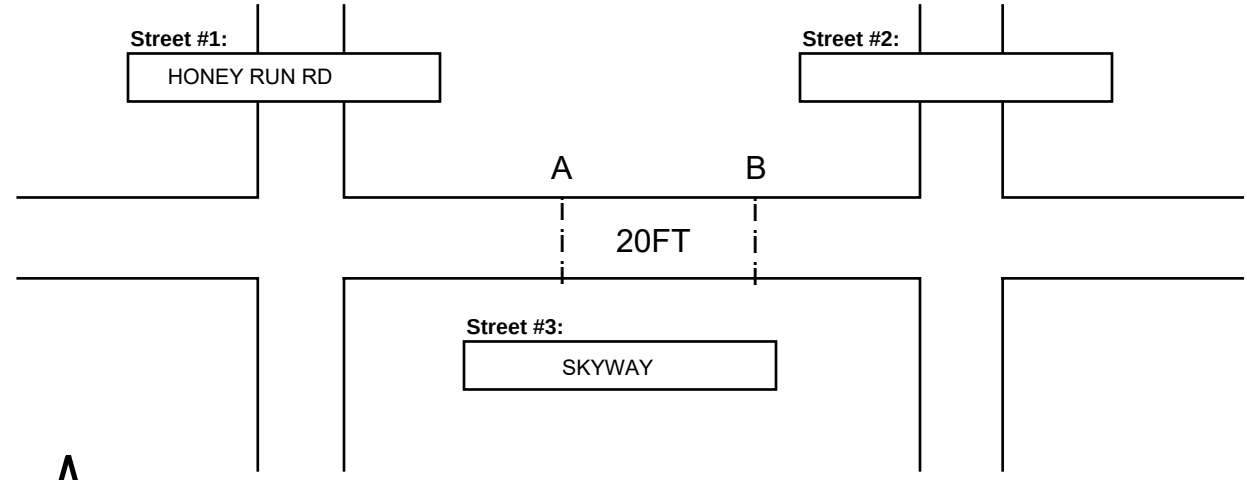
The data presented in the technical memorandum are intended to inform readers of the reported collision history in the study area and to highlight general collision trends and patterns from the data. This does not constitute, and is not meant to be, a comprehensive review of safety in the study or surrounding area, which could be much broader in scope (e.g., including a review of individual collision records, considerations of human factors, and comparisons of the collision rates and frequencies with similar localities). While some possible conceptual treatments have been identified, the data is not adequate on its own for identifying all potential countermeasures that may be required to sufficiently address recurring or other safety issues.

Appendix A:
Traffic Volume & Speed Data

County of Butte
Department of Public Works
7 County Center Dr.
Oroville, CA. 95965

TRAFFIC COUNT

Technician/Engineer:	MIMILLERR	Date:	3/23/2022
Road Name:	SKYWAY	Requested By:	PACK
Road Number:	51261-1	Type of Survey:	ETS
Traffic Counter Number:	333/303/	Count Begin Date:	3/14/2022
Configuration Number:	51	Count Begin Time:	10:00
Existing Count Station:	266-1-1	Count End Date:	3/17/2022
File Number:		Count End Time:	9:00
Purpose of Study:	ETS		
Location:	E/O HONEY RUN RD		
GPS Coord::	X-Coord: Y-Coord:		



Enter Road Names, Counter Location and North Arrow
Place "A" hose northerly or easterly direction
Place "B" hose southerly or westerly direction.

Calculated ADT:

Additional Requests:

ADT SLOW LANE=4224
ADT FAST LANE= 3136

Calculations:

ADT: TOTAL=7360

85th % Speed SLOW LANE 58
FAST LANE 60

Remarks:

12% TRUCKS SLOW LANE
5% TRUCKS FAST LANE


Honey Run Rd
st Dr
Skyway
Skyway
Palomino Ct

Average Hourly Volumes

	EB	WB	Combined
12:00 AM	16.7	0.0	16.7
1:00 AM	10.7	0.0	10.7
2:00 AM	9.7	0.0	9.7
3:00 AM	7.3	0.0	7.3
4:00 AM	20.3	0.0	20.3
5:00 AM	85.0	0.0	85.0
6:00 AM	208.0	0.0	208.0
7:00 AM	284.7	0.0	284.7
8:00 AM	258.0	0.0	258.0
9:00 AM	238.0	0.0	238.0
10:00 AM	232.7	0.0	232.7
11:00 AM	246.3	0.0	246.3
12:00 PM	256.7	0.0	256.7
1:00 PM	284.3	0.0	284.3
2:00 PM	301.3	0.0	301.3
3:00 PM	340.3	0.0	340.3
4:00 PM	371.3	0.0	371.3
5:00 PM	370.0	0.0	370.0
6:00 PM	237.3	0.0	237.3
7:00 PM	153.7	0.0	153.7
8:00 PM	124.0	0.0	124.0
9:00 PM	84.0	0.0	84.0
10:00 PM	53.7	0.0	53.7
11:00 PM	30.0	0.0	30.0
Average Daily Traffic (ADT)	4224.0	0.0	4224.0

Volume Totals

EB	WB	Combined
12515	0	12515
100.0%	0.0%	

LOCATION : SKYWAY E/0 HONEY RUN RD

Site: 266-1 SLOW LANE
Monday, 3/14/2022 10:00 AM -
Thursday, 3/17/2022 9:00 AM

Classification Grand Totals

Hourly Averages

EB

Interval Start	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
12:00 AM	16.7	0.0	13.7	2.3	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0
1:00 AM	10.7	0.0	8.0	2.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
2:00 AM	9.7	0.0	6.3	2.7	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3:00 AM	7.3	0.0	4.3	1.3	0.0	0.3	0.3	0.0	0.7	0.3	0.0	0.0	0.0	0.0
4:00 AM	20.3	0.0	12.0	4.0	0.0	0.7	0.3	0.0	1.7	1.7	0.0	0.0	0.0	0.0
5:00 AM	85.0	0.0	48.0	17.3	1.0	13.0	2.0	0.0	1.3	1.7	0.0	0.7	0.0	0.0
6:00 AM	208.0	0.3	88.0	61.7	0.0	39.7	5.3	0.3	8.3	3.3	0.0	1.0	0.0	0.0
7:00 AM	284.7	0.7	136.7	77.7	4.7	36.0	4.7	0.3	13.7	8.3	0.0	2.0	0.0	0.0
8:00 AM	258.0	0.0	117.0	86.3	2.7	26.3	6.0	1.3	11.3	4.3	0.0	2.7	0.0	0.0
9:00 AM	238.0	0.0	111.5	75.5	3.5	23.0	7.0	0.0	8.5	6.0	0.5	2.0	0.5	0.0
10:00 AM	232.7	1.0	132.0	55.7	3.3	20.0	4.7	0.3	7.3	6.0	0.0	2.0	0.0	0.3
11:00 AM	246.3	0.3	141.3	65.0	2.3	21.7	2.7	0.0	5.0	5.7	0.0	2.0	0.3	0.0
12:00 PM	256.7	1.3	163.0	56.3	2.7	16.3	5.3	0.0	6.0	4.0	0.0	1.7	0.0	0.0
1:00 PM	284.3	1.7	185.7	64.0	1.0	19.7	2.0	0.3	4.7	3.7	0.0	1.7	0.0	0.0
2:00 PM	301.3	1.0	196.7	67.7	1.3	19.7	2.0	0.7	5.7	5.0	0.3	1.3	0.0	0.0
3:00 PM	340.3	2.3	234.3	73.3	2.3	17.3	1.7	0.0	1.3	6.7	0.0	1.0	0.0	0.0
4:00 PM	371.3	1.3	258.3	85.7	2.0	18.7	0.3	0.0	3.7	1.0	0.3	0.0	0.0	0.0
5:00 PM	370.0	3.0	278.7	71.0	2.0	12.3	0.7	0.0	2.0	0.3	0.0	0.0	0.0	0.0
6:00 PM	237.3	1.3	183.3	39.7	0.0	9.3	0.3	0.7	1.7	1.0	0.0	0.0	0.0	0.0
7:00 PM	153.7	0.7	119.3	29.0	0.0	4.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
8:00 PM	124.0	1.0	97.0	20.7	0.7	4.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
9:00 PM	84.0	1.0	65.7	13.3	0.3	2.3	0.0	0.0	0.7	0.7	0.0	0.0	0.0	0.0
10:00 PM	53.7	1.0	42.0	8.3	0.0	1.3	0.3	0.0	0.3	0.3	0.0	0.0	0.0	0.0
11:00 PM	30.0	0.0	22.3	6.3	0.0	0.3	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Daily Average	4224.0	18.0	2665.2	986.8	29.8	307.0	46.0	4.0	85.5	61.3	1.2	18.0	0.8	0.3

Study Grand Totals

	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
EB	12434	54	7884	2885	86	898	131	12	248	178	3	52	2	1
		0.4%	63.4%	23.2%	0.7%	7.2%	1.1%	0.1%	2.0%	1.4%	0.0%	0.4%	0.0%	0.0%

LOCATION : SKYWAY E/0 HONEY RUN RD

Site: 266-1 SLOW LANE
Monday, 3/14/2022 10:00 AM -
Thursday, 3/17/2022 9:00 AM

Speed Grand Totals

Hourly Averages EB

mph	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
12:00 AM	16.7	0.0	0.0	0.0	0.0	0.0	0.0	1.0	4.0	5.3	3.3	2.0	0.7	0.3
1:00 AM	10.7	0.0	0.0	0.0	0.0	0.0	0.0	1.7	2.3	3.0	2.7	0.3	0.7	0.0
2:00 AM	9.7	0.0	0.0	0.0	0.0	0.0	0.3	1.0	2.3	4.0	1.0	0.3	0.3	0.3
3:00 AM	7.3	0.0	0.0	0.0	0.0	0.0	0.7	1.0	2.0	2.7	1.0	0.0	0.0	0.0
4:00 AM	20.3	0.0	0.0	0.0	0.0	0.0	0.3	2.3	4.7	6.3	4.3	1.3	0.3	0.7
5:00 AM	85.0	0.0	0.0	0.3	0.3	0.0	0.3	5.0	12.3	27.7	25.0	11.0	2.0	1.0
6:00 AM	208.0	0.0	0.0	0.0	0.3	0.3	2.0	6.7	29.7	76.0	51.7	30.7	7.3	3.3
7:00 AM	284.7	0.0	0.0	0.0	0.0	1.0	2.0	15.7	61.0	115.7	66.7	18.7	3.7	0.3
8:00 AM	258.0	0.0	0.3	0.0	0.3	2.3	2.3	16.0	62.3	109.7	43.0	17.3	3.3	1.0
9:00 AM	238.0	0.0	0.5	0.0	1.0	0.0	2.0	15.5	55.0	107.0	43.0	12.5	1.0	0.5
10:00 AM	232.7	0.0	0.0	0.0	0.0	0.0	3.7	14.3	50.7	100.7	46.3	12.7	4.3	0.0
11:00 AM	246.3	0.0	0.0	0.0	0.0	1.3	3.7	11.0	53.7	115.0	46.0	11.3	4.0	0.3
12:00 PM	256.7	0.0	0.0	0.0	0.3	0.7	2.0	14.0	65.7	112.0	47.0	13.0	1.7	0.3
1:00 PM	284.3	0.0	0.0	0.7	0.0	0.3	2.7	18.7	70.0	129.7	46.7	13.3	2.3	0.0
2:00 PM	301.3	0.0	0.0	0.0	0.0	0.0	2.3	18.0	69.3	134.3	61.3	13.7	2.0	0.3
3:00 PM	340.3	0.0	0.0	0.0	0.0	0.0	2.3	20.0	80.3	139.0	70.0	25.0	3.0	0.7
4:00 PM	371.3	0.0	0.0	0.0	0.0	0.0	0.7	12.7	61.7	168.7	88.3	32.0	4.3	3.0
5:00 PM	370.0	0.0	0.0	0.0	0.0	0.3	1.0	8.3	69.0	165.3	92.3	27.0	5.7	1.0
6:00 PM	237.3	0.0	0.0	0.0	0.0	0.0	0.3	6.0	30.3	111.3	65.3	19.7	4.0	0.3
7:00 PM	153.7	0.0	0.0	0.0	0.0	0.0	1.3	7.0	28.3	66.3	37.3	10.7	1.7	1.0
8:00 PM	124.0	0.0	0.0	0.0	0.0	0.0	0.7	8.3	23.7	55.7	23.3	10.7	1.3	0.3
9:00 PM	84.0	0.0	0.0	0.0	0.0	0.0	0.7	1.3	17.0	36.7	17.7	9.0	1.7	0.0
10:00 PM	53.7	0.0	0.0	0.0	0.0	0.3	1.3	3.0	11.0	18.7	11.3	6.7	1.3	0.0
11:00 PM	30.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	6.0	11.3	6.7	3.0	1.0	0.7
Daily Average	4224.0	0.0	0.8	1.0	2.3	6.7	32.7	209.8	872.3	1822.0	901.3	301.8	57.7	15.5

Average (Mean) 52.9 mph **Minimum** 16.8 mph **Maximum** 84.6 mph **Pace Range** 48.4 - 58.4 mph 9073 vehicles (73.0%)

Percentile Speeds	10%	15%	50%	85%	90%
(mph)	46.5	47.7	53.2	58.2	59.1

Speeds Exceeded	25 mph	35 mph	45 mph	55 mph	65 mph	75 mph
	100.0% (12429)	99.8% (12403)	94.0% (11693)	30.3% (3772)	1.8% (218)	0.1% (11)

Study Grand Totals

	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
EB	12434	0	2	3	6	20	96	614	2562	5359	2661	893	172	46
		0.0%	0.0%	0.0%	0.0%	0.2%	0.8%	4.9%	20.6%	43.1%	21.4%	7.2%	1.4%	0.4%

Volume Grand Totals

Average Hourly Volumes

	EB	WB	Combined
12:00 AM	10.7	0.0	10.7
1:00 AM	9.0	0.0	9.0
2:00 AM	4.7	0.0	4.7
3:00 AM	5.3	0.0	5.3
4:00 AM	21.3	0.0	21.3
5:00 AM	91.3	0.0	91.3
6:00 AM	183.7	0.0	183.7
7:00 AM	227.3	0.0	227.3
8:00 AM	165.5	0.0	165.5
9:00 AM	158.3	0.0	158.3
10:00 AM	174.3	0.0	174.3
11:00 AM	170.7	0.0	170.7
12:00 PM	194.3	0.0	194.3
1:00 PM	214.7	0.0	214.7
2:00 PM	253.0	0.0	253.0
3:00 PM	299.3	0.3	299.7
4:00 PM	338.3	0.0	338.3
5:00 PM	227.3	0.0	227.3
6:00 PM	135.7	0.0	135.7
7:00 PM	94.3	0.0	94.3
8:00 PM	68.7	0.0	68.7
9:00 PM	42.7	0.0	42.7
10:00 PM	30.3	0.0	30.3
11:00 PM	15.3	0.0	15.3
Average Daily Traffic (ADT)	3136.2	0.3	3136.5

Volume Totals

EB	WB	Combined
9328	1	9329
100.0%	0.0%	

LOCATION : E/O HONEY RUN RD

Site: 266-1 FAST LANE
Monday, 3/14/2022 9:00 AM -
Thursday, 3/17/2022 8:00 AM

Classification Grand Totals

Hourly Averages

EB

Interval Start	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
12:00 AM	10.7	0.0	9.7	0.7	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
1:00 AM	9.0	0.0	7.7	0.7	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2:00 AM	4.7	0.0	3.7	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3:00 AM	5.3	0.0	3.7	1.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4:00 AM	21.3	0.0	13.0	4.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5:00 AM	91.3	0.0	52.0	21.3	0.3	17.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6:00 AM	183.7	0.0	108.3	52.7	0.0	20.0	0.3	0.0	1.3	1.0	0.0	0.0	0.0	0.0
7:00 AM	227.3	0.3	156.0	55.0	0.3	13.3	0.0	0.3	2.0	0.0	0.0	0.0	0.0	0.0
8:00 AM	165.5	0.5	115.0	42.0	0.5	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9:00 AM	158.3	0.0	108.0	41.3	0.7	7.3	0.3	0.0	0.3	0.3	0.0	0.0	0.0	0.0
10:00 AM	174.3	0.7	120.7	42.3	0.0	9.3	0.0	0.3	1.0	0.0	0.0	0.0	0.0	0.0
11:00 AM	170.7	0.3	124.7	36.0	0.0	9.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
12:00 PM	194.3	1.7	145.7	41.0	0.0	5.7	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
1:00 PM	214.7	1.0	165.0	37.0	0.3	10.3	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
2:00 PM	253.0	0.7	195.7	46.3	0.3	9.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
3:00 PM	299.3	1.0	226.7	63.7	0.3	7.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
4:00 PM	338.3	2.3	264.7	64.0	0.0	7.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
5:00 PM	227.3	2.0	192.7	31.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6:00 PM	135.7	0.7	105.3	25.7	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7:00 PM	94.3	0.3	77.3	14.7	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8:00 PM	68.7	0.0	57.0	10.3	0.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9:00 PM	42.7	0.3	35.3	6.7	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10:00 PM	30.3	0.3	24.0	5.3	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0
11:00 PM	15.3	0.0	12.3	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Daily Average	3136.2	12.2	2324.0	645.7	3.2	138.5	1.3	1.0	8.7	1.7	0.0	0.0	0.0	0.0

Study Grand Totals

	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
EB	9243	36	6857	1895	9	408	4	3	26	5	0	0	0	0
		0.4%	74.2%	20.5%	0.1%	4.4%	0.0%	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%

LOCATION : E/O HONEY RUN RD

Site: 266-1 FAST LANE
Monday, 3/14/2022 9:00 AM -
Thursday, 3/17/2022 8:00 AM

Speed Grand Totals

Hourly Averages EB

mph	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
12:00 AM	10.7	0.0	0.0	0.0	0.0	0.0	0.3	0.3	1.7	4.3	2.0	1.7	0.3	0.0
1:00 AM	9.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.3	2.0	1.0	1.3	0.0	0.3
2:00 AM	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.3	1.7	1.0	1.0	0.0	0.0
3:00 AM	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	2.3	0.7	0.3	0.3
4:00 AM	21.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	5.0	7.0	6.0	1.3	0.3
5:00 AM	91.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	25.7	31.0	22.0	6.0	2.3
6:00 AM	183.7	0.0	0.0	0.0	0.0	0.0	0.0	1.0	10.7	42.3	75.7	45.7	6.0	2.3
7:00 AM	227.3	0.0	0.0	0.0	0.0	0.0	0.0	2.0	8.3	63.3	96.0	50.0	6.3	1.3
8:00 AM	165.5	0.0	0.0	0.0	0.0	0.0	1.5	3.0	14.0	62.0	56.5	24.0	2.5	2.0
9:00 AM	158.3	0.0	0.3	0.3	0.7	0.7	1.3	7.3	21.3	51.7	53.3	18.0	3.3	0.0
10:00 AM	174.3	0.0	0.0	0.0	0.0	0.0	0.3	1.7	14.0	67.0	67.3	20.0	3.0	1.0
11:00 AM	170.7	0.0	0.0	0.0	0.0	0.0	0.0	2.0	19.3	70.7	51.0	22.7	5.0	0.0
12:00 PM	194.3	0.0	0.0	0.0	0.0	0.0	1.0	3.7	19.7	69.7	68.0	26.0	6.3	0.0
1:00 PM	214.7	0.0	0.0	0.0	0.0	0.0	0.0	4.0	21.0	76.7	69.0	36.3	5.7	2.0
2:00 PM	253.0	0.0	0.0	0.0	0.0	0.0	0.3	5.7	21.0	84.7	100.3	34.0	5.3	1.7
3:00 PM	299.3	0.0	0.0	0.0	0.0	0.0	0.0	1.3	18.7	107.7	112.7	51.0	6.0	2.0
4:00 PM	338.3	0.0	0.0	0.0	0.0	0.0	0.0	7.7	22.0	95.3	140.7	66.3	5.7	0.7
5:00 PM	227.3	0.0	0.0	0.0	0.0	0.0	0.7	0.3	10.0	70.0	90.3	48.3	6.3	1.3
6:00 PM	135.7	0.0	0.0	0.0	0.0	0.0	0.0	1.3	13.7	40.0	49.3	27.0	3.0	1.3
7:00 PM	94.3	0.0	0.0	0.0	0.0	0.0	0.0	1.7	13.7	38.0	31.3	7.7	1.7	0.3
8:00 PM	68.7	0.0	0.0	0.0	0.0	0.0	0.0	0.3	9.7	22.3	23.7	9.7	2.0	1.0
9:00 PM	42.7	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.7	17.7	10.3	4.7	2.3	1.0
10:00 PM	30.3	0.0	0.0	0.0	0.0	0.0	0.0	1.0	6.3	9.0	7.0	5.7	1.0	0.3
11:00 PM	15.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	8.3	2.7	1.3	0.7	0.3
Daily Average	3136.2	0.0	0.3	0.3	0.7	0.7	5.5	47.0	262.3	1036.7	1149.5	531.0	80.2	22.0

Average (Mean) 55.9 mph **Minimum** 18.5 mph **Maximum** 86.6 mph **Pace Range** 50.3 - 60.3 mph 6926 vehicles (74.9%)

Percentile Speeds	10%	15%	50%	85%	90%
(mph)	49.6	51.0	55.6	60.1	62.1

Speeds Exceeded	25 mph	35 mph	45 mph	55 mph	65 mph	75 mph
	100.0% (9241)	99.9% (9237)	98.3% (9084)	56.9% (5263)	3.3% (302)	0.1% (8)

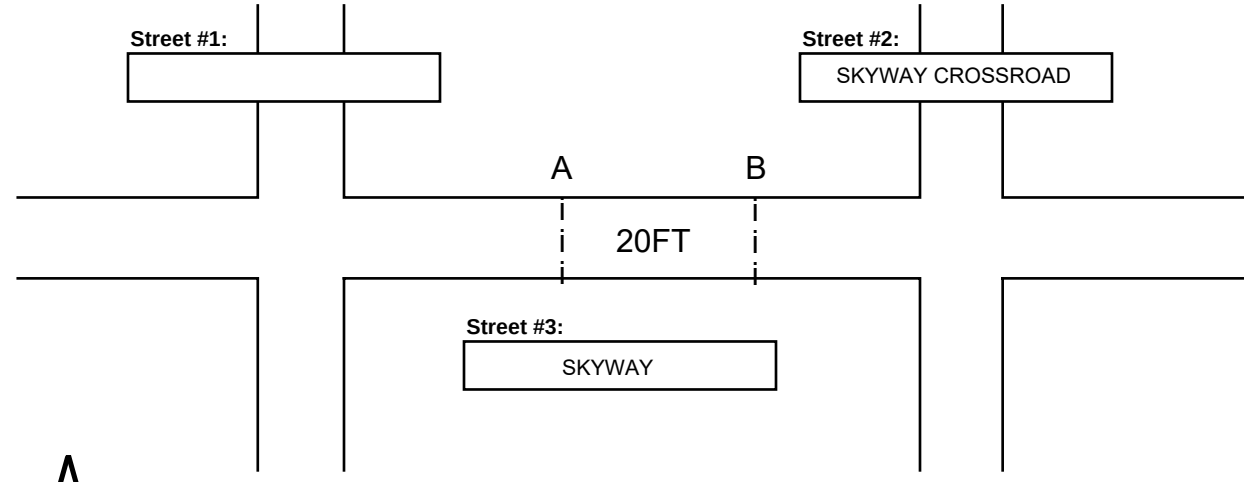
Study Grand Totals

	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
EB	9243	0	1	1	2	2	15	138	773	3048	3392	1569	238	64
		0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	1.5%	8.4%	33.0%	36.7%	17.0%	2.6%	0.7%

County of Butte
Department of Public Works
7 County Center Dr.
Oroville, CA. 95965

TRAFFIC COUNT

Technician/Engineer:	MILLER	Date:	3/15/2022
Road Name:	SKYWAY	Requested By:	PACK
Road Number:	51261-2	Type of Survey:	ETS
Traffic Counter Number:	7/13	Count Begin Date:	3/7/2022
Configuration Number:	51	Count Begin Time:	8:00
Existing Count Station:	SR-0058	Count End Date:	3/10/2022
File Number:		Count End Time:	7:00
Purpose of Study:	ETS		
Location:	W/O SKYWAY CROSSROAD		
GPS Coord::	X-Coord: Y-Coord:		



Enter Road Names, Counter Location and North Arrow
Place "A" hose northerly or easterly direction
Place "B" hose southerly or westerly direction.

Calculated ADT:

Additional Requests:

ADT SLOW LANE=5195
ADT FAST LANE= 2064

Calculations:

ADT: TOTAL=7259

85th % Speed SLOW LANE 62
FAST LANE 71

Remarks:

21% TRUCKS SLOW LANE
19% TRUCKS FAST LANE


Skyway
Skyway Crossroad
Granda Vista Dr
Bay Tree Dr
Tree Dr

Volume Grand Totals

Average Hourly Volumes

	EB	WB	Combined
12:00 AM	0.0	11.0	11.0
1:00 AM	0.0	2.7	2.7
2:00 AM	0.0	3.7	3.7
3:00 AM	0.0	3.7	3.7
4:00 AM	0.0	12.0	12.0
5:00 AM	0.0	31.0	31.0
6:00 AM	0.0	84.3	84.3
7:00 AM	0.0	215.3	215.3
8:00 AM	0.0	369.3	369.3
9:00 AM	0.0	431.7	431.7
10:00 AM	0.0	391.0	391.0
11:00 AM	0.0	394.0	394.0
12:00 PM	0.0	373.3	373.3
1:00 PM	0.0	368.0	368.0
2:00 PM	0.0	363.0	363.0
3:00 PM	0.0	397.7	397.7
4:00 PM	0.0	495.0	495.0
5:00 PM	0.0	462.7	462.7
6:00 PM	0.0	387.3	387.3
7:00 PM	0.0	190.0	190.0
8:00 PM	0.0	91.3	91.3
9:00 PM	0.0	59.3	59.3
10:00 PM	0.0	39.3	39.3
11:00 PM	0.0	18.3	18.3
Average Daily Traffic (ADT)	0.0	5195.0	5195.0

Volume Totals

EB	WB	Combined
0	15464	15464
0.0%	100.0%	

LOCATION : W/O SKYWAY CROSSROAD WEST BOUND

Site: SR-0058 SLOW LANE
Monday, 3/7/2022 11:00 AM -
Thursday, 3/10/2022 10:00 AM

Classification Grand Totals

Hourly Averages

Combined

Interval Start	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
12:00 AM	11.0	0.0	7.3	3.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
1:00 AM	2.7	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2:00 AM	3.7	0.3	1.7	1.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0
3:00 AM	3.7	0.0	3.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
4:00 AM	12.0	0.0	10.3	1.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
5:00 AM	31.0	0.0	15.3	10.3	0.0	4.7	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0
6:00 AM	84.3	0.0	49.3	17.0	0.0	17.3	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.0
7:00 AM	215.3	1.0	114.3	42.0	1.3	49.3	1.0	0.0	4.7	1.7	0.0	0.0	0.0	0.0
8:00 AM	369.3	0.7	219.3	84.0	2.7	47.3	5.3	0.0	8.0	2.0	0.0	0.0	0.0	0.0
9:00 AM	431.7	1.0	259.7	98.7	2.3	54.0	6.7	0.0	4.7	4.7	0.0	0.0	0.0	0.0
10:00 AM	391.0	1.5	220.0	87.0	3.5	61.5	4.5	0.0	8.5	4.5	0.0	0.0	0.0	0.0
11:00 AM	394.0	0.7	226.0	94.0	3.0	53.3	5.7	0.0	8.3	3.0	0.0	0.0	0.0	0.0
12:00 PM	373.3	2.3	202.0	86.0	5.7	58.7	6.7	0.0	9.7	2.3	0.0	0.0	0.0	0.0
1:00 PM	368.0	1.0	202.7	89.7	5.7	53.3	5.7	0.0	6.0	3.7	0.0	0.3	0.0	0.0
2:00 PM	363.0	3.3	200.7	76.7	3.7	60.0	3.3	0.0	11.3	4.0	0.0	0.0	0.0	0.0
3:00 PM	397.7	1.3	213.0	98.7	4.0	66.0	5.0	0.0	6.3	3.0	0.3	0.0	0.0	0.0
4:00 PM	495.0	0.7	235.0	124.0	6.3	103.0	5.3	0.0	14.0	6.3	0.3	0.0	0.0	0.0
5:00 PM	462.7	2.3	239.7	109.3	4.0	89.3	3.7	0.7	9.7	3.7	0.3	0.0	0.0	0.0
6:00 PM	387.3	1.3	230.3	75.7	1.7	72.3	0.0	0.0	5.7	0.3	0.0	0.0	0.0	0.0
7:00 PM	190.0	0.7	106.3	42.3	1.3	36.3	0.0	0.3	2.0	0.7	0.0	0.0	0.0	0.0
8:00 PM	91.3	0.7	58.7	18.7	2.3	9.3	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0
9:00 PM	59.3	1.0	42.7	10.7	0.0	3.7	0.0	0.0	1.0	0.3	0.0	0.0	0.0	0.0
10:00 PM	39.3	0.7	29.0	5.7	0.3	3.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0
11:00 PM	18.3	0.3	13.7	3.3	0.0	0.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Daily Average	5195.0	20.8	2902.7	1178.7	47.8	843.8	53.2	1.0	102.8	42.8	1.0	0.3	0.0	0.0

Study Grand Totals

	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
Combined	15194	61	8488	3449	140	2470	155	3	300	124	3	1	0	0
		0.4%	55.9%	22.7%	0.9%	16.3%	1.0%	0.0%	2.0%	0.8%	0.0%	0.0%	0.0%	0.0%
EB	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-	-	-	-	-	-	-	-	-	-	-	-	-
WB	15194	61	8488	3449	140	2470	155	3	300	124	3	1	0	0
		0.4%	55.9%	22.7%	0.9%	16.3%	1.0%	0.0%	2.0%	0.8%	0.0%	0.0%	0.0%	0.0%

LOCATION : W/O SKYWAY CROSSROAD WEST BOUND

Site: SR-0058 SLOW LANE
Monday, 3/7/2022 11:00 AM -
Thursday, 3/10/2022 10:00 AM

Speed Grand Totals

Hourly Averages Combined

mph	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
12:00 AM	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.0	1.7	3.3	3.0	1.0	0.3
1:00 AM	2.7	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	1.0	0.0	0.0
2:00 AM	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	1.0	0.7	0.7	0.7
3:00 AM	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	1.0	0.7	0.7	0.7
4:00 AM	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	1.3	1.7	3.3	3.3	1.3
5:00 AM	31.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.7	4.3	11.0	6.0	7.0	1.3
6:00 AM	84.3	0.0	0.0	0.0	0.0	0.0	0.0	1.0	4.0	8.0	19.7	30.3	14.0	7.3
7:00 AM	215.3	0.0	0.0	0.0	0.0	0.0	0.0	1.3	4.7	18.0	53.3	77.0	42.7	18.3
8:00 AM	369.3	0.0	0.0	0.0	0.0	0.0	0.0	1.3	12.0	78.0	126.0	99.3	35.7	17.0
9:00 AM	431.7	0.0	0.0	0.0	0.0	0.0	0.7	5.3	30.0	117.7	150.7	93.3	26.0	8.0
10:00 AM	391.0	0.0	0.0	0.0	0.0	0.5	0.5	7.5	55.0	136.5	116.0	62.5	9.5	3.0
11:00 AM	394.0	0.0	0.0	0.0	0.0	0.7	1.7	14.3	65.0	129.3	111.0	52.7	14.7	4.7
12:00 PM	373.3	0.0	0.0	0.0	0.0	0.7	1.3	13.3	63.0	131.7	97.3	52.7	11.0	2.3
1:00 PM	368.0	0.0	0.0	0.0	0.0	0.3	2.0	13.7	58.7	127.3	99.3	47.7	14.7	4.3
2:00 PM	363.0	0.0	0.0	0.0	0.0	0.3	0.7	15.7	65.0	123.0	96.3	47.0	11.0	4.0
3:00 PM	397.7	0.0	0.0	0.0	0.0	0.7	2.0	16.3	69.0	140.3	101.3	49.3	13.0	5.7
4:00 PM	495.0	0.0	0.0	0.0	0.0	0.3	3.0	18.0	104.7	183.0	119.7	51.0	12.3	3.0
5:00 PM	462.7	0.0	0.0	0.0	0.0	0.0	2.0	17.3	67.7	164.0	127.3	62.3	18.7	3.3
6:00 PM	387.3	0.0	0.0	0.0	0.0	0.0	1.0	5.0	31.3	103.7	126.3	89.7	22.0	8.3
7:00 PM	190.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	9.0	42.3	55.3	53.7	21.0	6.0
8:00 PM	91.3	0.0	0.0	0.0	0.0	0.0	0.0	2.0	10.7	18.7	25.7	22.7	6.3	5.3
9:00 PM	59.3	0.0	0.0	0.0	0.0	0.0	0.0	1.7	4.3	13.0	15.7	17.0	5.7	2.0
10:00 PM	39.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.3	8.0	10.7	9.3	6.0	2.7
11:00 PM	18.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.0	2.3	4.7	4.7	3.0	1.3
Daily Average	5195.0	0.0	0.0	0.0	0.0	3.5	15.5	138.8	662.0	1552.8	1474.7	936.8	299.8	111.0

Average (Mean) 56.0 mph **Minimum** 31.0 mph **Maximum** 88.7 mph **Pace Range** 50.3 - 60.3 mph 9576 vehicles (63.0%)

Percentile Speeds	10%	15%	50%	85%	90%
(mph)	48.4	49.6	55.6	62.1	64.2

Speeds Exceeded	25 mph	35 mph	45 mph	55 mph	65 mph	75 mph
	100% (15194)	99.9% (15184)	96.9% (14729)	54.5% (8276)	8.0% (1220)	0.6% (85)

Study Grand Totals

	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
Combined	15194	0	0	0	0	10	46	409	1931	4522	4308	2748	890	330
		0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	2.7%	12.7%	29.8%	28.4%	18.1%	5.9%	2.2%
EB	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-	-	-	-	-	-	-	-	-	-	-	-	-
WB	15194	0	0	0	0	10	46	409	1931	4522	4308	2748	890	330
		0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	2.7%	12.7%	29.8%	28.4%	18.1%	5.9%	2.2%

Average Hourly Volumes

	EB	WB	Combined
12:00 AM	0.0	2.0	2.0
1:00 AM	0.0	5.3	5.3
2:00 AM	0.0	10.3	10.3
3:00 AM	0.0	37.7	37.7
4:00 AM	0.0	103.3	103.3
5:00 AM	0.0	151.0	151.0
6:00 AM	0.0	248.7	248.7
7:00 AM	0.0	128.0	128.0
8:00 AM	0.0	98.3	98.3
9:00 AM	0.0	99.0	99.0
10:00 AM	0.0	110.7	110.7
11:00 AM	0.0	104.7	104.7
12:00 PM	0.0	114.0	114.0
1:00 PM	0.0	151.3	151.3
2:00 PM	0.0	171.0	171.0
3:00 PM	0.0	152.0	152.0
4:00 PM	0.0	148.0	148.0
5:00 PM	0.0	95.0	95.0
6:00 PM	0.0	52.7	52.7
7:00 PM	0.0	32.0	32.0
8:00 PM	0.0	26.0	26.0
9:00 PM	0.0	13.0	13.0
10:00 PM	0.0	8.0	8.0
11:00 PM	0.0	2.0	2.0
Average Daily Traffic (ADT)	0.0	2064.0	2064.0

Volume Totals

EB	WB	Combined
0	6190	6190
0.0%	100.0%	

LOCATION : W/O SKYWAY CROSSROAD

Site: SR-0059 FAST LANE
Monday, 3/7/2022 8:00 AM -
Thursday, 3/10/2022 7:00 AM

Classification Grand Totals

Hourly Averages

Combined

Interval Start	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
12:00 AM	2.0	0.0	1.0	0.3	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1:00 AM	5.3	0.0	3.7	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2:00 AM	10.3	0.0	7.3	0.3	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3:00 AM	37.7	0.0	19.7	7.0	0.3	10.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4:00 AM	103.3	0.7	53.3	21.3	0.0	27.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
5:00 AM	151.0	2.3	95.3	24.7	0.3	28.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6:00 AM	248.7	1.0	164.3	44.7	0.0	38.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
7:00 AM	128.0	0.0	83.0	22.5	0.0	22.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8:00 AM	98.3	0.7	55.3	25.0	0.0	17.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
9:00 AM	99.0	0.3	59.7	23.0	0.3	15.3	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
10:00 AM	110.7	0.3	68.3	22.0	0.3	19.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
11:00 AM	104.7	1.3	67.7	18.3	0.3	16.0	0.0	0.0	0.7	0.3	0.0	0.0	0.0	0.0
12:00 PM	114.0	0.3	70.7	24.3	0.0	17.3	0.0	0.0	1.0	0.3	0.0	0.0	0.0	0.0
1:00 PM	151.3	1.7	95.0	29.7	0.0	24.0	0.3	0.0	0.7	0.0	0.0	0.0	0.0	0.0
2:00 PM	171.0	2.3	94.7	33.3	0.0	38.0	0.0	0.0	2.3	0.3	0.0	0.0	0.0	0.0
3:00 PM	152.0	0.3	84.7	29.0	0.0	37.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4:00 PM	148.0	0.7	83.3	28.3	0.0	35.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
5:00 PM	95.0	0.3	52.3	18.7	0.3	22.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
6:00 PM	52.7	0.3	32.0	12.7	0.0	7.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
7:00 PM	32.0	0.0	24.3	6.7	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8:00 PM	26.0	0.3	17.7	5.7	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9:00 PM	13.0	0.0	8.7	3.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10:00 PM	8.0	0.0	5.3	1.3	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11:00 PM	2.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Daily Average	2064.0	13.0	1248.3	404.5	2.0	384.8	0.7	0.0	9.7	1.0	0.0	0.0	0.0	0.0

Study Grand Totals

	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
Combined	6064	39	3662	1191	6	1132	2	0	29	3	0	0	0	0
		0.6%	60.4%	19.6%	0.1%	18.7%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%
EB	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-	-	-	-	-	-	-	-	-	-	-	-	-
WB	6064	39	3662	1191	6	1132	2	0	29	3	0	0	0	0
		0.6%	60.4%	19.6%	0.1%	18.7%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%

LOCATION : W/O SKYWAY CROSSROAD

Site: SR-0059 FAST LANE
Monday, 3/7/2022 8:00 AM -
Thursday, 3/10/2022 7:00 AM

Speed Grand Totals

Hourly Averages Combined

mph	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
12:00 AM	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.3	0.7
1:00 AM	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.7	2.0	0.3
2:00 AM	10.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.0	4.0	2.7	2.3
3:00 AM	37.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	3.0	12.0	10.3	11.3
4:00 AM	103.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	5.0	19.0	30.7	48.3
5:00 AM	151.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	8.7	35.3	46.7	59.3
6:00 AM	248.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	18.7	73.3	85.3	68.3
7:00 AM	128.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	11.0	35.5	47.0	32.0
8:00 AM	98.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	16.3	35.7	28.3	14.3
9:00 AM	99.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.7	14.3	35.0	27.3	18.3
10:00 AM	110.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	17.3	40.0	32.3	16.3
11:00 AM	104.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	14.0	42.7	25.3	20.0
12:00 PM	114.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	3.7	17.7	42.3	29.7	19.3
1:00 PM	151.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	4.3	23.0	55.3	40.3	27.3
2:00 PM	171.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.3	4.3	22.0	60.7	55.3	26.7
3:00 PM	152.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	15.7	51.7	51.3	29.0
4:00 PM	148.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	6.3	16.7	51.3	46.7	26.7
5:00 PM	95.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	8.0	19.0	27.7	25.7	14.0
6:00 PM	52.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.3	9.7	18.0	11.3	10.0
7:00 PM	32.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	5.0	11.7	5.7	6.3
8:00 PM	26.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	5.7	9.7	4.7	4.0
9:00 PM	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.3	2.7	3.3	2.3	3.0
10:00 PM	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.0	1.3	2.7	0.7	1.7
11:00 PM	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.3	0.7
Daily Average	2064.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	6.0	64.2	250.3	669.2	612.3	460.3

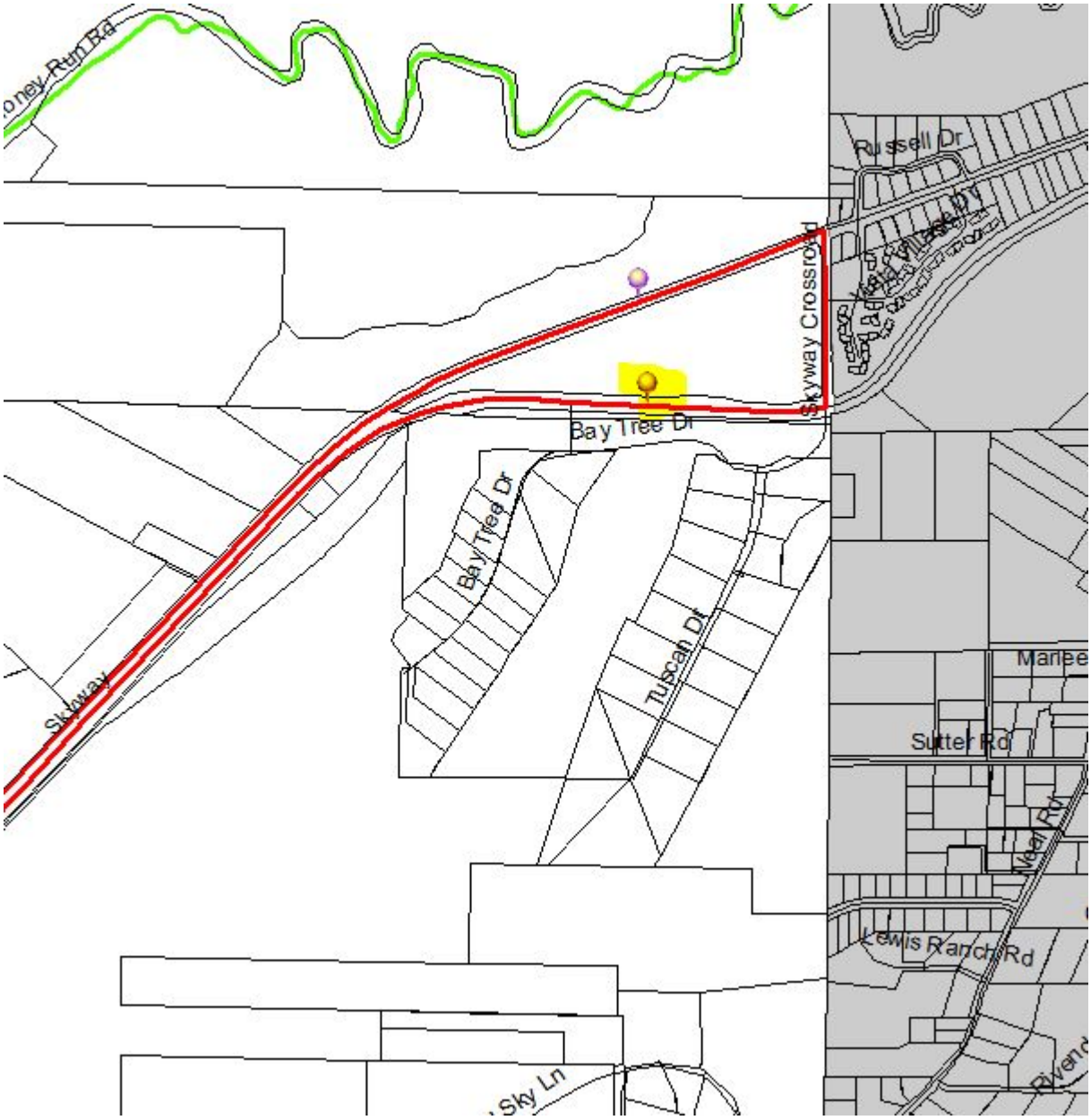
Average (Mean) 65.4 mph **Minimum** 43.8 mph **Maximum** 88.7 mph **Pace Range** 59.1 - 69.1 mph 4010 vehicles (66.1%)

Percentile Speeds	10%	15%	50%	85%	90%
(mph)	58.2	59.1	65.3	71.6	73.0

Speeds Exceeded	25 mph	35 mph	45 mph	55 mph	65 mph	75 mph
	100% (6064)	100% (6064)	99.9% (6059)	96.5% (5851)	51.8% (3139)	5.9% (356)

Study Grand Totals

	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
Combined	6064	0	0	0	0	0	0	5	18	190	740	1972	1790	1349
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	3.1%	12.2%	32.5%	29.5%	22.2%
EB	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-	-	-	-	-	-	-	-	-	-	-	-	-
WB	6064	0	0	0	0	0	0	5	18	190	740	1972	1790	1349
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	3.1%	12.2%	32.5%	29.5%	22.2%


Russell Dr
Skyway Crossroad
Bay Tree Dr
Bay Tree Dr
Tuscan Dr
Skyway
Sutter Rd
Lewis Ranch Rd

Average Hourly Volumes

	EB	WB	Combined
12:00 AM	9.7	0.0	116.0
1:00 AM	7.3	0.0	123.0
2:00 AM	6.7	0.0	143.3
3:00 AM	4.7	0.0	156.0
4:00 AM	13.0	0.0	196.0
5:00 AM	35.3	0.0	229.0
6:00 AM	123.3	0.0	277.7
7:00 AM	203.3	0.0	275.3
8:00 AM	158.0	0.0	134.7
9:00 AM	122.5	0.0	81.7
10:00 AM	116.0	0.0	67.0
11:00 AM	123.0	0.0	45.0
12:00 PM	143.3	0.0	30.7
1:00 PM	156.0	0.0	18.3
2:00 PM	196.0	0.0	9.7
3:00 PM	229.0	0.0	7.3
4:00 PM	277.7	0.0	6.7
5:00 PM	275.3	0.0	4.7
6:00 PM	134.7	0.0	13.0
7:00 PM	81.7	0.0	35.3
8:00 PM	67.7	0.0	123.3
9:00 PM	44.7	0.3	203.3
10:00 PM	30.7	0.0	158.0
11:00 PM	18.3	0.0	122.5
Average Daily Traffic (ADT)	2577.2	0.3	2577.5

Volume Totals

EB	WB	Combined
7626	1	7627
100.0%	0.0%	

Average Hourly Volumes

	EB	WB	Combined
12:00 AM	20.0	0.0	20.0
1:00 AM	14.7	0.0	14.7
2:00 AM	5.7	0.0	5.7
3:00 AM	4.7	0.0	4.7
4:00 AM	13.3	0.0	13.3
5:00 AM	53.0	0.0	53.0
6:00 AM	171.7	0.0	171.7
7:00 AM	248.3	0.7	249.0
8:00 AM	265.3	0.0	265.3
9:00 AM	234.5	0.0	234.5
10:00 AM	247.0	0.0	247.0
11:00 AM	250.0	0.3	250.3
12:00 PM	254.0	0.0	254.0
1:00 PM	296.7	0.0	296.7
2:00 PM	281.7	0.0	281.7
3:00 PM	364.7	0.0	364.7
4:00 PM	370.7	0.0	370.7
5:00 PM	381.7	0.0	381.7
6:00 PM	250.3	0.0	250.3
7:00 PM	171.0	0.0	171.0
8:00 PM	134.3	0.0	134.3
9:00 PM	93.3	0.0	93.3
10:00 PM	55.3	0.0	55.3
11:00 PM	27.7	0.0	27.7
Average Daily Traffic (ADT)	4209.5	1.0	4210.5

Volume Totals

EB	WB	Combined
12366	3	12369
100.0%	0.0%	

Speed Survey

FEHR PEERS

Date & Time: Thursday, March 16, 2023, 10:00 am – 11:00 am

Location: Skyway, within 800 feet of Santa Rosa Road

Personnel: Madeline Harriott, PE

Speed (MPH)	Occurrences	
	Eastbound	Westbound
<55	1	-
56	2	2
57	4	2
58	3	1
59	6	3
60	4	2
61	5	9
62	18	5
63	7	3
64	7	8
65	10	19
66	3	11
67	6	9
68	8	4
69	3	7
70	2	7
71	3	4
72	3	4
73	3	2
74	3	3
75	-	1
76	-	2
77	-	1
78	1	-
79	1	-
80	-	1
Minimum Speed	54	56
Median Speed	64	66
Average Speed	64	66
85th Percentile Speed	**70**	**71**
Maximum Speed	79	80

Source: Fehr & Peers, 2023.

Appendix B:
Road Accident Rate Calculation & Signal Warrant

Road Accident Rate (RAR) Calculation

Study Segment: 1,000 feet beyond the eastern and western edge of proposed development, totaling ~1.68 miles on Skyway.

Methodology

$$RAR = \frac{(\#\text{ of Collisions in Time Range}) * 10^6}{(\text{Average Daily Traffic})\ (365\text{ days})\ (\text{Road Section Length in Miles})\ (\text{Time Range in Years})}$$

	2012-2016	2017-2021[1]	2012-2021
Years	5	5	10
Number of Injury Collisions[1]	9	9	19
Average Daily Traffic [2]	19,230	16,190	17,710
Road Section Length (miles) [3]	1.68	1.68	1.68
Road Accident Rate [4]	**0.153**	**0.181**	**0.175**

1. Injury collision data from UC Berkely SafeTREC Traffic Injury Mapping System, 2022. Note that this data does not include property-damage only collisions.
2. Average daily traffic counts from 2013-2014, 2017-2018, and 2022 from Butte County Public Works. A weighted average of traffic volumes was used to calculate the traffic volume for 2017 – 2021 to account for the traffic volume change after the Camp Fire in November 2018.
3. Road section length measured using Google Maps.
4. RAR equation above provided by Butte County Public Works.

FEHR PEERS

Major Street	Skyway	Project	Tuscan Ridge ICE
Minor Street	Santa Rosa Rd	Scenario	Existing Plus Project Conditions
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	286	0	0	140
Through	0	0	791	697
Right	112	0	298	0
Total	398	0	1,089	837

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	300	(over 300)
Approach with Worst Case Delay	NB	
Total Vehicles on Approach	398	

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Plus Project Conditions	**33.2**	**398**	**2,324**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

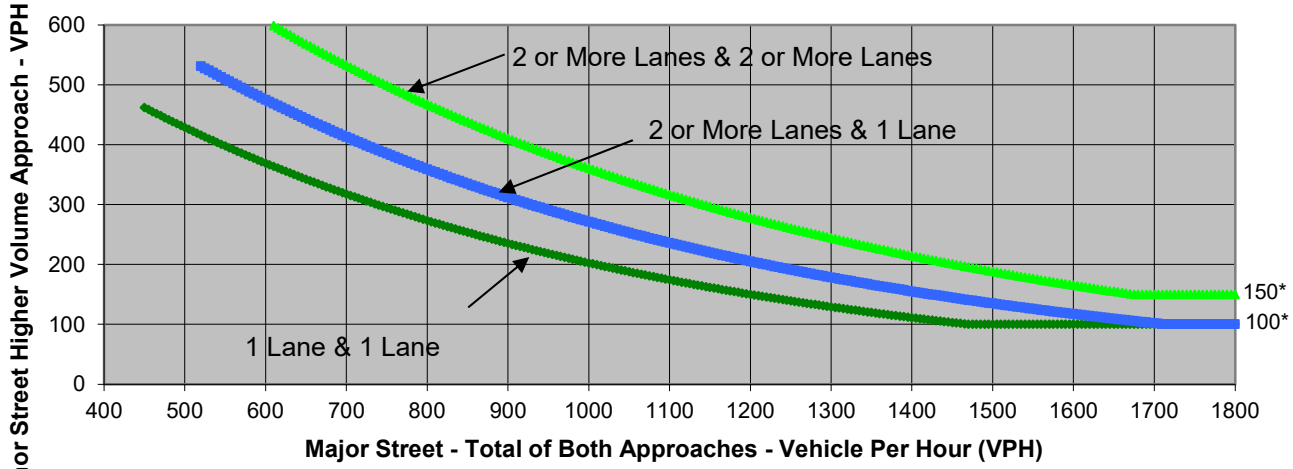
Major Street	Skyway	Project	Tuscan Ridge ICE
Minor Street	Santa Rosa Rd	Scenario	Existing Plus Project Conditions
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	286	0	0	140
Through	0	0	791	697
Right	112	0	298	0
Total	398	0	1,089	837

Major Street Direction

	North/South
x	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Skyway	Santa Rosa Rd	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,926**	**398**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Appendix C:
Alternatives Concept Drawings

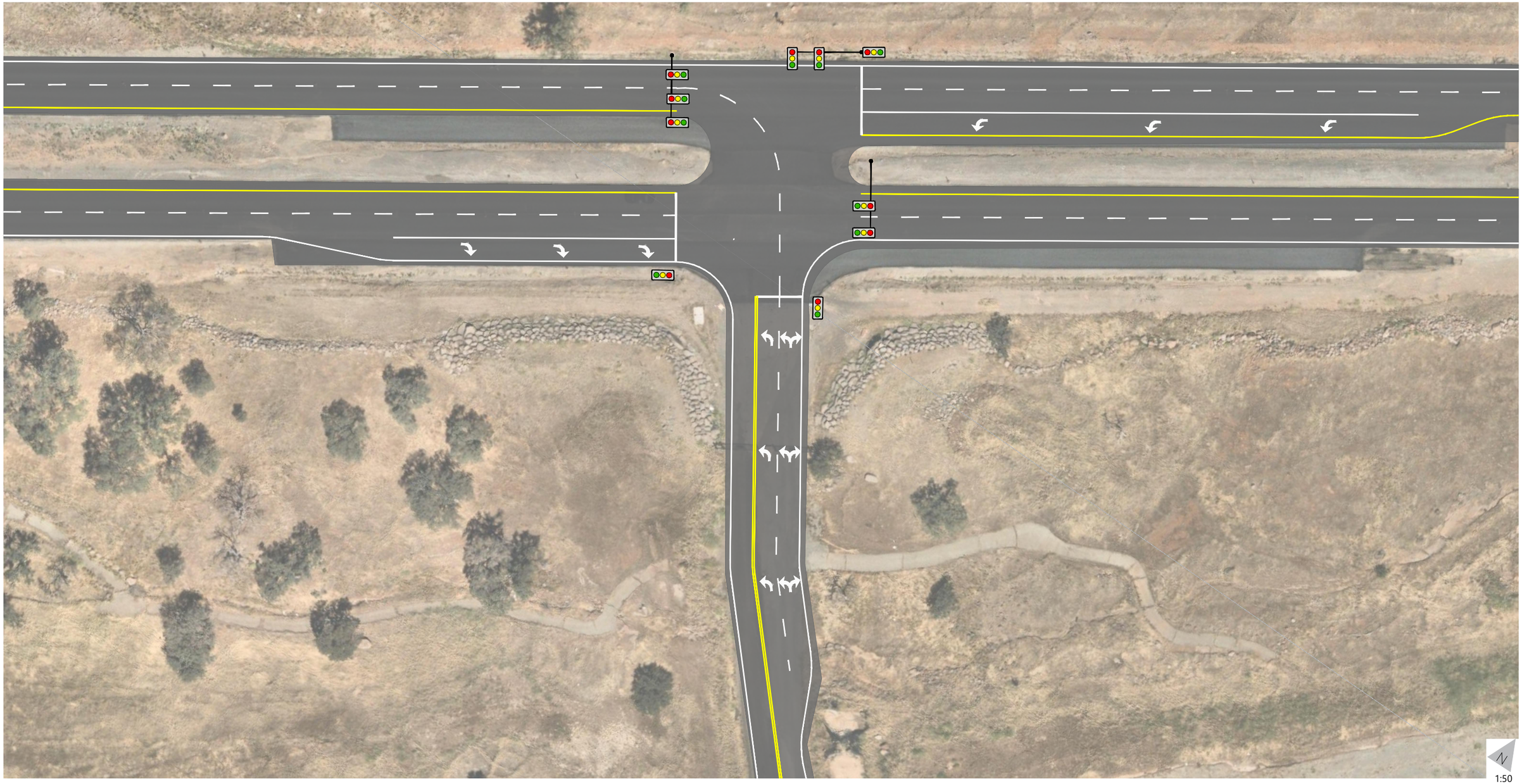


Figure 1

Tuscan Ridge: Skyway and Santa Rosa Road
Signalized Intersection

CONCEPTUAL - NOT FOR CONSTRUCTION. ADDITIONAL
DETAILED ANALYSIS AND ENGINEERING DESIGN REQUIRED.

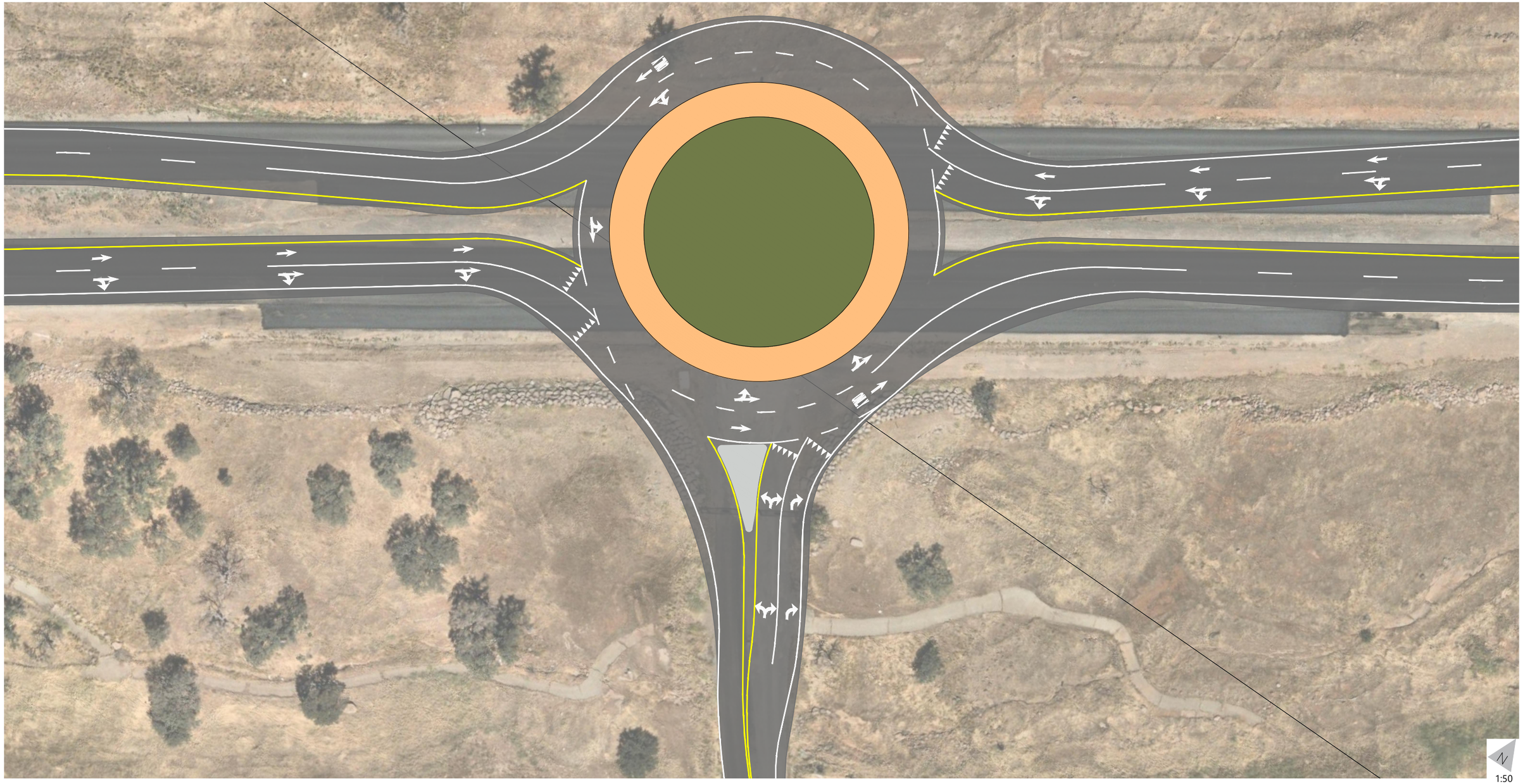


Figure 2

Tuscan Ridge: Skyway and Santa Rosa Road
Two-Lane Roundabout

CONCEPTUAL - NOT FOR CONSTRUCTION. ADDITIONAL
DETAILED ANALYSIS AND ENGINEERING DESIGN REQUIRED.

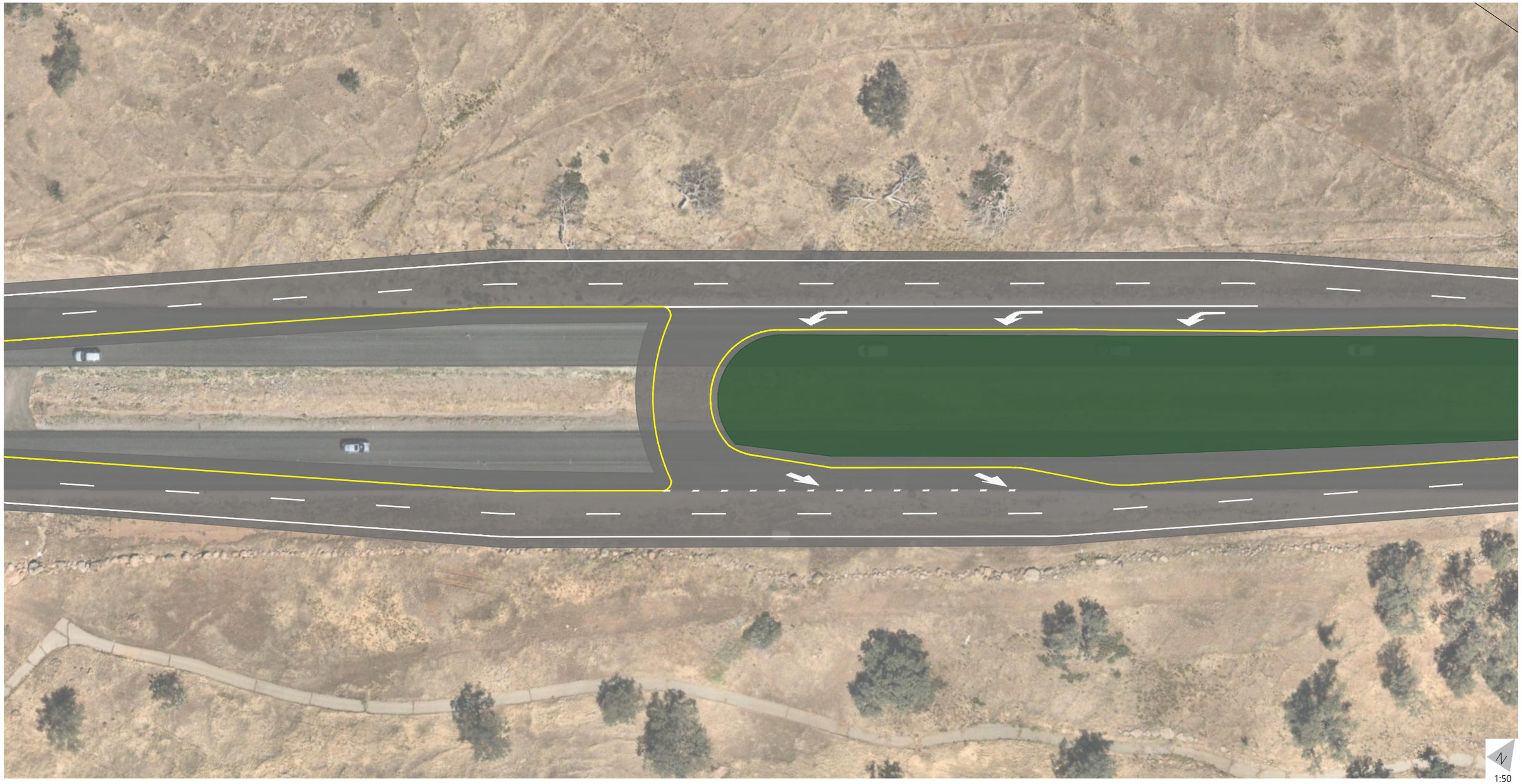


Figure 3a

Tuscan Ridge: Skyway and Santa Rosa Road
Restricted Crossing U-Turn Intersection

CONCEPTUAL - NOT FOR CONSTRUCTION. ADDITIONAL
DETAILED ANALYSIS AND ENGINEERING DESIGN REQUIRED.

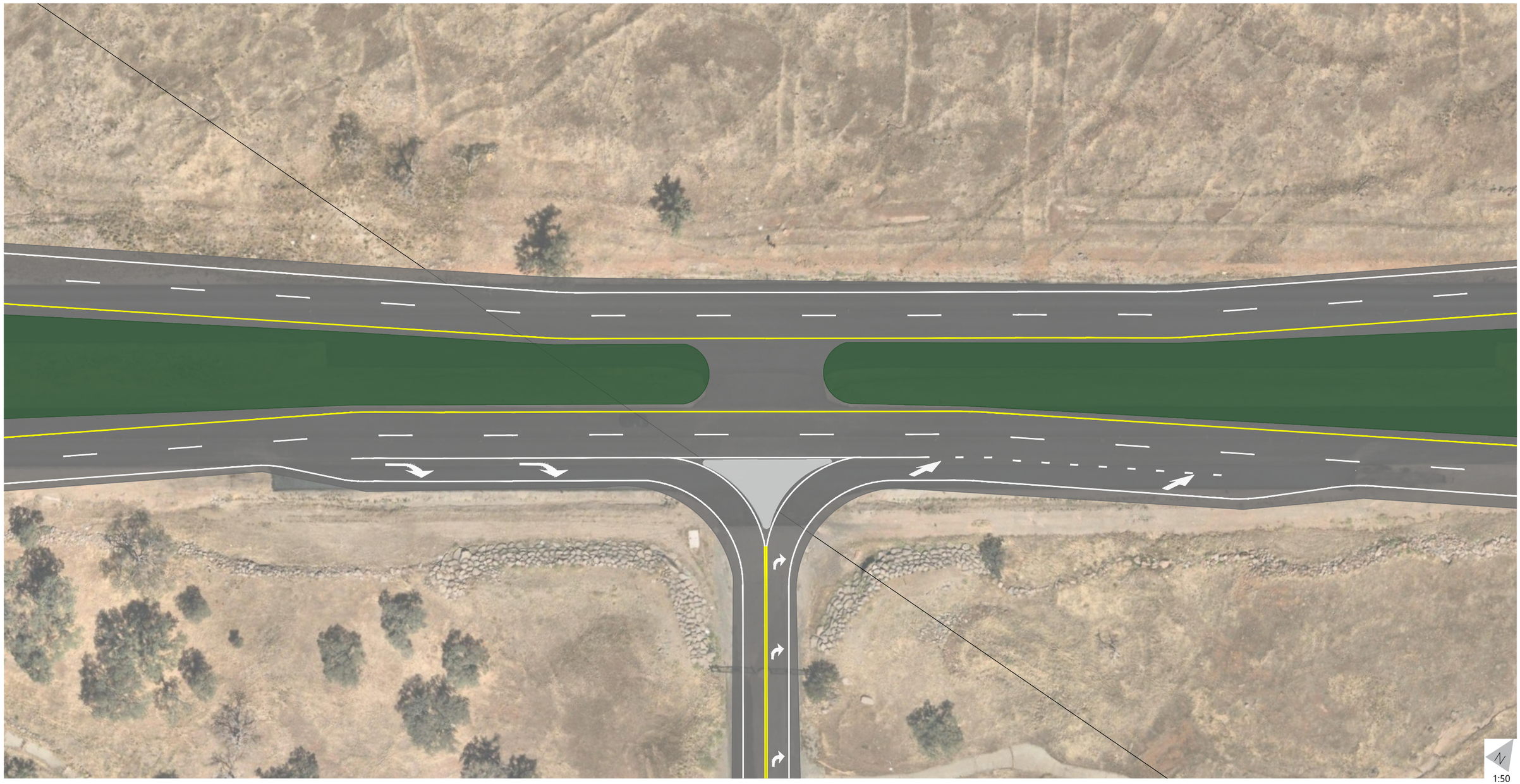


Figure 3b

Tuscan Ridge: Skyway and Santa Rosa Road
Restricted Crossing U-Turn Intersection

CONCEPTUAL - NOT FOR CONSTRUCTION. ADDITIONAL
DETAILED ANALYSIS AND ENGINEERING DESIGN REQUIRED.

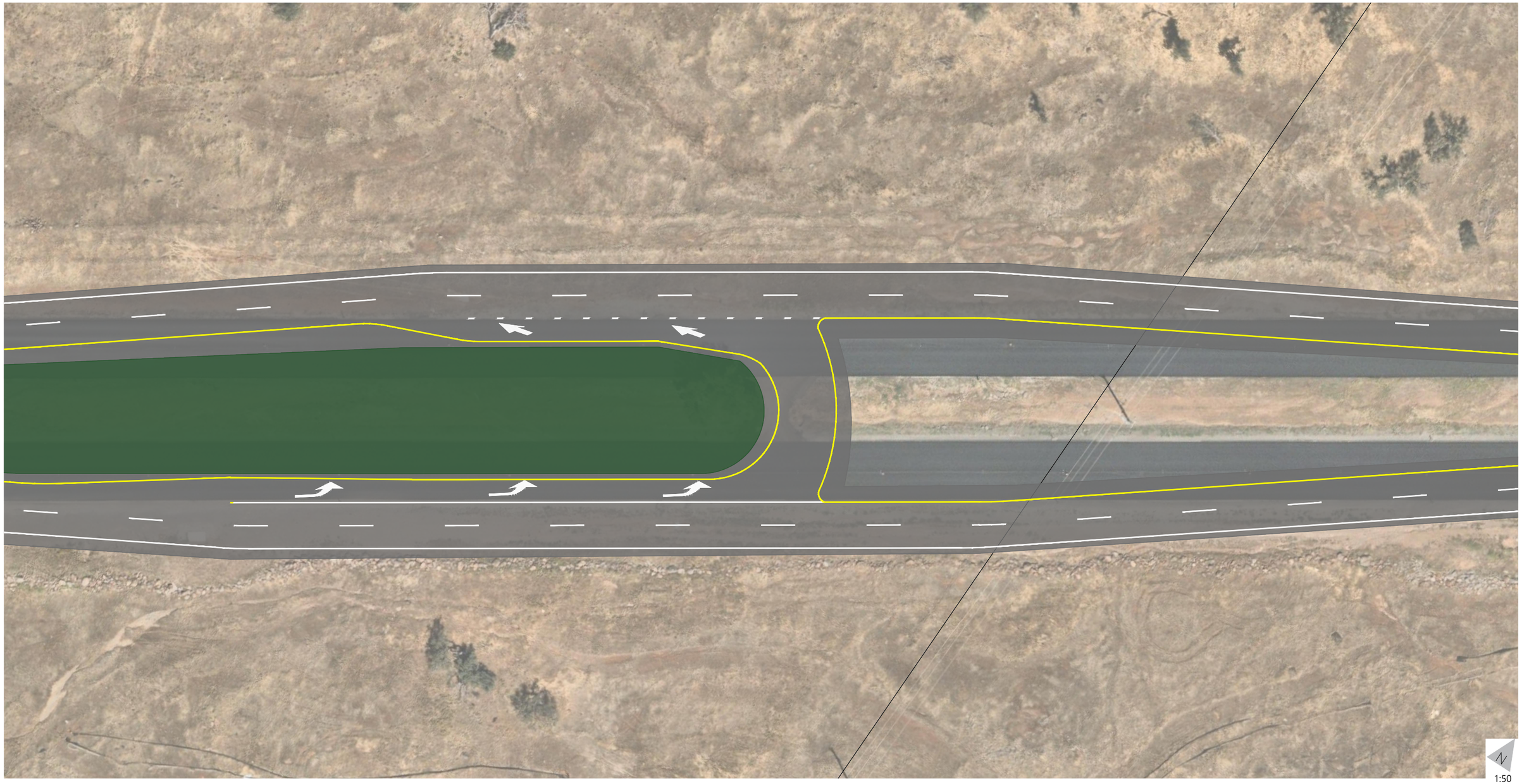


Figure 3c

Tuscan Ridge: Skyway and Santa Rosa Road
Restricted Crossing U-Turn Intersection

CONCEPTUAL - NOT FOR CONSTRUCTION. ADDITIONAL
DETAILED ANALYSIS AND ENGINEERING DESIGN REQUIRED.

Figure 4

Tuscan Ridge: Skyway and Santa Rosa Road
Signalized Intersection

CONCEPTUAL - NOT FOR CONSTRUCTION. ADDITIONAL
DETAILED ANALYSIS AND ENGINEERING DESIGN REQUIRED.

Appendix D:
High-Speed Roundabout Concepts

CA State Route 89 & CA State Route 50 in Meyers, California (https://www.youtube.com/watch?v=NmCQPvgXnPg)

Slingerlands Bypass (NY Route 85) in Bethlehem, New York (https://cmellp.com/portfolio-items/slingerlands-byass-rt85/)

South 89 & E Road 4 S & Outer Loop Road in Chino Valley, Arizona
(http://roundaboutresources.org/rural/high-speed.html)

Estrella Pkwy & Cotton Lane in Goodyear, Arizona
(https://www.mtjengineering.com/project/estrella-pkwy-cotton-ln-goodyear-az/)

East Lake Sammamish Parkway and SE 43rd Way in Issaquah, Washington
(https://www.reidmiddleton.com/reidourblog/east-lake-sammamish-parkwayse-43rd-way-roundabout-city-of-issaquah-washington-three-leg-multi-lane-open-2010/)

Appendix E:
Alternatives Operations Analysis Reports

Intersection	
Int Delay, s/veh	186.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	791	298	140	697	286	112
Future Vol, veh/h	791	298	140	697	286	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	150	250	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	860	324	152	758	311	122

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1184	0	1543	430
Stage 1	-	-	-	-	860	-
Stage 2	-	-	-	-	683	-
Critical Hdwy	-	-	4.18	-	6.88	6.98
Critical Hdwy Stg 1	-	-	-	-	5.88	-
Critical Hdwy Stg 2	-	-	-	-	5.88	-
Follow-up Hdwy	-	-	2.24	-	3.54	3.34
Pot Cap-1 Maneuver	-	-	574	-	~ 104	568
Stage 1	-	-	-	-	370	-
Stage 2	-	-	-	-	458	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	574	-	~ 76	568
Mov Cap-2 Maneuver	-	-	-	-	~ 76	-
Stage 1	-	-	-	-	370	-
Stage 2	-	-	-	-	337	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	$ 1083.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	76	568	-	-	574	-
HCM Lane V/C Ratio	4.09	0.214	-	-	0.265	-
HCM Control Delay (s)	$ 1503.1	13.1	-	-	13.5	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	32.9	0.8	-	-	1.1	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	791	298	140	697	286	112
Future Volume (veh/h)	791	298	140	697	286	112
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1647	1647	1647	1647	1647	1647
Adj Flow Rate, veh/h	860	103	152	758	311	88
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4
Cap, veh/h	1074	479	187	1751	386	344
Arrive On Green	0.34	0.34	0.12	0.56	0.25	0.25
Sat Flow, veh/h	3212	1396	1569	3212	1569	1396
Grp Volume(v), veh/h	860	103	152	758	311	88
Grp Sat Flow(s),veh/h/ln	1565	1396	1569	1565	1569	1396
Q Serve(g_s), s	10.3	2.2	3.9	5.8	7.7	2.1
Cycle Q Clear(g_c), s	10.3	2.2	3.9	5.8	7.7	2.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1074	479	187	1751	386	344
V/C Ratio(X)	0.80	0.21	0.81	0.43	0.81	0.26
Avail Cap(c_a), veh/h	1215	542	305	2127	533	474
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.3	9.6	17.7	5.3	14.6	12.5
Incr Delay (d2), s/veh	3.5	0.2	8.2	0.2	6.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.7	0.8	2.6	1.0	5.4	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.8	9.8	25.9	5.4	20.9	12.9
LnGrp LOS	B	A	C	A	C	B
Approach Vol, veh/h	963			910	399	
Approach Delay, s/veh	15.1			8.9	19.1	
Approach LOS	B			A	B	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		14.1	8.9	18.1		27.1
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		14.0	8.0	16.0		28.0
Max Q Clear Time (g_c+I1), s		9.7	5.9	12.3		7.8
Green Ext Time (p_c), s		0.6	0.1	1.9		4.4

Intersection Summary	
HCM 6th Ctrl Delay	13.3
HCM 6th LOS	B

MOVEMENT SUMMARY

Site: Skyway and Santa Rosa

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
West: Skyway														
8	T1	791	4.0	860	4.0	0.501	8.6	LOS A	3.1	80.7	0.44	0.29	0.44	36.3
18	R2	298	4.0	324	4.0	0.501	8.6	LOS A	3.1	80.7	0.44	0.29	0.44	34.6
Approach		1089	4.0	1184	4.0	0.501	8.6	LOS A	3.1	80.7	0.44	0.29	0.44	35.8
South: Santa Road Rd														
1	L2	286	3.0	311	3.0	0.482	13.1	LOS B	2.6	66.0	0.71	0.88	1.08	20.4
16	R2	112	3.0	122	3.0	0.211	9.0	LOS A	0.8	19.4	0.64	0.64	0.64	28.7
Approach		398	3.0	433	3.0	0.482	11.9	LOS B	2.6	66.0	0.69	0.81	0.96	22.7
East: Skyway														
7	L2	140	4.0	152	4.0	0.446	8.6	LOS A	2.3	60.5	0.55	0.46	0.55	39.0
4	T1	697	4.0	758	4.0	0.446	8.6	LOS A	2.3	60.5	0.55	0.46	0.55	34.0
Approach		837	4.0	910	4.0	0.446	8.6	LOS A	2.3	60.5	0.55	0.46	0.55	35.0
All Vehicles		2324	3.8	2526	3.8	0.501	9.1	LOS A	3.1	80.7	0.52	0.44	0.57	32.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1: Santa Rosa Rd & Skyway Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.3	0.0
Total Delay (hr)	0.4	0.1	0.1	1.5	2.1
Total Del/Veh (s)	1.7	1.1	0.4	12.9	2.7
Stop Delay (hr)	0.0	0.0	0.0	1.1	1.1
Stop Del/Veh (s)	0.0	0.0	0.0	9.5	1.4
Total Stops	1	1	0	410	412
Stop/Veh	0.00	0.00	0.00	0.99	0.14
Travel Dist (mi)	51.4	29.1	72.5	47.5	200.4
Travel Time (hr)	1.3	1.4	1.4	3.3	7.4
Avg Speed (mph)	40	21	51	15	27
Fuel Used (gal)	2.2	0.6	2.9	1.4	7.1
Fuel Eff. (mpg)	23.0	51.9	25.1	34.3	28.4
HC Emissions (g)	58	10	84	22	174
CO Emissions (g)	2765	299	3716	498	7278
NOx Emissions (g)	179	26	266	57	528
Vehicles Entered	814	463	1161	411	2849
Vehicles Exited	814	463	1161	409	2847
Hourly Exit Rate	814	463	1161	409	2847
Input Volume	809	448	1148	407	2811
% of Volume	101	103	101	101	101
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0
Density (ft/veh)					304
Occupancy (veh)	1	1	1	3	7

2: WB U-turn & Skyway Performance by movement

Movement	EBT	WBU	WBT	All
Denied Delay (hr)	0.1	0.0	0.0	0.1
Denied Del/Veh (s)	0.3	0.0	0.0	0.1
Total Delay (hr)	0.5	0.6	0.0	1.1
Total Del/Veh (s)	1.7	13.3	0.2	1.8
Stop Delay (hr)	0.0	0.6	0.0	0.6
Stop Del/Veh (s)	0.0	13.3	0.0	0.9
Total Stops	0	127	0	127
Stop/Veh	0.00	0.85	0.00	0.06
Travel Dist (mi)	182.1	11.4	78.9	272.5
Travel Time (hr)	3.7	0.9	1.4	6.1
Avg Speed (mph)	50	12	56	45
Fuel Used (gal)	5.5	0.3	2.3	8.1
Fuel Eff. (mpg)	32.8	42.9	34.1	33.5
HC Emissions (g)	165	4	76	245
CO Emissions (g)	6518	88	2278	8884
NOx Emissions (g)	505	7	266	779
Vehicles Entered	1130	148	1013	2291
Vehicles Exited	1129	147	1012	2288
Hourly Exit Rate	1129	147	1012	2288
Input Volume	1113	143	1004	2260
% of Volume	101	103	101	101
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0
Density (ft/veh)				482
Occupancy (veh)	4	1	1	6

3: Skyway & EB U-turn Performance by movement

Movement	EBU	EBT	WBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Delay (hr)	1.0	0.2	0.3	1.5
Total Del/Veh (s)	12.2	0.8	1.4	2.6
Stop Delay (hr)	1.0	0.0	0.0	1.0
Stop Del/Veh (s)	11.8	0.0	0.0	1.7
Total Stops	238	2	0	240
Stop/Veh	0.80	0.00	0.00	0.11
Travel Dist (mi)	22.5	71.4	254.9	348.9
Travel Time (hr)	1.8	1.4	4.7	8.0
Avg Speed (mph)	12	49	54	44
Fuel Used (gal)	0.7	3.4	6.9	11.0
Fuel Eff. (mpg)	34.2	20.9	36.9	31.8
HC Emissions (g)	10	102	208	320
CO Emissions (g)	381	5033	6292	11705
NOx Emissions (g)	25	297	735	1057
Vehicles Entered	295	928	868	2091
Vehicles Exited	294	928	867	2089
Hourly Exit Rate	294	928	867	2089
Input Volume	292	924	855	2071
% of Volume	101	100	101	101
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0
Density (ft/veh)				538
Occupancy (veh)	2	1	5	8

Intersection: 1: Santa Rosa Rd & Skyway

Movement	EB	EB	NB
Directions Served	T	T	R
Maximum Queue (ft)	4	3	239
Average Queue (ft)	0	0	95
95th Queue (ft)	4	3	174
Link Distance (ft)	298	298	602
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: WB U-turn & Skyway

Movement	WB	WB
Directions Served	UL	T
Maximum Queue (ft)	131	87
Average Queue (ft)	55	7
95th Queue (ft)	105	38
Link Distance (ft)		374
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	250	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Skyway & EB U-turn

Movement	EB	EB	EB
Directions Served	UL	T	T
Maximum Queue (ft)	188	93	68
Average Queue (ft)	81	5	3
95th Queue (ft)	145	47	34
Link Distance (ft)		373	373
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	250		
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

APPENDIX J

TECHNICAL MEMORANDUM

Tuscan Ridge Planned Development Estimated Water Use and Storage Tank Sizing
3100 Skyway Road, Paradise, California 95969
Assessor's Parcel Numbers 040-520-104-104 through -111

Date: May 15, 2022

Project No.: 9799.02

Prepared For: Tuscan Ridge Associates, LLC

Reviewed By: Rod Wilburn, PE
RCE No. 69388

1.0 INTRODUCTION

Tuscan Ridge Associates, LLC (Applicant) is proposing a Planned Development on the approximately 163-acre (Note: Butte County records indicate 172 acres; however, a recent boundary survey yielded 163 acres) property located on the southeast side of Skyway Road between Chico and Paradise, California and identified by Assessor's Parcel Numbers (APNs) 040-520-104 through -111 (Site), to facilitate the construction of 165 residential units, commercial development, landscaped areas, passive recreation areas, and open space (Project).

The Site, which was previously occupied by the Tuscan Ridge Golf Club, is located approximately 3 miles west of the Town of Paradise, ½ mile east of the Bluffs subdivision, and 4 miles east of the City of Chico. The Site is surrounded primarily by large undeveloped parcels to the east, south, and west. Skyway runs the entire length of the northwest Site boundary and Paradise Rod & Gun Club is located adjacent to the northeast of the Site.

The purpose of this memorandum is to provide the water storage tank sizing calculations, the basis for these calculations, a preliminary location for the water storage tank, and preliminary tank dimensions.

1.1 Project Description

As shown on the Vesting Tentative Map dated November 3, 2021, Land Use Plan dated April 21, 2022, and Planned Development (PD) plan dated February 23, 2022, the proposed Planned Development and Major Subdivision includes the following uses:

- 165 single family residential lots ranging from 4,000 square feet to 40,000 square feet.
- Commercial development spanning approximately 19.3 acres. While specific commercial development is unknown at this time, potential uses would generally align with the permitted and conditionally permitted uses allowed within the General Commercial (GC) and Neighborhood Commercial (NC) zoning districts, pursuant to Table 24-22-1 *Permitted Land Uses in the Commercial and Mixed-Use Zones* of the Butte County Code (Code). A sanitary waste disposal station is also proposed within the northeastern commercial area. Water demand from the sanitary waste disposal area was assumed to be negligible. Based on the potential uses, the following commercial areas have been assumed for the purposes of this evaluation:
    - 3,600 square-foot gas station/convenience store
    - 76,000 square-feet of retail space
    - 53,000 square-foot mini storage
    - 3,000 square-foot restaurant at the previous club house
- Approximately 3.9 acres (169,885 square feet) of landscaped open space and 52.6 acres for passive recreational to include bicycle and pedestrian trails, and open space areas.

2.0 EVALUATION

2.1 Water

2.1.1 Estimated Water Demand

An estimate of water demand in gallons per day (GPD) for the proposed development is summarized below in Table 1, which indicates the water supply system will need to supply an average of 110,042 GPD. The estimated water demand for the proposed project is based on the project description provided above, data reviewed for similar developments, multiple sources, and standard engineering principles. The residential value was determined based on review of the *2020 City of Chico Urban Water Management Plan*, June 2021, prepared by EKI Environment and Water, Inc., M. Cubed and Gary Fiske and Associates. The demand for an accessory dwelling unit (ADU) was assumed at 50-percent of the usage of the primary dwelling, for the purposes of this technical memorandum, since no source data could be found and the number of ADUs was assumed to be just less than 50-percet of lots. Retail and restaurant demand per square foot was found in the Ventura Water District *Final Water Demand Factor Study* dated April 8, 2020 and prepared by Wood Rodgers. The gas station estimate per vehicle was found in the *Standard Handbook of Environmental Engineering*, by Robert A. Corbitt, 1990.

Table 1: Summary of Estimated Water Demand

Type of Occupancy	Number	Unit	GPD/Unit	GPD
Residential	165	Single-Family Homes	400	66,000
Accessory Dwelling Units (ADU)	82	Single-Family Homes	200	16,400
Retail	76,000	Square-foot	0.155	11,780
Restaurant	3,000	Square-foot	0.673	2,019
Gas Station/Convenience Store	500	Vehicles	5	2,500
Mini-Storage	2	Bathrooms	150	300
Landscaping[1]	169,885	Square-Foot	0.065	11,043
			TOTAL	**110,042**
			MAXIMUM DAY DEMAND (PEAKING FACTOR: 2)	**220,083**
			PEAK HOUR DEMAND (1.5 X MAX DAY DEMAND)	**229 GPM**

[1]US Department of Energy: *Guidelines for Estimating Unmetered Landscaping Water Use, July 2010.* Sacramento values provided in the document were used to estimate a mid-range demand per square foot.

Of the 110,042 GPD estimated for the total project water demand, 99,000 GPD are estimated for domestic use at residential units, the commercial developments, and the amenity center. It is important to note that approximately 50 to 75-percent of the water used for these purposes will become wastewater that is to be treated at the on-site wastewater treatment facility. That 50 to 75-percent range allows us to determine that the amount of average wastewater generated by the project at full build out is between approximately 49,500 GPD and 74,249 GPD. It is also important to note that the peaking factors for wastewater treatment system design will likely differ from the peaking factors for potable water storage requirement, and this may create an apparent inconsistency in the data presented in corresponding reports. However, these are preliminary calculations that introduce factors of safety in the supply, storage, and treatment facilities for both water and wastewater utilities to ensure the systems can perform under the range of conditions expected at the Tuscan Ridge Planned Development.

2.1.2 Proposed Water Source

Domestic water will be provided to the Project via an existing water system that includes an on-site well at a depth of 735 feet, which will serve as the primary water source. Per the request of the Butte County Department of Environmental Health, a new, secondary well will be constructed on-site to provide water system redundancy should issues arise with the primary well. Water produced from the existing well is sent to two (2) 10,000-gallon above-ground storage tanks using a 75 horsepower (hp) turbine pump, and subsequently pulled from the tanks using two (2) 10 hp pumps and pressurized into a distribution system through four (4) pressure tanks. The existing well was initially installed in 1999 for the purposes of irrigating the Tuscan Ridge Golf Course and providing services to the associated bistro. The well was subsequently utilized for potable water purposes by Pacific Gas & Electric (PG&E)

and ECC Constructors during their occupation of the Site. The water system is currently permitted through the State Water Resources Control Board (SWRCB) Division of Drinking Water and modification of the permit will be needed to allow use of the system as a public water system to serve the Project.

2.1.3 Proposed Water Storage Tank

The proposed water storage tank is designed to provide adequate storage to meet the fire flow requirements and meet the peak domestic water demands for site. The peaking conditions considered for the project and the sizing of the water infrastructure are: 1) maximum day demand with fire flow; and 2) peak hour demand on the maximum day. The maximum day demand is expressed in GPD, and the peak hour demand is expressed in gallons per minute (GPM). The system must be able to meet both the maximum day demand plus fire flow in storage and meet the peak hour demand through the well and distribution system for all pressure zones (Title 22, California Code of Regulations, Chapter 16, Section 6554. (a)(3)).

The fire flow calculation assumes the commercial construction will meet the requirements under the California Building Code that will allow the minimum fire flow to be reduced to 25-percent of the value in Table B105.1(2) and not less than 1,500 GPM, per Table B105.2, for a duration of 2 hours. The required fire flow storage resulting from these assumptions is 180,000 gallons. By adding the maximum day demand for domestic use of 220,083 gallons to the estimated fire flow storage requirement, the total storage requirement would then be 400,083 gallons.

The tank is proposed to be located on the Commercial 4 Lot near the southern edge of the proposed mini-storage to stay outside the Scenic Highway Overlay Zone and near the road that crosses Commercial 4 Lot for access to Commercial 5 Lot. The lots are delineated on Sheets 7 and 8 of the Vesting Tentative Map, dated November 3, 2021 and the approximate proposed tank location is shown on the PD plan dated February 23, 2022. The approximate dimensions of the storage tank would be 72 feet in diameter and 16 feet in height. This tank size would provide approximately 487,000 gallons of total storage volume and 457,000 gallons of active storage volume for domestic water usage when 1-foot of freeboard is maintained at the top of the tank. A 125-foot by 125-foot security fence would be constructed around the tank, providing room to allow space for piping, valves, overflow infrastructure, and vehicle access for inspection, operation, and maintenance purposes.

3.0 REFERENCES

U.S. Department of Energy. July 2010. ***Guidelines for Estimating Unmetered Landscaping Water Use.*** Available at: https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-19498.pdf

California Fire Code, Appendix B. 2016. Available at: https://up.codes/viewer/california/ca-fire-code-2016/chapter/B/fire-flow-requirements-for-buildings#B

Standard Handbook of Environmental Engineering. Robert A. Corbitt, 1990.

City of Chico, June 2021. ***2020 Urban Water Management Plan. Chico-Hamilton City District*** Available at: https://www.calwater.com/docs/uwmp2020/CH_2020_UWMP_FINAL.pdf

Ventura Water district, 2020. ***Final Water Demand Factor Study.*** Available at: https://www.cityofventura.ca.gov/DocumentCenter/View/21211/Water-Demand-Factor-Study

APPENDIX K

WallaceKuhl & ASSOCIATES
A Universal Engineering Sciences Company

Corporate Office
3050 Industrial Boulevard
West Sacramento, CA 95691
916.372.1434 phone
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Stockton Office
3422 West Hammer Lane, Suite D
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March 31, 2022

Mr. Scott Bates
C/O Nexgen Engineering & Consulting, LLC
1043 Nichols Court, Suite 200
Rocklin, CA 95765

Well Siting Consultation Services (Rev. 3-31-22)
3100 SKYWAY PROPERTY
Paradise, California
WKA Project No. 4640.2200029.0000

Dear Mr. Bates:

Wallace-Kuhl & Associates (WKA) was verbally authorized on March 18, 2022, to prepare a hydrogeologic opinion letter regarding the siting of a second production well (Tuscan Ridge Well #2) for the 163-acre Tuscan Ridge property located at 3100 Skyway outside of Paradise, California. In preparing this letter, WKA reviewed the following information:

- A February 22, 2022, Technical Memorandum prepared by Rod Wilburn, P.E. titled Tuscan Ridge Planned Development Estimated Water Use and Storage Tank Sizing 3100 Skyway, Paradise, California 95969 Assessor's Parcel Numbers 040-520-104 through -111
- A Site Figure Titled Tuscan Ridge Planned Development prepared by Julian Berg Designs in conjunction with LACO Surveyors, Engineers, Planners, Geologists and dated February 23, 2022
- Well Driller Reports within approximately 3 miles of the proposed well location
- Tuscan Ridge Well #1 Completion Report
- Tuscan Ridge Well #1 Well production information
- Google Earth Pro aerial imagery 5/2/2021

In addition, WKA conducted numerous field visits from November of 2018 through May 2021 and completed numerous technical documents related to property uses by Pacific Gas & Electric Company (PG&E), the 2018 Camp Fire emergency response base camp, and potential future development of the property. Previous WKA reports include:

- Site Inspection Report February 15, 2019
- Phase I Environmental Site Assessment February 26, 2019
- Phase I Environmental Site Assessment April 21, 2020

- Site Inspection Report April 15, 2020
- Geotechnical Engineering Report May 6, 2021
- Hydrogeologic and soil Exploration Report May 17, 2021

Project Understanding and Site Description

Tuscan Ridge Associates is proposing a Planned Development on approximately 163 acres located on the southeast side of Skyway Road between Chico and Paradise, California, with identified Butte County Assessor's Parcel Numbers (APN's) 040-520-104 through -111 to facilitate the construction of 165 residential units, commercial development, recreation areas and open space (Project)(Wilburn, 2022).

The Site was previously occupied by the Tuscan Ridge Golf Club and is surrounded by oak woodlands and open grasslands. The golf course fell into disrepair, and PG&E tree trimming crews most recently occupied the Site, followed immediately by the 2018 Camp Fire response base camp. The Site contains the original golf course clubhouse, a wastewater treatment system with evaporation ponds located in the southwest portion of the Site. A large metal Quonset hut structure is located in the southeast portion of the property.

The Wilburn technical memorandum estimates that the project will require approximately 147,977 gallons of water per day. According to LACO's information, the existing Tuscan Ridge Well #1 has documented usage of between 325,000 and 425,000 gallons per day. Therefore, the existing well should be more than sufficient to supply the daily requirement of the proposed project. The proposed Well #2 is being constructed at the request of the Butte County Department of Environmental Health to provide water system redundancy

Geologic Setting

The Site is located along the northeastern edge of the Great Valley geomorphic province of California. Situated between the granitic and metamorphic basement rock which forms the Sierra Nevada range and the sedimentary and volcanic rock units of the Coast Ranges, the province is a vast asymmetrical, synclinal trough formed by uplifting of the Sierran block to form the Sierra Nevada mountains with the western side dropping to form the valley. Erosion of the adjacent Sierra Nevada and Coast Ranges has in-filled the valley with a thick sequence of unconsolidated to semi-consolidated Quaternary (Pleistocene and Holocene) age alluvial, basin, and delta plain sediments deposited by the Sacramento and San Joaquin rivers and their tributaries.

The project site is located within the Sierra Foothills, east of the Chico Monocline, a broad upwarping caused by uplift on the east side of the Chico Monocline fault, located a few miles east of Chico. The primary geologic formation with the project area is the Tuscan Formation extending from Redding south to near Oroville, where surface exposures are seen on the east side of the Great Valley. Overall, the Tuscan Formation is composed of a series of volcanic lahars (mudflows) that include volcanic conglomerate, sandstone, siltstone, and pumiceous tuff layers deposited over a period of about 1 million years (Helley and Harwood 1985)[1]. The source areas of the lahars were the eroded ancestral volcanoes, Mount Yana and Mount Maidu, which were historically located northwest and south of Lassen Peak in the Cascade Range (Lydon 1968)[2]. As the lahars flowed westward off the ancestral volcanoes and onto the valley floor, they fanned out, causing deposition that varies in thickness and topographic elevation. Over time, ancient streams and rivers flowed downslope over the lahars, forming channels that were then infilled with reworked volcanic sand and gravel sediments. East of the Chico Monocline, the Tuscan Formation has been uplifted to form the south to southwest sloping Sierra Foothills east of Chico. Subsequent streams and other drainages have cut their way into the Tuscan to form deep, steep-sided, narrow canyons separated by equally long, narrow, fingerlike ridges or mesas. The total effect is a subparallel arrangement of canyons and southwestward sloping ridge-crests.

The Site is situated on one of the fingerlike ridges (Coon Ridge) between Butte Creek Canyon to the north and Nance Canyon to the south. Rock exposed at the surface of the Site is mapped by Helley and Harwood (1985) as Unit C (denoted as Ttc) of the Tuscan Formation. Unit C is described as lahars with some interbedded volcanic conglomerate and sandstone locally, separated from overlying units by partially stripped soil horizon. Within the general project area, the lahars are described as 3 to 12 meters thick layers separated from each other by thin layers of volcanic sediments containing abundant casts of wood fragments and prominent cooling fractures. According to Harwood et al. (1981), Unit C is predominantly lahars composed of angular to subrounded volcanic fragments (cobbles and boulders) in a matrix of gray-tan volcanic mudstone in excess of 150 feet in total thickness.

Surface exposures of the lahar are common all over the Site. Areas where hard lahar is exposed at the surface or beneath a thin mantle of soil are referred to by the local contractors as "lava cap." The individual lahar units dip at approximately one to five degrees to the southwest, which also generally conforms to the topography of the Site.

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[1] Helley E.J. and Harwood D.S. (1985), Geologic Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierran Foothills, California, 1:62,500: United states Geological Survey Map MF-1790

[2] Lydon P.A (1968), Geology of Lahars of the Tuscan Formation, Northern California, The Geological Society of America Volume 116

Many of the current and former tree lines visible on aerial photographs generally follow the boundaries between lahar units. (WKA GER, 2021)

Well Construction Report Review

Figure 1 is a map showing the approximate location of several wells in the vicinity of the Site. Well construction reports are available for each of these wells through the California Department of Water Resources. WKA reviewed associated well construction reports for each well shown on the figure and found only two wells, in addition to Tuscan Ridge Well #1 that met the location and approximate depth parameters to suggest they were located on the same ridge as the Site. The reader should be aware that well locations on the older well completion reports are often inaccurate, and field confirmation is advised.

The two wells are identified as WCR 1999-008039 and WCR 1980-005711 with respective depths of 320 and 605 feet. WKA believes the closest production well (probably well 1980-005711) is located approximately 1.1 miles west southwest of existing Tuscan Ridge Well #1 and serves a residential subdivision of approximately 65 homes.

Well Siting Opinion

Following a review of available information, it is WKA's professional opinion that a second well drilled on the eastern 1/3 of the Site would likely provide similar production as existing Well #1 if drilled to a similar depth (740 feet) corrected for surface elevation differences, and similarly designed. Depth of the well is likely more important than placement. It is necessary to penetrate the Tuscan mudflow breccia and access permeable underlying strata. A new production well at Tuscan Ridge is unlikely to impact wells located beyond 1 mile adversely. However, to minimize pumping influences between Tuscan Ridge Wells #1 and #2, it would be advisable to separate them by a minimum of 1,500. This 1,500 foot separation is precausionary only as the demonstrated pumping capacity of Well #1 suggests a very productive aquifer beneath Tuscan Ridge. In addition, Well #2 is proposed as a redundancy for Well #1 such that the two wells will likely not be operating at the same time. Figure 2 shows the location of Well #1 with a 1,500 foot radius shown shaded in orange.

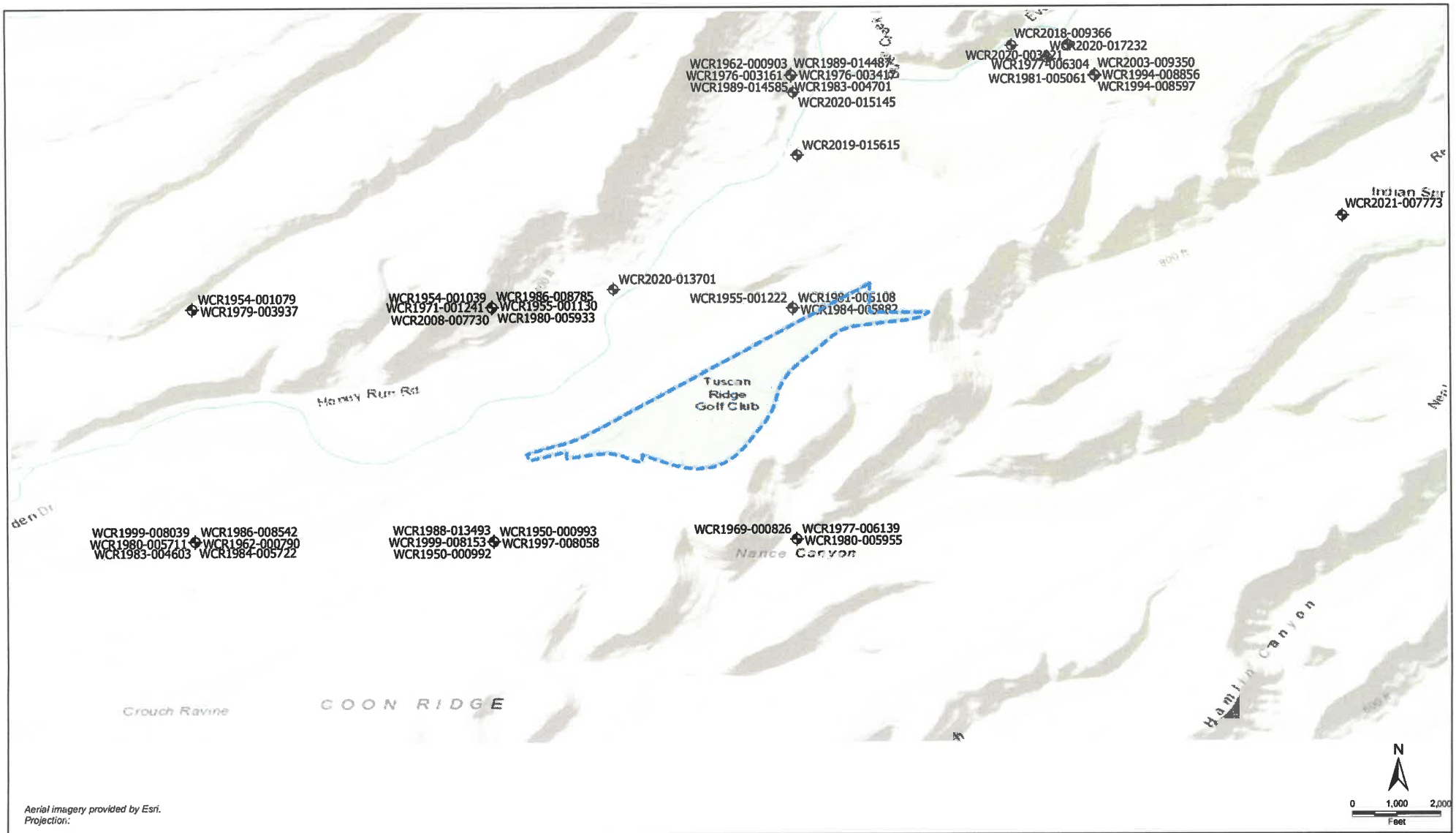
Please do not hesitate to contact us with any questions.

Wallace - Kuhl & Associates

Kurt Balasek, PG, CHG
Senior Hydrogeologist

Attachments:

Figure 1	Well Map
Figure 2	Well Buffer Map



Aerial imagery provided by Esri.
Projection:

WallaceKuhl & Associates — A Universal Engineering Sciences Company

WELL MAP

TUSCAN RIDGE

Butte County, California

FIGURE	1
DRAWN BY	JWR
CHECKED BY	KMB
PROJECT MGR	KMB
DATE	03/2022
4640.2200029.0000	

Well #1
1,500 Foot Buffer
Approximate Site Boundary

N

0 300 600
Feet

Aerial imagery provided by Esri.
Projection: NAD 1983 2011 StatePlane California II FIPS 0402 Ft US

WallaceKuhl & Associates — A Universal Engineering Sciences Company

WELL BUFFER MAP

TUSCAN RIDGE

Butte County, California

FIGURE	2
DRAWN BY	JWR
CHECKED BY	KMB
PROJECT MGR	KMB
DATE	03/2022
4640.2200029.0000	

APPENDIX L

NexGen
Engineering & Consulting LLC

TECHNICAL MEMORANDUM

TO: Tuscan Ridge Associates, LLC

FROM: Ian M. Cole, PE
NexGen Engineering and Consulting LLC

PROJECT: Tuscan Ridge Planned Unit Development, Wastewater Treatment System Capacity Study
Butte County, California

DATE: December 12, 2023

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1. Company Background

With a combined 40+ years of experience, the team at NexGen Engineering & Consulting LLC (NexGen) has extensive expertise in the field of civil and environmental engineering, including the planning, design, and construction of onsite wastewater treatment systems.

While NexGen primarily focuses on wastewater treatment solutions, the company also specializes in land development, soils analysis, stormwater management, entitlements and due diligence, as well as grading and drainage studies. For more information visit www.NexGenEng.com.

2. Introduction and Purpose

Tuscan Ridge Associates, LLC is proposing a Planned Unit Development (PUD) to develop the approximately 163-acre site referred to as Tuscan Ridge. Tuscan Ridge is located on the south side of Skyway, approximately three miles west of the Town of Paradise, one-half mile east of the Bluffs subdivision, and four miles east of the City of Chico. The site is comprised of Assessor Parcel Numbers (APNs) 040-520-104 through -111. It is bound by Skyway to the north, Paradise Rod and Gun Club to the east, and undeveloped parcels to the south and west.

Tuscan Ridge was once occupied by the Tuscan Ridge Golf Club. In 2019 it was transformed into a temporary base camp to provide construction staging and worker housing during the demolition and cleanup efforts after the Paradise Camp Fire. The work included the construction of a small domestic wastewater treatment facility (WWTF) at the southwest end of the site.

The PUD represents a mixed-use community comprised of 165 single-family residential homes; approximately 17.3 acres of commercial development consisting of commercial/retail space, a gas station/convenience store and mini storage facility; a sewage dump station; and approximately 68.7 acres of recreational and open space areas.

While the wastewater generated by the proposed development will not exceed the capacity of the existing WWTF, upgrades are necessary in order to support the new development plan and corresponding changes to the land uses (i.e. wastewater characteristics). This technical memorandum provides an overview of the wastewater treatment system and processes, and an analysis of the estimated wastewater flows generated by the proposed project.

3. Overview of Wastewater Treatment System and Processes

Wastewater Treatment Facility

The Tuscan Ridge WWTF, including the proposed upgrades, is covered under the State Water Resources Control Board (State Water Board) General Waste Discharge Requirements for Domestic Wastewater Treatment Systems, Order WQ 2014-0153-DWQ (General Order). The Waste Discharge Requirements (WDR) permit specifies a discharge limit of 100,000 gallons per day (gpd) and requires treatment of effluent to meet basic secondary treatment levels (including ultraviolet disinfection). The WWTF is designed to treat and dispose of up to an average daily flow of 100,000 gpd.

The proposed WWTF will provide solids separation and anaerobic digestion, aerobic digestion, media filtration, and ultraviolet light (UV) disinfection. This will be accomplished using flow equalization (EQ) tanks, septic tanks, aerobic treatment modules, and UV disinfection units. Treated effluent will be disposed of by evaporation and transpiration via lined evaporative ponds and a drip dispersal system. A site plan showing the WWTF is included as Attachment 1. The treatment process is summarized in more detail below.

The WWTF will utilize microorganisms to treat raw sewage generated by the homes and businesses within the proposed development. The raw sewage will flow through a network of collection pipes throughout the development which discharges into the treatment facility. In the primary treatment phase, flow equalization (EQ) tanks will provide consistent influent flow to downstream processes by retaining high flow fluctuations. Aeration systems within each EQ tank will prevent the raw wastewater from becoming septic and to maintain solids in suspension. Pump systems will then deliver wastewater in timed doses to a screener, where particles too small to be caught by the EQ tanks will be removed. Next, the influent flows into a series of septic tanks that provide digestion of organic matter and separation of floatable matter (e.g., oils and grease) and solids from the wastewater.

The secondary treatment process begins after the septic tanks where influent enters the media filter treatment modules. These modules are specially designed to create a healthy biomat (a microscopic layer created by the waste-products of anaerobic bacterial activity) that operates like a living filter, digesting waste materials as the wastewater passes through. The biomat is also responsible for regulating the rate at which fluid moves through the system. Slowing down the liquid enables the bacteria (both aerobic and anaerobic) the time it needs to digest the waste materials (suspended solids) in the effluent. The end result is a self-sustaining, self-regulating biological ecosystem which is highly effective at purifying effluent. After passing through the modules, the treated influent will flow through an ultraviolet system where harmful bacteria such as E. Coli, giardia, and cryptosporidium are deactivated by ultraviolet light. Then it will flow into pump tanks before finally being discharged via underground pressure distribution piping to either the lined evaporative ponds or a drip dispersal system.
The lined evaporative ponds will be located at the south and east sides of the PUD. Effluent and accumulated direct precipitation into the ponds will be disposed of by evaporation, enhanced using

The lined evaporative ponds will be located at the south and east sides of the PUD. Effluent and accumulated direct precipitation into the ponds will be disposed of by evaporation, enhanced using floating fountain type aerators, and/or sprinklers spraying from the pond perimeters towards the pond center.

The drip dispersal system will be located within the open space areas adjacent to Skyway. The system will be comprised of special drip tubing that discharges the treated wastewater in small, precise doses. The tubing will be placed at or slightly below the ground surface to make use of the most biologically active soil zone for distribution, nutrient uptake, and evapotranspiration of the wastewater. The drip dispersal system will be located at a distance greater than 50 feet from the existing drainage course which runs through the open space areas and nearest property line; therefore, the system will meet the setback requirements specified in Table 3 of the General Order. In regards to potential impacts to groundwater, the water discharged to the ground surface is not expected to infiltrate the underlying bedrock. If the treated wastewater does reach groundwater levels, it will have already been treated to State standards for discharge to groundwater.

It is anticipated that the drip dispersal system will be utilized during the dry weather season (between April and October), particularly the summer months. During the wet weather season or periods of inclement weather, the treated wastewater will be discharged to the evaporative ponds.

To offset the areas impacted by the evaporative ponds, an equivalent sized pond mitigation area has been defined at the eastern end of the property. This mitigation area will remain undisturbed. A site plan showing the WWTF is included as Attachment 1.

Water Balance Analysis

A water balance analysis was performed to assess the storage capacities of the ponds for the processed wastewater and the ability of the drip dispersal system to contain the discharge (outflow) of the wastewater without discharging from the land application area. The analysis was submitted to the RWQCB in response to their request for more information showing that the WWTF has the capacity to serve the proposed development. Below is a summary of the comments received from the RWQCB on the water balance analysis to date:

- The seasonal precipitation used in the pond sizing water balance calculations shall be based on the 100-year return annual total precipitation distributed monthly in accordance with average precipitation values. The calculations shall demonstrate adequate capacity to maintain two feet of freeboard in the ponds.
- Provide justification of the use of a 1.5 multiplier given the type and size of evaporators proposed.
- Use precipitation data representative of the site location.
- Provide water balance calculation that utilize multiple years of average rainfall in addition to one year of 100-year rainfall to demonstrate adequacy of wastewater storage and disposal system.

The water balance analysis was updated to address the above comments and resubmitted to the RWQCB. It demonstrates that over the course of ten calendar years, the WWTF has the capacity to capture and distribute the treated wastewater generated onsite. Once the analysis is approved, it is anticipated that the RWQCB will issue the Notice of Applicability (NOA) for regulatory coverage under

the General Order. The contact information for the RWQCB's project manager assigned to this project is as follows:

David Durette, P.E.
Senior Water Resource Control Engineer
Central Valley Regional Water Board
Office: (530) 224-3208
Email: david.durette@waterboards.ca.gov
Project Reference No: WDID 5A04NC00068

Sewage Dump Station

The sewage dump station will be constructed within the northeastern commercial area of the project. The dump station will receive domestic wastes and domestic wastewater primarily from the holding tanks of septage pumper trucks originating from Paradise, California and the greater Butte County area subject to the daily maximum limit of 10,000 gpd, as set forth below. However, in the event that there is available capacity, the system may receive wastewater from travel trailers, recreational vehicles, or other similar mobile vehicles.

The sewage dump station will include a series of septic and clarification tanks that will allow for both septage detention and liquid waste discharge to the treatment system. The tanks will be sized as follows. A 40,000-gallon solids holding tank will be installed to accept the raw sewage. It will then digest the solid waste, fill and overflow through commercial effluent filters into a 20,000-gallon clarification tank that will eventually allow the pretreated waste to flow by gravity towards the treatment plant. These tanks are sized to accept peak flow while providing a retention time of three to four days for separation of solids from the liquid. The long retention time will minimize cleaning frequency and provide the sewage more time to digest and thus reduce the load on the treatment system.

Solid levels will be monitored monthly, while wastewater will be monitored in real time via telemetry and an alarm system. The system operator will be notified via the real-time monitoring system and when solid levels reach seventy-five percent (75%) of capacity and tanks will be pumped when solid levels reach ninety percent (90%) solid capacity. Once the solid levels reach 90%, the system shall not accept any further wastewater until the tanks are pumped. The septage wastes (solids) that are pumped from the tanks will be hauled away and disposed of at a local sewage treatment facility. The nearest local sewage treatment facility is in Lincoln, California.

Operations and Maintenance

Although the sewage dump station's basic function is straightforward, operating a successful station involves properly executing many different tasks. Some tasks are routine and easily understood, while others occur infrequently and might be difficult to conduct properly without step-by-step directions. To help ensure proper operations, prior to commencement of operations, the dump station shall have a written Operations and Maintenance Plan (OMP), which will be reviewed by the County, that includes the following elements:

- Facility operating schedule, including days of the week, hours each day, and holidays, including conditions upon which wastewater from travel trailers, recreational vehicles and similar mobile vehicles will be accepted at the facility.

- Staffing plan that lists duties by job title, minimum staffing levels, and typical work schedules.
- Description of acceptable and unacceptable wastes, and procedures for diverting restricted waste before and after unloading.
- Operating methods for each component of the facility, including waste-screening methods, onsite and offsite litter cleanup, and wastewater collection system operations.
- Description of maintenance procedures for each component, including the building, mobile equipment, utilities, and landscaping.
- Employee training.
- Safety rules and regulations.
- Recordkeeping procedures.
- Contingency plans in the event of transfer vehicle or equipment failure, or if the disposal site is unavailable.

4. Estimated Wastewater Flows

Wastewater will be generated from the residential and commercial land uses proposed at the Tuscan Ridge development, including the single-family residences, office and retail spaces, and sewage dump station. The wastewater will consist of domestic waste generated from flush toilets, sinks, dishwashers, washing machines, bathtubs and showers.

Residential

Wastewater design flows for each residential connection or equivalent dwelling unit (EDU) are estimated to be either 350 gpd/EDU or 450 gpd/EDU depending on whether the parcel includes an accessory dwelling unit (ADU). 350 gpd/EDU is based on an average bedroom count of 3.5, while 450 gpd/EDU includes an additional bedroom. The total number of bedrooms is then multiplied by an assumed unit flow factor of 100 gpd/bedroom. The 100 gpd/bedroom figure is based on the 2002 United States Environmental Protection Agency (EPA) Onsite Wastewater Treatment System Manual, taking into account the use of water conserving plumbing fixtures and the fact that this is a large community system and not an individual system.

There will be a total of 165 residential parcels. It is assumed that 82 (just less than 50 percent) of these parcels will also contain an ADU. The total estimated wastewater flow for the 83 residential parcels without ADU's and the 82 parcels with ADU's is 29,050 gpd and 36,900 gpd, respectively. Therefore, the total wastewater flow from all the residential parcels is approximately 65,950 gpd.

Commercial

The assumed unit flow factor for the commercial area is 1,200 gpd/acre. This is based on the Vallecitos Water District 2018 Water, Wastewater, and Recycled Water Master Plan dated October 4, 2018, and prepared by Black and Veatch.

The project proposes to develop 17.3 acres for commercial uses. This equates to a total estimated wastewater flow of 20,760 gpd.

It should be noted that water usage and wastewater flow are not correlated given that potable water will be used for irrigation and other outside uses that does not end up as part of the wastewater flow. The percentage can range widely from 50 percent to more than 90 percent, depending on such things as the amount of irrigation uses and the time of year.

Gas Station/Convenience Store

The gas station/convenience store is anticipated to generate 500 gpd/service bay. This unit factor was obtained from the Butte County On-Site Wastewater Systems Ordinance dated March 16, 2010.

Assuming six service bays, the resulting wastewater flow from the gas station/convenience store is estimated to be 3,000 gpd.

Mini Storage

The mini storage facility will contain a one-bedroom managers unit. Based on the 100 gpd/bedroom unit flow factor identified previously, the mini storage facility will generate approximate 100 gpd of wastewater.

Sewage Dump Station

The recommended wastewater unit flow factor for the sewage dump station is 700 gpd/vehicle. This is based on the lowest capacity septage pumper of 1,000-gallons and applying a 0.7 reduction factor. The reduction factor assumes that 30 percent of the volume is solid matter that will remain in the dump station septic tank, while the remaining 70 percent is wastewater that will pass through to the WWTF.

It is anticipated that an average of 5 to 10 vehicles will use the sewage dump station daily. The dump station will be primarily utilized, and priority will be given to septage pumpers. As such and given that septage pumpers dump substantially more sewage than an RV, it is conservatively assumed that all 5 to 10 of the vehicles using the dump station each day will be septage pumpers. Therefore, the estimated wastewater flow for the sewage dump station is 3,500 gpd to 7,000 gpd. It is important to note that the total amount of daily discharges at the sewage dump station will be subject to the daily maximum limit of the wastewater treatment system.

As itemized in Table 1 below, the total wastewater flow for the project is estimated to be 96,810 gpd.

Table 1. Wastewater Flow Estimates

Facility	Factor	Flow Rate	Estimated Flow (gpd)
Residential (Primary Dwelling)	165 units	350 gpd/unit[1]	57,750
Residential (Accessory dwelling)	82 units	100 gpd/unit[1]	8,200
Commercial	17.3 acres	1,200 gpd/acres[2]	20,760
Gas Station/Convenience Store	6 bays	500 gpd/bay[3]	3,000
Mini Storage	1 unit	100 gpd/unit[1]	100 gpd
Sanitary Sewage Disposal Station	10 vehicles	700 gpd/vehicle[4]	7,000
		Total Flow	96,810

[1] Based on EPA Onsite Wastewater Treatment System Manual.

[2] Per Vallecitos Water District 2018 Water, Wastewater, and Recycled Water Master Plan.

[3] Per Butte County On-Site Wastewater Systems Ordinance.

5. References

County of Butte, March 16, 2010. On-Site Wastewater Systems Ordinance – Bute County Code Chapter 19. Available at: https://www.buttecounty.net/Portals/21/Env_Health/Wastewater/Ordinance.pdf

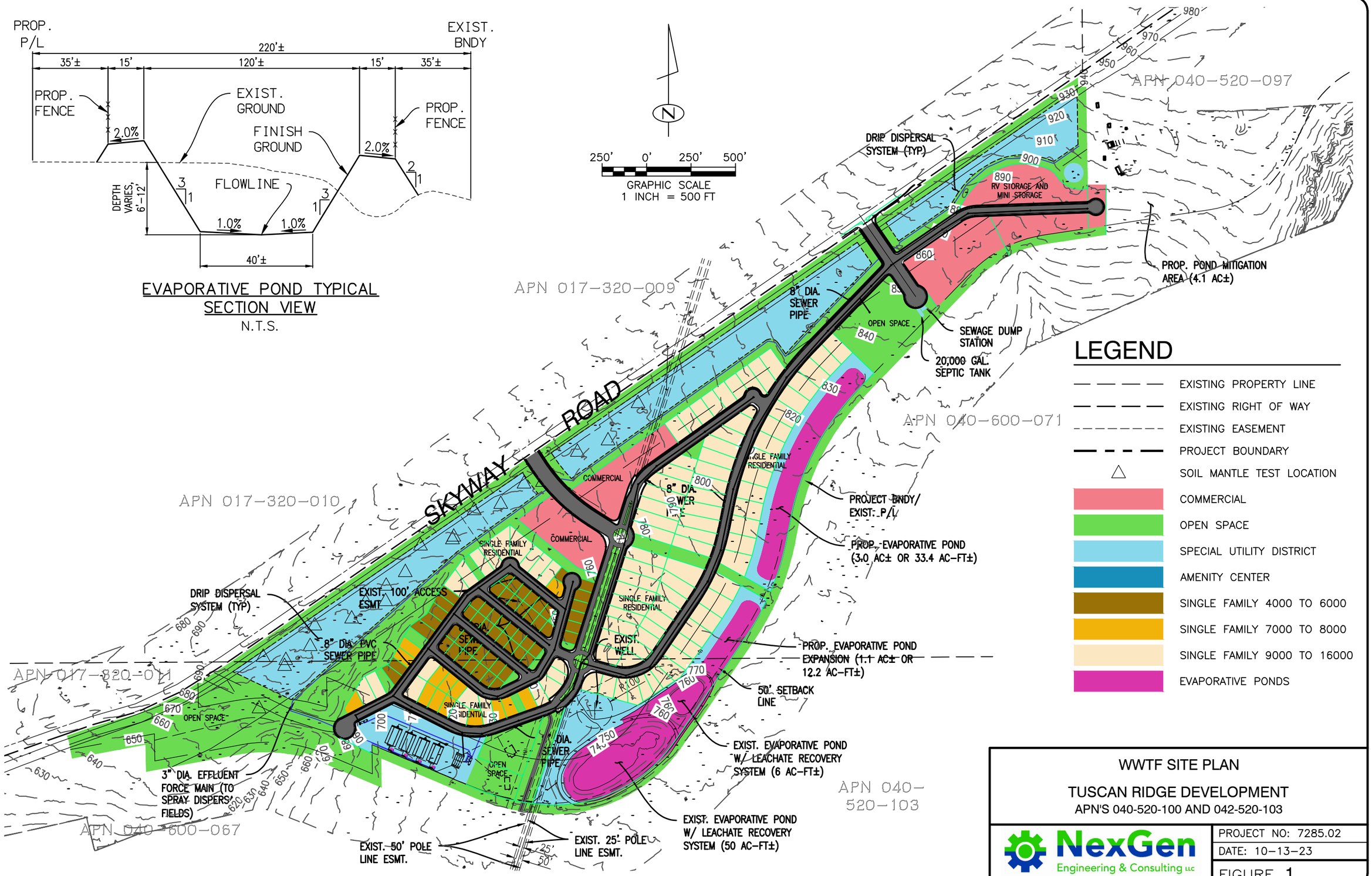
Vallecitos Water District, 2018. 2018 Water, Wastewater, and Recycled Water Master Plan. Available at: https://www.vwd.org/home/showpublisheddocument/10656/636752049380230000

US EPA, 2002, Onsite Wastewater Treatment Systems Manual, EPA/625/R-00/008.

Attachment 1 – WWTF Site Plan

EVAPORATIVE POND TYPICAL SECTION VIEW

N.T.S.



WWTF SITE PLAN

TUSCAN RIDGE DEVELOPMENT

APN'S 040-520-100 AND 042-520-103

NexGen Engineering & Consulting LLC
1043 NICHOLS DR SUITE 200 • ROCKLIN, CA 95765 • 866.269.0999

PROJECT NO: 7285.02

DATE: 10-13-23

FIGURE 1

Attachment 2 – Water Balance Calculations

Table 1 - Water Balance Calculations
TUSCAN RIDGE
UES Job number 4640.2300030.0000

Water Balance (Gallons)	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September
Discharge (per month)	3,100,000	3,000,000	3,100,000	3,100,000	2,800,000	3,100,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	2,800,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,000,000	3,000,000
Direct Rainfall	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585
Evap	(1,635,065)	(766,207)	(476,588)	(461,924)	(780,872)	(1,400,436)	(2,063,994)	(3,035,501)	(3,706,391)	(4,208,642)	(3,559,748)	(2,698,223)	(1,635,065)	(766,207)	(476,588)	(461,924)	(780,872)	(1,400,436)	(2,063,994)	(3,035,501)	(3,706,391)	(4,208,642)	(3,559,748)	(2,698,223)
Effluent	(1,834,661)	(641,828)	(593,389)	(575,224)	(974,853)	(1,301,822)	(2,367,499)	(3,905,465)	(3,790,421)	(4,626,009)	(4,250,600)	(3,190,977)	(1,834,661)	(641,828)	(593,389)	(575,224)	(974,853)	(1,301,822)	(2,367,499)	(3,905,465)	(3,790,421)	(4,626,009)	(4,250,600)	(3,190,977)
Total Net Volume	129,332	2,639,624	3,569,343	3,718,589	2,471,753	1,613,312	(760,535)	(3,643,304)	(4,368,713)	(5,824,527)	(4,775,500)	(2,760,615)	129,332	2,639,624	3,569,343	3,718,589	2,471,753	1,613,312	(760,535)	(3,543,304)	(4,368,713)	(5,724,527)	(4,675,500)	(2,760,615)
Volume Accumulation	1,908,595	4,548,219	8,117,562	11,836,151	14,307,904	15,921,215	15,160,680	11,517,376	7,148,663	1,324,136	-	-	129,332	2,768,956	6,338,299	10,056,888	12,528,641	14,141,952	13,381,417	9,838,113	5,469,400	-	-	-
Percent of Capacity	6%	14%	25%	36%	44%	49%	46%	35%	22%	4%	0%	0%	0%	8%	19%	31%	38%	43%	41%	30%	17%	0%	0%	0%

Wastewater Discharge to ponds (Gallons)	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September
Days	31	30	31	31	28	31	30	30	30	30	30	30	31	30	31	31	28	31	30	31	30	31	31	30
Monthy Discharge	3100000	3000000	3100000	3100000	2800000	3100000	3000000	3000000	3000000	3000000	3000000	3000000	3100000	3000000	3100000	3100000	2800000	3100000	3000000	3100000	3000000	3100000	3100000	3000000
Modified Daily Discharge	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000

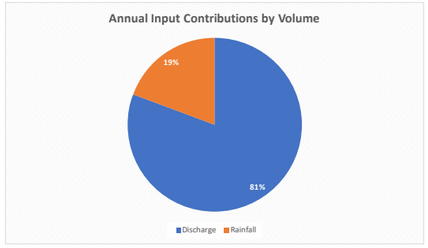
Rainfall (Gallons)	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September
Rainfall per month (Inches)	2.0508	4.3052	6.3256	6.804	5.866	4.9952	2.7572	1.2232	0.5264	0.0416	0.1432	0.5284	2.0508	4.3052	6.3256	6.804	5.866	4.9952	2.7572	1.2232	0.5264	0.0416	0.1432	0.5284
Rainfall per month (feet)	0.17	0.36	0.53	0.57	0.49	0.42	0.23	0.10	0.04	0.00	0.01	0.04	0.17	0.36	0.53	0.57	0.49	0.42	0.23	0.10	0.04	0.00	0.01	0.04
Rainfall to Ponds (ft^3)	36,478	76,577	112,513	121,023	104,339	88,850	49,042	21,757	9,363	740	2,547	9,399	36,478	76,577	112,513	121,023	104,339	88,850	49,042	21,757	9,363	740	2,547	9,399
Rainfall to Existing Ponds (Gal)	272,889	572,869	841,713	905,371	780,557	664,684	366,886	162,765	70,045	5,535	19,055	70,311	272,889	572,869	841,713	905,371	780,557	664,684	366,886	162,765	70,045	5,535	19,055	70,311
Rainfall to Additional Pond (Gal Approx.)	226,168	474,791	697,606	750,366	646,920	550,886	304,072	134,898	58,053	4,588	15,793	58,274	226,168	474,791	697,606	750,366	646,920	550,886	304,072	134,898	58,053	4,588	15,793	58,274
New Pond Rainfall	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585

Evap	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September
Pan Evap (Inches)	4.46	2.09	1.3	1.26	2.13	3.82	5.63	8.28	10.11	11.48	9.71	7.36	4.46	2.09	1.3	1.26	2.13	3.82	5.63	8.28	10.11	11.48	9.71	7.36
Pan Evap (Feet)	0.37	0.17	0.11	0.11	0.18	0.32	0.47	0.69	0.84	0.96	0.81	0.61	0.37	0.17	0.11	0.11	0.18	0.32	0.47	0.69	0.84	0.96	0.81	0.61
Pan Evap (Feet ^{3})	145,708	68,280	42,471	41,164	69,587	124,799	183,932	270,508	330,294	375,052	317,226	240,451	145,708	68,280	42,471	41,164	69,587	124,799	183,932	270,508	330,294	375,052	317,226	240,451
Pan Evap (Gallons)	1,090,043	510,805	317,726	307,949	520,581	933,624	1,375,996	2,023,667	2,470,927	2,805,761	2,373,165	1,798,815	1,090,043	510,805	317,726	307,949	520,581	933,624	1,375,996	2,023,667	2,470,927	2,805,761	2,373,165	1,798,815
Evap with Aerator (Gal)	1,635,065	766,207	476,588	461,924	780,872	1,400,436	2,063,994	3,035,501	3,706,391	4,208,642	3,559,748	2,698,223	1,635,065	766,207	476,588	461,924	780,872	1,400,436	2,063,994	3,035,501	3,706,391	4,208,642	3,559,748	2,698,223

Evapotranspiration (Eto)	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September
Eto Pasture/Misc. Grassess (Inches)	3.03	1.06	0.98	0.95	1.61	2.15	3.91	6.45	6.26	7.64	7.02	5.27	3.03	1.06	0.98	0.95	1.61	2.15	3.91	6.45	6.26	7.64	7.02	5.27
Eto Pasture/Misc. Grassess (feet)	0.2525	0.088333333	0.081666667	0.079166667	0.134166667	0.179166667	0.325833333	0.5375	0.521666667	0.636666667	0.585	0.439166667	0.2525	0.088333333	0.081666667	0.079166667	0.134166667	0.179166667	0.325833333	0.5375	0.521666667	0.636666667	0.585	0.439166667
Eto Pasture/Misc. Grassess (Inches)	245,275	85,806	79,330	76,902	130,328	174,040	316,511	522,121	506,741	618,450	568,262	426,601	245,275	85,806	79,330	76,902	130,328	174,040	316,511	522,121	506,741	618,450	568,262	426,601
Eto Pasture/Misc. Grassess (Gal)	1,834,661	641,828	593,389	575,224	974,853	1,301,822	2,367,499	3,905,465	3,790,421	4,626,009	4,250,600	3,190,977	1,834,661	641,828	593,389	575,224	974,853	1,301,822	2,367,499	3,905,465	3,790,421	4,626,009	4,250,600	3,190,977

Constants	
Daily Discharge	100,000 GPD
Pond Area	4.90 Ac.
Pond Area	213,444 Ft^2
Starting Pond Volume	10%
Starting Pond Volume	1,779,263 Gal.
Dhuhe uip xoaicjhu	1.50
Storage Capacity (Ac-Ft)	54.60 AcFt
Storage Capacity (Ft^3)	2,378,376 Ft^3
Operational Storage Capacity (Gal)	17,792,631 Gal.
Max Storage Capacity (Ac-Ft)	68.40 AcFt
Max Storage Capacity (Ft^3)	2,979,504 Ft^3
Max Storage Capacity (Gal)	22,289,669 Gal.
Effluent Field	22.30 Ac.
Effluent Field	971,388 Ft^2
Spray Dispersal	No
Mitigation Adjustment	100%
Mitigation Amount	0 GPD
Extra Pond Area	4.10 Ac.
Extra Pond Area	178596 Ft^2
Extra Pond Volume	14,887,712 Gal.

Annual Input Summary	
Discharge	36,200,000 Gal.
Rainfall	8,655,095 Gal.



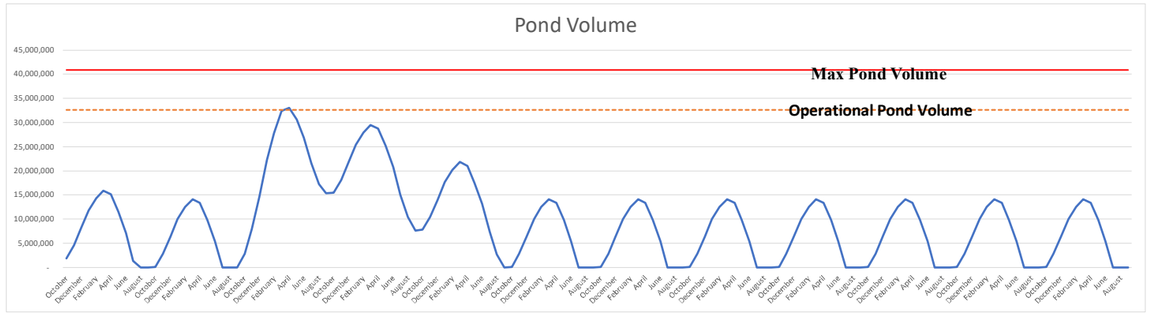


Table 1 - Water Balance Calculations
TUSCAN RIDGE
UES Job number 4640.2300030.0000

October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
3,100,000	3,000,000	3,100,000	3,100,000	2,800,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	2,800,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000
3,200,118	3,532,336	4,692,909	5,470,162	4,546,317	4,195,118	2,127,539	1,404,602	716,415	377,870	384,684	1,044,545	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319
(1,635,065)	(766,207)	(476,588)	(461,924)	(780,872)	(1,400,436)	(2,063,994)	(3,035,501)	(3,706,391)	(4,208,642)	(3,559,748)	(2,698,223)	(1,635,065)	(766,207)	(476,588)	(461,924)	(780,872)	(1,400,436)	(2,063,994)	(3,035,501)	(3,706,391)	(4,208,642)	(3,559,748)	(2,698,223)	(1,635,065)	(766,207)	(476,588)
(1,834,661)	(641,828)	(593,389)	(575,224)	(974,853)	(1,301,822)	(2,367,499)	(3,905,465)	(3,790,421)	(4,626,009)	(4,250,600)	(3,190,977)	(1,834,661)	(641,828)	(593,389)	(575,224)	(974,853)	(1,301,822)	(2,367,499)	(3,905,465)	(3,790,421)	(4,626,009)	(4,250,600)	(3,190,977)	(1,834,661)	(641,828)	(593,389)
2,830,393	5,124,300	6,722,932	7,533,014	5,590,593	4,592,859	696,046	(2,436,364)	(3,780,396)	(5,356,780)	(4,325,664)	(1,844,655)	129,332	2,639,624	3,569,343	3,718,589	2,471,753	1,613,312	(760,535)	(3,543,304)	(4,368,713)	(5,724,527)	(4,675,500)	(2,760,615)	129,332	2,639,624	3,569,343
2,830,393	7,954,693	14,677,626	22,210,639	27,801,232	32,394,091	33,090,137	30,653,773	26,873,377	21,516,597	17,190,933	15,346,277	15,475,610	18,115,234	21,684,576	25,403,166	27,874,918	29,488,230	28,727,694	25,184,391	20,815,677	15,091,150	10,415,650	7,655,034	7,784,367	10,423,991	13,993,333
9%	24%	45%	68%	85%	99%	101%	94%	82%	66%	53%	47%	47%	55%	66%	78%	85%	90%	88%	77%	64%	46%	32%	23%	24%	32%	43%

October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
31	30	31	31	28	31	30	31	30	31	31	30	31	30	31	31	28	31	30	31	30	31	31	30	31	30	31
3100000	3000000	3100000	3100000	2800000	3100000	3000000	3100000	3000000	3100000	3100000	3000000	3100000	3000000	3100000	3100000	2800000	3100000	3000000	3100000	3000000	3100000	3100000	3000000	3100000	3000000	3100000
100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000

October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
13.1504	14.5156	19.2848	22.4788	18.6824	17.2392	8.7428	5.772	2.944	1.5528	1.5808	4.2924	2.0508	4.3052	6.3256	6.804	5.866	4.9952	2.7572	1.2232	0.5264	0.0416	0.1432	0.5284	2.0508	4.3052	6.3256
1.10	1.21	1.61	1.87	1.56	1.44	0.73	0.48	0.25	0.13	0.13	0.36	0.17	0.36	0.53	0.57	0.49	0.42	0.23	0.10	0.04	0.00	0.01	0.04	0.17	0.36	0.53
233,906	258,189	343,019	399,830	332,304	306,634	155,508	102,667	52,365	27,620	28,118	76,349	36,478	76,577	112,513	121,023	104,339	88,850	49,042	21,757	9,363	740	2,547	9,399	36,478	76,577	112,513
1,749,852	1,931,512	2,566,123	2,991,131	2,485,965	2,293,926	1,163,357	768,049	391,742	206,623	210,348	571,166	272,889	572,869	841,713	905,371	780,557	664,684	366,886	162,765	70,045	5,535	19,055	70,311	272,889	572,869	841,713
1,450,266	1,600,824	2,126,786	2,479,030	2,060,352	1,901,191	964,182	636,554	324,673	171,247	174,335	473,379	226,168	474,791	697,606	750,366	646,920	550,886	304,072	134,898	58,053	4,588	15,793	58,274	226,168	474,791	697,606
3,200,118	3,532,336	4,692,909	5,470,162	4,546,317	4,195,118	2,127,539	1,404,602	716,415	377,870	384,684	1,044,545	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319

October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
4.46	2.09	1.3	1.26	2.13	3.82	5.63	8.28	10.11	11.48	9.71	7.36	4.46	2.09	1.3	1.26	2.13	3.82	5.63	8.28	10.11	11.48	9.71	7.36	4.46	2.09	1.3
0.37	0.17	0.11	0.11	0.18	0.32	0.47	0.69	0.84	0.96	0.81	0.61	0.37	0.17	0.11	0.11	0.18	0.32	0.47	0.69	0.84	0.96	0.81	0.61	0.37	0.17	0.11
145,708	68,280	42,471	41,164	69,587	124,799	183,932	270,508	330,294	375,052	317,226	240,451	145,708	68,280	42,471	41,164	69,587	124,799	183,932	270,508	330,294	375,052	317,226	240,451	145,708	68,280	42,471
1,090,043	510,805	317,726	307,949	520,581	933,624	1,375,996	2,023,667	2,470,927	2,805,761	2,373,165	1,798,815	1,090,043	510,805	317,726	307,949	520,581	933,624	1,375,996	2,023,667	2,470,927	2,805,761	2,373,165	1,798,815	1,090,043	510,805	317,726
1,635,065	766,207	476,588	461,924	780,872	1,400,436	2,063,994	3,035,501	3,706,391	4,208,642	3,559,748	2,698,223	1,635,065	766,207	476,588	461,924	780,872	1,400,436	2,063,994	3,035,501	3,706,391	4,208,642	3,559,748	2,698,223	1,635,065	766,207	476,588

October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
3.03	1.06	0.98	0.95	1.61	2.15	3.91	6.45	6.26	7.64	7.02	5.27	3.03	1.06	0.98	0.95	1.61	2.15	3.91	6.45	6.26	7.64	7.02	5.27	3.03	1.06	0.98
0.2525	0.088333333	0.081666667	0.079166667	0.134166667	0.179166667	0.325833333	0.5375	0.521666667	0.636666667	0.585	0.439166667	0.2525	0.088333333	0.081666667	0.079166667	0.134166667	0.179166667	0.325833333	0.5375	0.521666667	0.636666667	0.585	0.439166667	0.2525	0.088333333	0.081666667
245,275	85,806	79,330	76,902	130,328	174,040	316,511	522,121	506,741	618,450	568,262	426,601	245,275	85,806	79,330	76,902	130,328	174,040	316,511	522,121	506,741	618,450	568,262	426,601	245,275	85,806	79,330
1,834,661	641,828	593,389	575,224	974,853	1,301,822	2,367,499	3,905,465	3,790,421	4,626,009	4,250,600	3,190,977	1,834,661	641,828	593,389	575,224	974,853	1,301,822	2,367,499	3,905,465	3,790,421	4,626,009	4,250,600	3,190,977	1,834,661	641,828	593,389

Table 1 - Water Balance Calculations
TUSCAN RIDGE
UES Job number 4640.2300030.0000

January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March
3,100,000	2,800,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	2,800,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	2,800,000	3,100,000
1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570
(461,924)	(780,872)	(1,400,436)	(2,063,994)	(3,035,501)	(3,706,391)	(4,208,642)	(3,559,748)	(2,698,223)	(1,635,065)	(766,207)	(476,588)	(461,924)	(780,872)	(1,400,436)	(2,063,994)	(3,035,501)	(3,706,391)	(4,208,642)	(3,559,748)	(2,698,223)	(1,635,065)	(766,207)	(476,588)	(461,924)	(780,872)	(1,400,436)
(575,224)	(974,853)	(1,301,822)	(2,367,499)	(3,905,465)	(3,790,421)	(4,626,009)	(4,250,600)	(3,190,977)	(1,834,661)	(641,828)	(593,389)	(575,224)	(974,853)	(1,301,822)	(2,367,499)	(3,905,465)	(3,790,421)	(4,626,009)	(4,250,600)	(3,190,977)	(1,834,661)	(641,828)	(593,389)	(575,224)	(974,853)	(1,301,822)
3,718,589	2,471,753	1,613,312	(760,535)	(3,543,304)	(4,368,713)	(5,724,527)	(4,675,500)	(2,760,615)	129,332	2,639,624	3,569,343	3,718,589	2,471,753	1,613,312	(760,535)	(3,543,304)	(4,368,713)	(5,724,527)	(4,675,500)	(2,760,615)	129,332	2,639,624	3,569,343	3,718,589	2,471,753	1,613,312
17,711,923	20,183,675	21,796,987	21,036,451	17,493,148	13,124,434	7,399,907	2,724,407	-	129,332	2,768,956	6,338,299	10,056,888	12,528,641	14,141,952	13,381,417	9,838,113	5,469,400	-	-	-	129,332	2,768,956	6,338,299	10,056,888	12,528,641	14,141,952
54%	62%	67%	64%	54%	40%	23%	8%	0%	0%	8%	19%	31%	38%	43%	41%	30%	17%	0%	0%	0%	0%	8%	19%	31%	38%	43%

January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March
31	28	31	30	31	30	31	31	30	31	30	31	31	28	31	30	31	30	31	31	30	31	30	31	31	28	31
3100000	2800000	3100000	3000000	3100000	3000000	3100000	3100000	3000000	3100000	3000000	3100000	3100000	2800000	3100000	3000000	3100000	3000000	3100000	3100000	3000000	3100000	3000000	3100000	3100000	2800000	3100000
100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000

January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March
6.804	5.866	4.9952	2.7572	1.2232	0.5264	0.0416	0.1432	0.5284	2.0508	4.3052	6.3256	6.804	5.866	4.9952	2.7572	1.2232	0.5264	0.0416	0.1432	0.5284	2.0508	4.3052	6.3256	6.804	5.866	4.9952
0.57	0.49	0.42	0.23	0.10	0.04	0.00	0.01	0.04	0.17	0.36	0.53	0.57	0.49	0.42	0.23	0.10	0.04	0.00	0.01	0.04	0.17	0.36	0.53	0.57	0.49	0.42
121,023	104,339	88,850	49,042	21,757	9,363	740	2,547	9,399	36,478	76,577	112,513	121,023	104,339	88,850	49,042	21,757	9,363	740	2,547	9,399	36,478	76,577	112,513	121,023	104,339	88,850
905,371	780,557	664,684	366,886	162,765	70,045	5,535	19,055	70,311	272,889	572,869	841,713	905,371	780,557	664,684	366,886	162,765	70,045	5,535	19,055	70,311	272,889	572,869	841,713	905,371	780,557	664,684
750,366	646,920	550,886	304,072	134,898	58,053	4,588	15,793	58,274	226,168	474,791	697,606	750,366	646,920	550,886	304,072	134,898	58,053	4,588	15,793	58,274	226,168	474,791	697,606	750,366	646,920	550,886
1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570

January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March
1.26	2.13	3.82	5.63	8.28	10.11	11.48	9.71	7.36	4.46	2.09	1.3	1.26	2.13	3.82	5.63	8.28	10.11	11.48	9.71	7.36	4.46	2.09	1.3	1.26	2.13	3.82
0.11	0.18	0.32	0.47	0.69	0.84	0.96	0.81	0.61	0.37	0.17	0.11	0.11	0.18	0.32	0.47	0.69	0.84	0.96	0.81	0.61	0.37	0.17	0.11	0.11	0.18	0.32
41,164	69,587	124,799	183,932	270,508	330,294	375,052	317,226	240,451	145,708	68,280	42,471	41,164	69,587	124,799	183,932	270,508	330,294	375,052	317,226	240,451	145,708	68,280	42,471	41,164	69,587	124,799
307,949	520,581	933,624	1,375,996	2,023,667	2,470,927	2,805,761	2,373,165	1,798,815	1,090,043	510,805	317,726	307,949	520,581	933,624	1,375,996	2,023,667	2,470,927	2,805,761	2,373,165	1,798,815	1,090,043	510,805	317,726	307,949	520,581	933,624
461,924	780,872	1,400,436	2,063,994	3,035,501	3,706,391	4,208,642	3,559,748	2,698,223	1,635,065	766,207	476,588	461,924	780,872	1,400,436	2,063,994	3,035,501	3,706,391	4,208,642	3,559,748	2,698,223	1,635,065	766,207	476,588	461,924	780,872	1,400,436

January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March
0.95	1.61	2.15	3.91	6.45	6.26	7.64	7.02	5.27	3.03	1.06	0.98	0.95	1.61	2.15	3.91	6.45	6.26	7.64	7.02	5.27	3.03	1.06	0.98	0.95	1.61	2.15
0.079166667	0.134166667	0.179166667	0.325833333	0.5375	0.521666667	0.636666667	0.585	0.439166667	0.2525	0.088333333	0.081666667	0.079166667	0.134166667	0.179166667	0.325833333	0.5375	0.521666667	0.636666667	0.585	0.439166667	0.2525	0.088333333	0.081666667	0.079166667	0.134166667	0.179166667
76,902	130,328	174,040	316,511	522,121	506,741	618,450	568,262	426,601	245,275	85,806	79,330	76,902	130,328	174,040	316,511	522,121	506,741	618,450	568,262	426,601	245,275	85,806	79,330	76,902	130,328	174,040
575,224	974,853	1,301,822	2,367,499	3,905,465	3,790,421	4,626,009	4,250,600	3,190,977	1,834,661	641,828	593,389	575,224	974,853	1,301,822	2,367,499	3,905,465	3,790,421	4,626,009	4,250,600	3,190,977	1,834,661	641,828	593,389	575,224	974,853	1,301,822

Table 1 - Water Balance Calculations
TUSCAN RIDGE
UES Job number 4640.2300030.0000

April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	2,800,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	2,800,000	3,100,000	3,000,000	3,100,000	3,000,000
670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098
(2,063,994)	(3,035,501)	(3,706,391)	(4,208,642)	(3,559,748)	(2,698,223)	(1,635,065)	(766,207)	(476,588)	(461,924)	(780,872)	(1,400,436)	(2,063,994)	(3,035,501)	(3,706,391)	(4,208,642)	(3,559,748)	(2,698,223)	(1,635,065)	(766,207)	(476,588)	(461,924)	(780,872)	(1,400,436)	(2,063,994)	(3,035,501)	(3,706,391)
(2,367,499)	(3,905,465)	(3,790,421)	(4,626,009)	(4,250,600)	(3,190,977)	(1,834,661)	(641,828)	(593,389)	(575,224)	(974,853)	(1,301,822)	(2,367,499)	(3,905,465)	(3,790,421)	(4,626,009)	(4,250,600)	(3,190,977)	(1,834,661)	(641,828)	(593,389)	(575,224)	(974,853)	(1,301,822)	(2,367,499)	(3,905,465)	(3,790,421)
(760,535)	(3,543,304)	(4,368,713)	(5,724,527)	(4,675,500)	(2,760,615)	129,332	2,639,624	3,569,343	3,718,589	2,471,753	1,613,312	(760,535)	(3,543,304)	(4,368,713)	(5,724,527)	(4,675,500)	(2,760,615)	129,332	2,639,624	3,569,343	3,718,589	2,471,753	1,613,312	(760,535)	(3,543,304)	(4,368,713)
13,381,417	9,838,113	5,469,400	-	-	-	129,332	2,768,956	6,338,299	10,056,888	12,528,641	14,141,952	13,381,417	9,838,113	5,469,400	-	-	-	129,332	2,768,956	6,338,299	10,056,888	12,528,641	14,141,952	13,381,417	9,838,113	5,469,400
41%	30%	17%	0%	0%	0%	0%	8%	19%	31%	38%	43%	41%	30%	17%	0%	0%	0%	0%	8%	19%	31%	38%	43%	41%	30%	17%

April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
30	31	30	31	31	30	31	30	31	31	28	31	30	31	30	31	31	30	31	30	31	31	28	31	30	31	30
3000000	3100000	3000000	3100000	3100000	3000000	3100000	3000000	3100000	3100000	2800000	3100000	3000000	3100000	3000000	3100000	3100000	3000000	3100000	3000000	3100000	3100000	2800000	3100000	3000000	3100000	3000000
100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000

April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
2.7572	1.2232	0.5264	0.0416	0.1432	0.5284	2.0508	4.3052	6.3256	6.804	5.866	4.9952	2.7572	1.2232	0.5264	0.0416	0.1432	0.5284	2.0508	4.3052	6.3256	6.804	5.866	4.9952	2.7572	1.2232	0.5264
0.23	0.10	0.04	0.00	0.01	0.04	0.17	0.36	0.53	0.57	0.49	0.42	0.23	0.10	0.04	0.00	0.01	0.04	0.17	0.36	0.53	0.57	0.49	0.42	0.23	0.10	0.04
49,042	21,757	9,363	740	2,547	9,399	36,478	76,577	112,513	121,023	104,339	88,850	49,042	21,757	9,363	740	2,547	9,399	36,478	76,577	112,513	121,023	104,339	88,850	49,042	21,757	9,363
366,886	162,765	70,045	5,535	19,055	70,311	272,889	572,869	841,713	905,371	780,557	664,684	366,886	162,765	70,045	5,535	19,055	70,311	272,889	572,869	841,713	905,371	780,557	664,684	366,886	162,765	70,045
304,072	134,898	58,053	4,588	15,793	58,274	226,168	474,791	697,606	750,366	646,920	550,886	304,072	134,898	58,053	4,588	15,793	58,274	226,168	474,791	697,606	750,366	646,920	550,886	304,072	134,898	58,053
670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098

April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
5.63	8.28	10.11	11.48	9.71	7.36	4.46	2.09	1.3	1.26	2.13	3.82	5.63	8.28	10.11	11.48	9.71	7.36	4.46	2.09	1.3	1.26	2.13	3.82	5.63	8.28	10.11
0.47	0.69	0.84	0.96	0.81	0.61	0.37	0.17	0.11	0.11	0.18	0.32	0.47	0.69	0.84	0.96	0.81	0.61	0.37	0.17	0.11	0.11	0.18	0.32	0.47	0.69	0.84
183,932	270,508	330,294	375,052	317,226	240,451	145,708	68,280	42,471	41,164	69,587	124,799	183,932	270,508	330,294	375,052	317,226	240,451	145,708	68,280	42,471	41,164	69,587	124,799	183,932	270,508	330,294
1,375,996	2,023,667	2,470,927	2,805,761	2,373,165	1,798,815	1,090,043	510,805	317,726	307,949	520,581	933,624	1,375,996	2,023,667	2,470,927	2,805,761	2,373,165	1,798,815	1,090,043	510,805	317,726	307,949	520,581	933,624	1,375,996	2,023,667	2,470,927
2,063,994	3,035,501	3,706,391	4,208,642	3,559,748	2,698,223	1,635,065	766,207	476,588	461,924	780,872	1,400,436	2,063,994	3,035,501	3,706,391	4,208,642	3,559,748	2,698,223	1,635,065	766,207	476,588	461,924	780,872	1,400,436	2,063,994	3,035,501	3,706,391

April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
3.91	6.45	6.26	7.64	7.02	5.27	3.03	1.06	0.98	0.95	1.61	2.15	3.91	6.45	6.26	7.64	7.02	5.27	3.03	1.06	0.98	0.95	1.61	2.15	3.91	6.45	6.26
0.325833333	0.5375	0.521666667	0.636666667	0.585	0.439166667	0.2525	0.088333333	0.081666667	0.079166667	0.134166667	0.179166667	0.325833333	0.5375	0.521666667	0.636666667	0.585	0.439166667	0.2525	0.088333333	0.081666667	0.079166667	0.134166667	0.179166667	0.325833333	0.5375	0.521666667
316,511	522,121	506,741	618,450	568,262	426,601	245,275	85,806	79,330	76,902	130,328	174,040	316,511	522,121	506,741	618,450	568,262	426,601	245,275	85,806	79,330	76,902	130,328	174,040	316,511	522,121	506,741
2,367,499	3,905,465	3,790,421	4,626,009	4,250,600	3,190,977	1,834,661	641,828	593,389	575,224	974,853	1,301,822	2,367,499	3,905,465	3,790,421	4,626,009	4,250,600	3,190,977	1,834,661	641,828	593,389	575,224	974,853	1,301,822	2,367,499	3,905,465	3,790,421

Table 1 - Water Balance Calculations
TUSCAN RIDGE
UES Job number 4640.2300030.0000

July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September
3,100,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	2,800,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	2,800,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	3,000,000
10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585
(4,208,642)	(3,559,748)	(2,698,223)	(1,635,065)	(766,207)	(476,588)	(461,924)	(780,872)	(1,400,436)	(2,063,994)	(3,035,501)	(3,706,391)	(4,208,642)	(3,559,748)	(2,698,223)	(1,635,065)	(766,207)	(476,588)	(461,924)	(780,872)	(1,400,436)	(2,063,994)	(3,035,501)	(3,706,391)	(4,208,642)	(3,559,748)	(2,698,223)
(4,626,009)	(4,250,600)	(3,190,977)	(1,834,661)	(641,828)	(593,389)	(575,224)	(974,853)	(1,301,822)	(2,367,499)	(3,905,465)	(3,790,421)	(4,626,009)	(4,250,600)	(3,190,977)	(1,834,661)	(641,828)	(593,389)	(575,224)	(974,853)	(1,301,822)	(2,367,499)	(3,905,465)	(3,790,421)	(4,626,009)	(4,250,600)	(3,190,977)
(5,724,527)	(4,675,500)	(2,760,615)	129,332	2,639,624	3,569,343	3,718,589	2,471,753	1,613,312	(760,535)	(3,543,304)	(4,368,713)	(5,724,527)	(4,675,500)	(2,760,615)	129,332	2,639,624	3,569,343	3,718,589	2,471,753	1,613,312	(760,535)	(3,543,304)	(4,368,713)	(5,724,527)	(4,675,500)	(2,760,615)
-	-	-	129,332	2,768,956	6,338,299	10,056,888	12,528,641	14,141,952	13,381,417	9,838,113	5,469,400	-	-	-	129,332	2,768,956	6,338,299	10,056,888	12,528,641	14,141,952	13,381,417	9,838,113	5,469,400	-	-	-
0%	0%	0%	0%	8%	19%	31%	38%	43%	41%	30%	17%	0%	0%	0%	0%	8%	19%	31%	38%	43%	41%	30%	17%	0%	0%	0%

July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September
31	31	30	31	30	31	31	28	31	30	31	30	31	31	30	31	30	31	31	28	31	30	31	30	31	31	30
3100000	3100000	3000000	3100000	3000000	3100000	3100000	2800000	3100000	3000000	3100000	3000000	3100000	3100000	3000000	3100000	3000000	3100000	3100000	2800000	3100000	3000000	3100000	3000000	3100000	3100000	3000000
100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000

July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September
0.0416	0.1432	0.5284	2.0508	4.3052	6.3256	6.804	5.866	4.9952	2.7572	1.2232	0.5264	0.0416	0.1432	0.5284	2.0508	4.3052	6.3256	6.804	5.866	4.9952	2.7572	1.2232	0.5264	0.0416	0.1432	0.5284
0.00	0.01	0.04	0.17	0.36	0.53	0.57	0.49	0.42	0.23	0.10	0.04	0.00	0.01	0.04	0.17	0.36	0.53	0.57	0.49	0.42	0.23	0.10	0.04	0.00	0.01	0.04
740	2,547	9,399	36,478	76,577	112,513	121,023	104,339	88,850	49,042	21,757	9,363	740	2,547	9,399	36,478	76,577	112,513	121,023	104,339	88,850	49,042	21,757	9,363	740	2,547	9,399
5,535	19,055	70,311	272,889	572,869	841,713	905,371	780,557	664,684	366,886	162,765	70,045	5,535	19,055	70,311	272,889	572,869	841,713	905,371	780,557	664,684	366,886	162,765	70,045	5,535	19,055	70,311
4,588	15,793	58,274	226,168	474,791	697,606	750,366	646,920	550,886	304,072	134,898	58,053	4,588	15,793	58,274	226,168	474,791	697,606	750,366	646,920	550,886	304,072	134,898	58,053	4,588	15,793	58,274
10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585	499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585

July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September
11.48	9.71	7.36	4.46	2.09	1.3	1.26	2.13	3.82	5.63	8.28	10.11	11.48	9.71	7.36	4.46	2.09	1.3	1.26	2.13	3.82	5.63	8.28	10.11	11.48	9.71	7.36
0.96	0.81	0.61	0.37	0.17	0.11	0.11	0.18	0.32	0.47	0.69	0.84	0.96	0.81	0.61	0.37	0.17	0.11	0.11	0.18	0.32	0.47	0.69	0.84	0.96	0.81	0.61
375,052	317,226	240,451	145,708	68,280	42,471	41,164	69,587	124,799	183,932	270,508	330,294	375,052	317,226	240,451	145,708	68,280	42,471	41,164	69,587	124,799	183,932	270,508	330,294	375,052	317,226	240,451
2,805,761	2,373,165	1,798,815	1,090,043	510,805	317,726	307,949	520,581	933,624	1,375,996	2,023,667	2,470,927	2,805,761	2,373,165	1,798,815	1,090,043	510,805	317,726	307,949	520,581	933,624	1,375,996	2,023,667	2,470,927	2,805,761	2,373,165	1,798,815
4,208,642	3,559,748	2,698,223	1,635,065	766,207	476,588	461,924	780,872	1,400,436	2,063,994	3,035,501	3,706,391	4,208,642	3,559,748	2,698,223	1,635,065	766,207	476,588	461,924	780,872	1,400,436	2,063,994	3,035,501	3,706,391	4,208,642	3,559,748	2,698,223

July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September
7.64	7.02	5.27	3.03	1.06	0.98	0.95	1.61	2.15	3.91	6.45	6.26	7.64	7.02	5.27	3.03	1.06	0.98	0.95	1.61	2.15	3.91	6.45	6.26	7.64	7.02	5.27
0.636666667	0.585	0.439166667	0.2525	0.088333333	0.081666667	0.079166667	0.134166667	0.179166667	0.325833333	0.5375	0.521666667	0.636666667	0.585	0.439166667	0.2525	0.088333333	0.081666667	0.079166667	0.134166667	0.179166667	0.325833333	0.5375	0.521666667	0.636666667	0.585	0.439166667
618,450	568,262	426,601	245,275	85,806	79,330	76,902	130,328	174,040	316,511	522,121	506,741	618,450	568,262	426,601	245,275	85,806	79,330	76,902	130,328	174,040	316,511	522,121	506,741	618,450	568,262	426,601
4,626,009	4,250,600	3,190,977	1,834,661	641,828	593,389	575,224	974,853	1,301,822	2,367,499	3,905,465	3,790,421	4,626,009	4,250,600	3,190,977	1,834,661	641,828	593,389	575,224	974,853	1,301,822	2,367,499	3,905,465	3,790,421	4,626,009	4,250,600	3,190,977

Table 1 - Water Balance Calculations
TUSCAN RIDGE
UES Job number 4640.2300030.0000

October	November	December	January	February	March	April	May	June	July	August	September
3,100,000	3,000,000	3,100,000	3,100,000	2,800,000	3,100,000	3,000,000	3,100,000	3,000,000	3,100,000	3,100,000	3,000,000
499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585
(1,635,065)	(766,207)	(476,588)	(461,924)	(780,872)	(1,400,436)	(2,063,994)	(3,035,501)	(3,706,391)	(4,208,642)	(3,559,748)	(2,698,223)
(1,834,661)	(641,828)	(593,389)	(575,224)	(974,853)	(1,301,822)	(2,367,499)	(3,905,465)	(3,790,421)	(4,626,009)	(4,250,600)	(3,190,977)
129,332	2,639,624	3,569,343	3,718,589	2,471,753	1,613,312	(760,535)	(3,543,304)	(4,368,713)	(5,724,527)	(4,675,500)	(2,760,615)
129,332	2,768,956	6,338,299	10,056,888	12,528,641	14,141,952	13,381,417	9,838,113	5,469,400	-	-	-
0%	8%	19%	31%	38%	43%	41%	30%	17%	0%	0%	0%

October	November	December	January	February	March	April	May	June	July	August	September
31	30	31	31	28	31	30	31	30	31	31	30
3100000	3000000	3100000	3100000	2800000	3100000	3000000	3100000	3000000	3100000	3100000	3000000
100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000

October	November	December	January	February	March	April	May	June	July	August	September
2.0508	4.3052	6.3256	6.804	5.866	4.9952	2.7572	1.2232	0.5264	0.0416	0.1432	0.5284
0.17	0.36	0.53	0.57	0.49	0.42	0.23	0.10	0.04	0.00	0.01	0.04
36,478	76,577	112,513	121,023	104,339	88,850	49,042	21,757	9,363	740	2,547	9,399
272,889	572,869	841,713	905,371	780,557	664,684	366,886	162,765	70,045	5,535	19,055	70,311
226,168	474,791	697,606	750,366	646,920	550,886	304,072	134,898	58,053	4,588	15,793	58,274
499,057	1,047,660	1,539,319	1,655,737	1,427,477	1,215,570	670,958	297,663	128,098	10,123	34,847	128,585

October	November	December	January	February	March	April	May	June	July	August	September
4.46	2.09	1.3	1.26	2.13	3.82	5.63	8.28	10.11	11.48	9.71	7.36
0.37	0.17	0.11	0.11	0.18	0.32	0.47	0.69	0.84	0.96	0.81	0.61
145,708	68,280	42,471	41,164	69,587	124,799	183,932	270,508	330,294	375,052	317,226	240,451
1,090,043	510,805	317,726	307,949	520,581	933,624	1,375,996	2,023,667	2,470,927	2,805,761	2,373,165	1,798,815
1,635,065	766,207	476,588	461,924	780,872	1,400,436	2,063,994	3,035,501	3,706,391	4,208,642	3,559,748	2,698,223

October	November	December	January	February	March	April	May	June	July	August	September
3.03	1.06	0.98	0.95	1.61	2.15	3.91	6.45	6.26	7.64	7.02	5.27
0.2525	0.088333333	0.081666667	0.079166667	0.134166667	0.179166667	0.325833333	0.5375	0.521666667	0.636666667	0.585	0.439166667
245,275	85,806	79,330	76,902	130,328	174,040	316,511	522,121	506,741	618,450	568,262	426,601
1,834,661	641,828	593,389	575,224	974,853	1,301,822	2,367,499	3,905,465	3,790,421	4,626,009	4,250,600	3,190,977

APPENDIX M

Tuscan Ridge Project
Fire Risk Reduction Plan

Prepared for Raney Management

By

Reax Engineering Inc.

1921 University Avenue, Berkeley, CA

Job No. 22-1074

Final Report
February 10, 2023

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INTRODUCTION

This report details a quantitative fire behavior analysis and risk reduction plan for the proposed Tuscan Ridge Project located on Skyway Road in unincorporated Butte County. Characterizing potential fire threat through analysis methods is necessary to inform appropriate and adequate mitigation techniques based on localized risk, as well as to facilitate resource prioritization for implementing mitigation measures. Fire behavior metrics are obtained using modeling software that takes input of the factors that contribute to fire hazard, *i.e.*, topography, fuels, and weather. As such, a desktop assessment of these local factors is an inherent first step to the analysis process. Ultimately, quantitative results are integrated with local code guidance to develop project-site-specific recommendations for fire risk reduction. Reax has developed this report in consultation with Raney Planning and Management the transportation and traffic consultants at Fehr and Peers, supporting a project evacuation impact study.

Scope

The scope of this work includes the following items that are listed with the associated section where they can be found within this report:

- Section 1: Fire hazard analysis and risk assessment
- Section 2: Fire risk reduction plan with site-specific recommendations for vegetation management, structure protection, and available evacuation strategies

Project site summary

The Tuscan Ridge Project is a proposed development spanning approximately 165 acres in unincorporated Butte County, located on the southeast side of Skyway Road between the cities of Chico and Paradise, at the site of the previous Tuscan Ridge Golf Club (Figure 1). The project site is situated on a prominent ridge consisting of highly disturbed land with areas void of vegetation due to damage sustained from the 2018 Camp Fire and subsequent local restoration activities. The site is predominantly bound by large undeveloped parcels to the east, south, and west, with the exception of Paradise Rod & Gun Club, which is located adjacent to the northeast border of the site.

The proposed project plan subdivides the site to include space for new construction of 165 single-family residential lots ranging in size from 4,000 square feet (sf) to 40,000 sf; 17.3 acres dedicated for commercial occupancies; 13.3 acres for mini storage units (53,000 sf) and outdoor RV and boat storage; the development of a sanitary waste disposal station; and 4 acres for improved buildings and parking. In addition, 49.4 acres of the site would consist of landscaped, recreational, and open space areas.

Access to the site would be provided through the existing driveway from Skyway Road near the center of the site, which would be improved as part of the project, and a new access near the eastern end of the site. Internal roadways throughout the site would be public, to be dedicated to the County for maintenance.

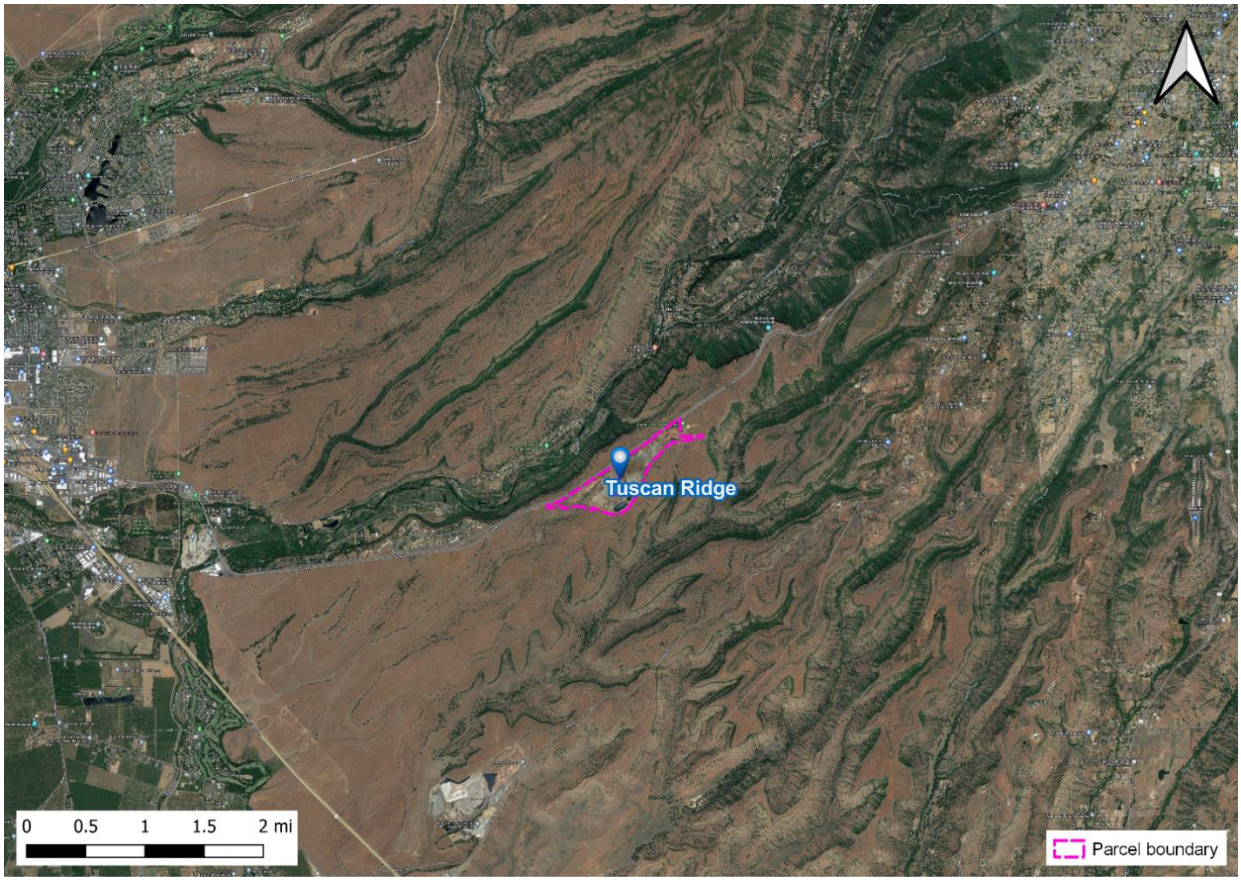


Figure 1. Tuscan Ridge Project site location and surrounding area.

Applicable codes and regulations

The project development and buildings are subject to applicable requirements for properties in unincorporated areas as set forth in the Butte County Code (BCC), which adopts California state codes with amendments. It is also under the jurisdiction of a CAL FIRE State Responsibility Area (SRA) located in "Moderate" and "High" Fire Hazard Severity Zones. In 2023, it is expected that an updated set of FHSZ maps will be adopted across the state for SRAs. At that time, the project site FHSZ classifications would change to "High" and "Very High" [1].

Due to its location in an SRA FHSZ, specific applicable codes and regulations with measures related to wildfire protection include, but are not limited to:

- Fire Prevention & Protection Ordinance (BCC Chapter 38A)
- 2022 California Building Code with Butte County amendments (CBC)
- 2022 California Fire Code with Butte County amendments (CFC)
- Public Resources Code (PRC) 4290 and 4291
- California Fire Safe Regulations

Note that the 2022 California codes have been adopted by Ordinance No. 4222 but are not yet codified. A new section of the 2022 CFC, Chapter 4903, states that the local fire code official is authorized to require a property Fire Protection Plan that is to be reviewed for acceptability of fire protection and life safety measures designed to mitigate wildfire hazards. This report can be extended to meet the criteria of such a plan if deemed to be required for further project development.

SECTION 1: FIRE HAZARD AND RISK ASSESSMENT

This section discusses fire history and the local characteristics of the project site that contribute to fire hazard, including topography, climate/weather patterns, and fuels. Information was gathered from publicly available sources for processing and subsequently used in wind and fire behavior analysis models.

1.0 FIRE HISTORY

Assessment of fire history provides context for potential future fire occurrence and behavior. Various federal, state, and local agencies maintain records of past ignitions and final fire perimeters. CAL FIRE maintains a relatively robust, multi-agency database of historical fire perimeters as part of the Fire and Resource Assessment Program (FRAP) [2], which is current through 2021. Note that the FRAP database only includes fires that grow beyond a minimum threshold set by lead responding agencies. For CAL FIRE, records include timber fires 10 acres or greater, brush fires 30 acres and greater, and grass fires 300 acres. For the US Forest Service, the minimum fire size is 10 acres. Additional geospatial data for current-year fire perimeters is available from the Wildland Fire Interagency Geospatial Services Group [3].

1.1 Significant past fire events

Figure 2 shows historical large fires from 1950 to present day that occurred or spread to within 15 miles of the project site. Of these, there have been eleven fires that have spread across or within a mile of the project site. Further details on the eleven nearest large fires are given in Table 1.

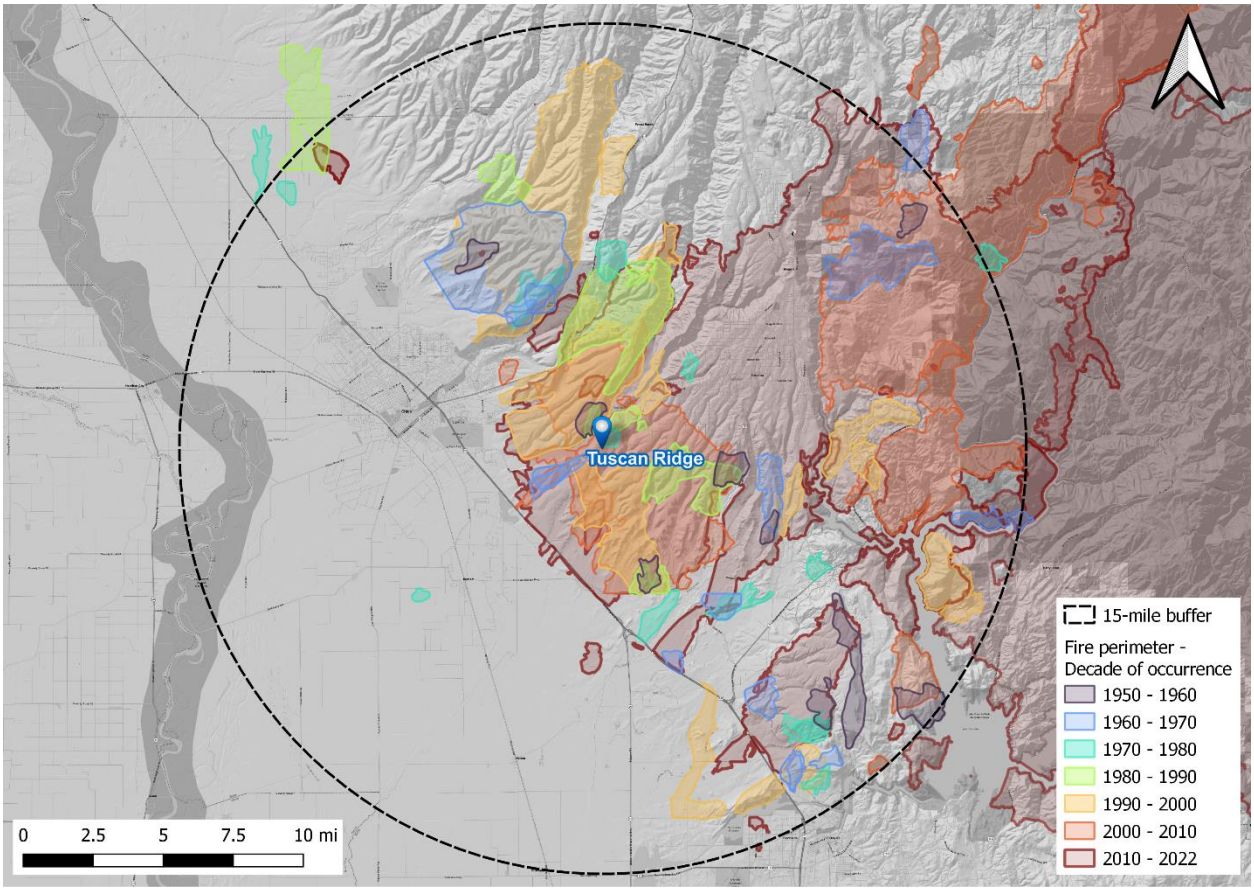


Figure 2. Historical fire perimeters within 15 miles of the project site [2, 3].

Table 1. Past large fires that spread across or within a 1-mile radius of the project site [2].

Fire Name	Year	Area (acres)	General Cause	Specific Cause
Camp	2018	153,336	Human	Power Line
Humboldt	2008	23,344	Human	Arson
Honey	2007	726	Human	Power Line
Skyway	2002	2,141	Natural	Lightning
Doe Mill	1999	10,856	Natural	Lightning
Burton	1992	5,914	Human	Equipment Use
Skyway	1961	638	Undetermined	Unknown/Unidentified
Skyway #3	1983	604	Undetermined	Unknown/Unidentified
Skyway #10	1961	538	Undetermined	Unknown/Unidentified
Centerville	1960	504	Undetermined	Unknown/Unidentified
Humbug Road	1979	264	Undetermined	Unknown/Unidentified

1.2 Historical ignition density analysis

While historical large fire perimeters inform fire activity and spread patterns that commonly occur in a region, fires smaller in size may trigger an evacuation and threaten structures. Thus, an assessment of local ignitions further improves understanding of potential fire threat. The US Forest Service maintains a Fire Occurrence Database (FOD) [4] which contains spatial information for wildfires in the United States. The FOD is updated roughly every 3 years and was most recently published in 2021 to include fire and ignition records from 1992 through 2018. Federal, state, and local fire organizations contributed records with a minimum requirement to include discovery date, final fire size, and a point location accurate to 1-square mile. Where possible, data were transformed to meet the National Wildfire Coordinating Group's (NWCG) data standards. Error-checking was performed and redundant records were removed where possible, resulting in a database with 2.17 million geo-referenced wildfire records. The FOD also records fire cause, allowing spatial and temporal distinctions to be made.

Figure 3 shows all ignitions within 15 miles of the project site for the years included in the FOD (1992-2018), color-coded per cause classification of either human, natural, or undetermined ignition source. Also shown in the figure is an associated heatmap of the ignition density, which is calculated using a quartic kernel density estimation function. The heatmap triangulates the areas that have historically experienced the greatest density of ignitions.

One finding from comparison between the ignition heatmap in Figure 3 and the fire perimeters shown in Figure 2 is that, although there is a moderately heightened density of ignitions that have occurred in the hotspot 14 miles to the southeast of Tuscan Ridge, it is not typical for large fires in this location to spread north as far as Highway 70 let alone to reach the project site.

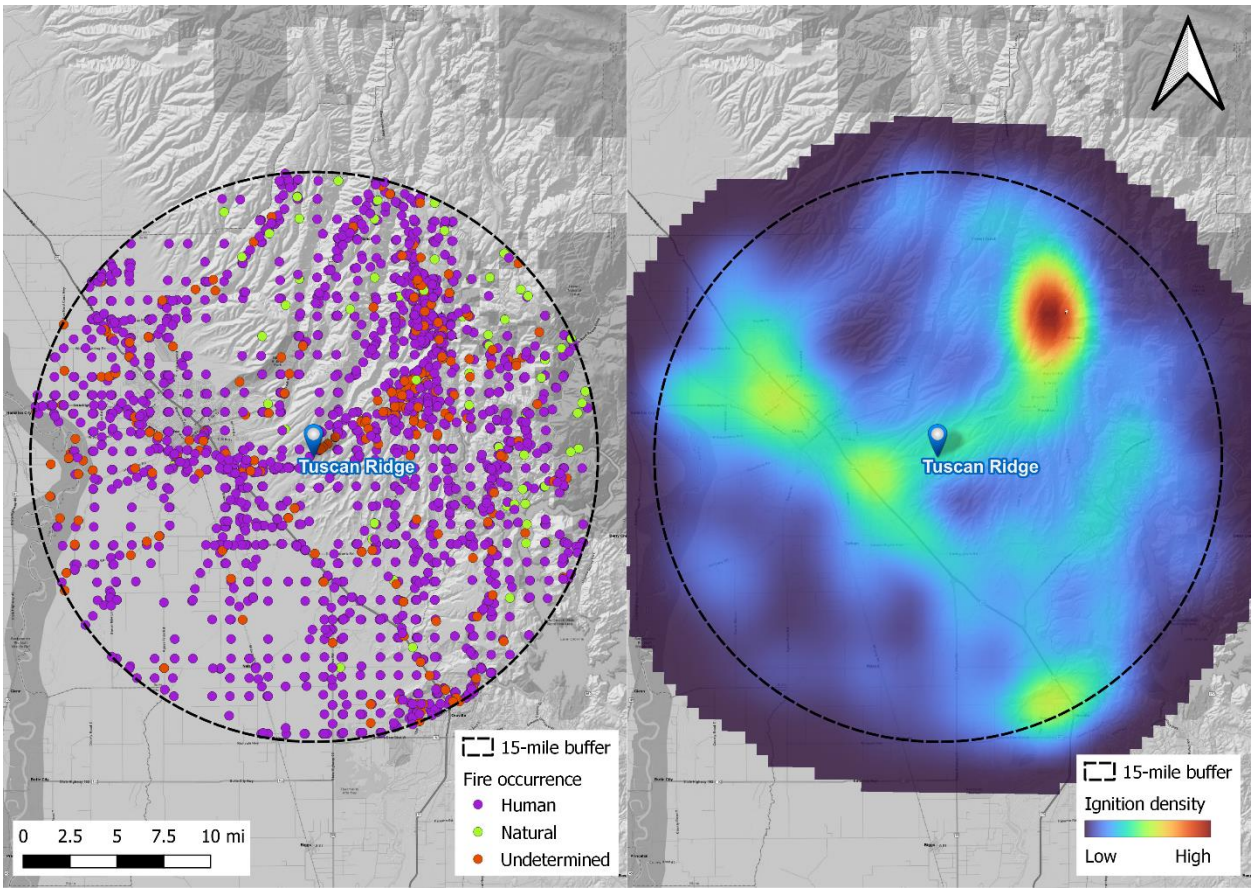


Figure 3. Ignitions per source within 15 miles of the project site [4] (left) and the associated ignition density heatmap (right) generated by a quartic kernel density estimation function.

Human-caused fires describe a range of possible ignition causes including debris burning, vehicle, utility, campfires, electrical, *etc*. The locations of these types of ignitions often follow linear features, such as roads, or tend to be clustered near centers of human activity such as residential neighborhoods, campgrounds, *etc*. Human-caused fires tend to be smaller and are more successfully suppressed in the initial attack phase than lightning-caused fires. However, these ignitions are of significant interest despite the higher probability of success in initial attack because large human-caused fires often occur under high winds [5]. This can be attributed to many factors, including expansion of human-caused ignitions into regions and during seasons where wind speeds are climatologically higher and the reduced tactical capacities of aerial suppression efforts during high winds [5].

Locations of lightning-caused ignitions tend to be both more random and more uniform than human-caused fires. Lightning-caused ignitions are indifferent to geographic location and as such display no dominating trends such as following linear features. Lightning-caused ignitions are also less common where certain fuel types are prevalent (*e.g.* wetlands or sparsely vegetated areas).

Using the FOD to create separate heatmaps, a comparison of human-caused and lightning-caused ignition densities is shown in Figure 4. It can be seen that human ignitions dominate lightning ignitions since the heatmap on the left depicting human ignitions follows closely to the heatmap of all-cause ignitions shown in Figure 3 above. It is also evident that human ignitions are denser along roadways whereas natural ignitions are predominantly in locations of higher elevation toward the east of the project site.

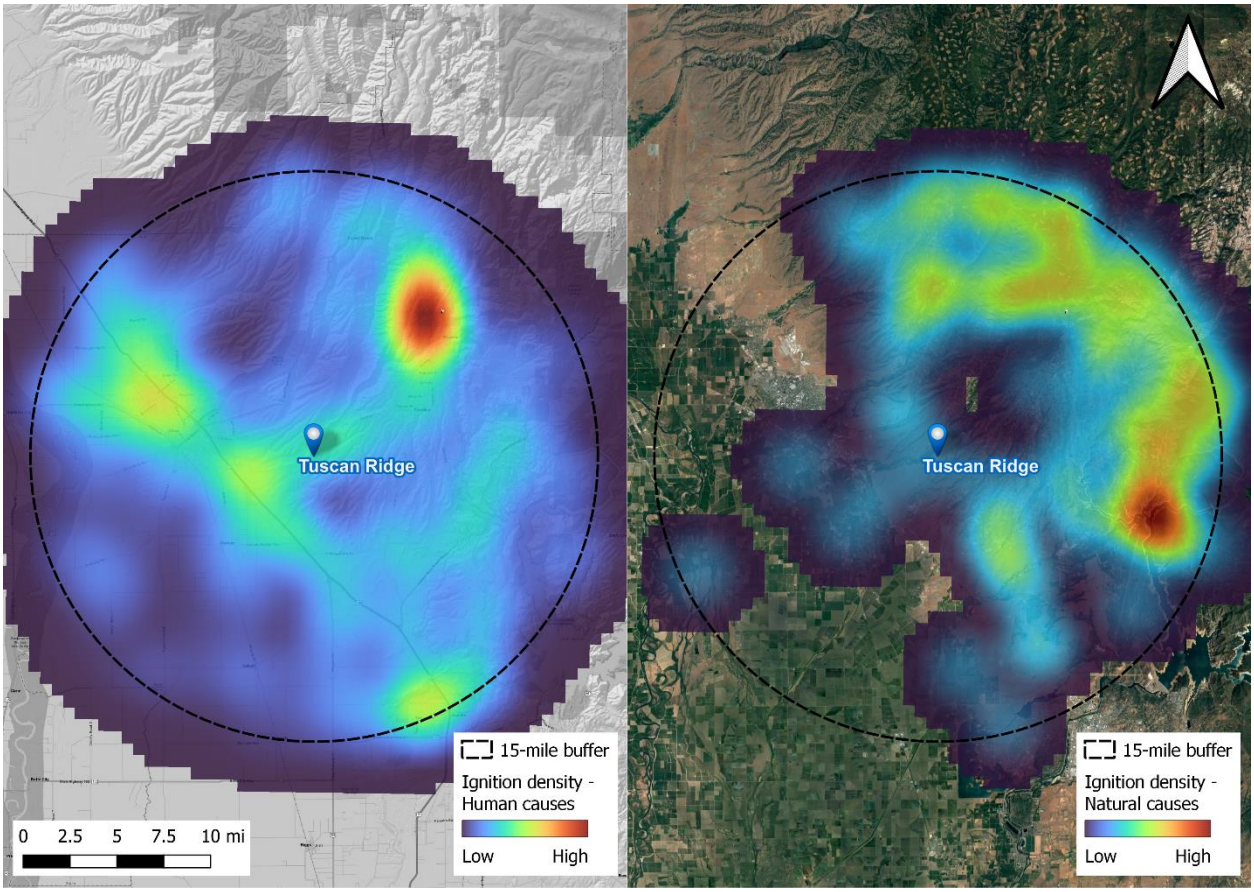


Figure 4. Density heatmap of human ignitions (left) and natural or lightning ignitions (right) within 15 miles of the project site calculated using the FOD historical ignition locations [4].

2.0 TOPOGRAPHY

Topography affects fire behavior by altering fire spread rates. Steep terrain leads to rapid up-slope and slower down-slope rates of spread. Types of terrain that can result in intense fire behavior include chimneys, chutes, and saddles (Figure 5). Slope aspect also has a significant influence on fire behavior as the vegetation on south-facing slopes in the Northern Hemisphere receives greater heating and drying by solar radiation from early morning to sunset. North-facing slopes only receive varying amounts of solar radiation depending on season and latitude.

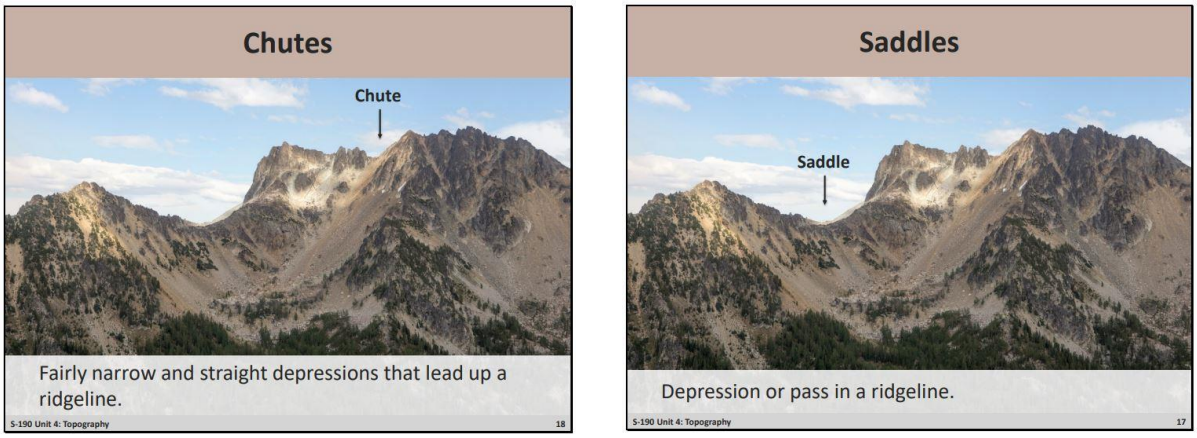


Figure 5. Examples of topography that can intensify fire behavior [6].

The proposed development site is mostly flat with gentle slopes across elevations ranging from 635 feet above mean sea level (msl) along the western boundary line to 945 feet (msl) along the eastern boundary (Figure 6). Slopes of up to 8° are present within the site boundary (Figure 7). The parcel slope is generally south facing, which leads to more rapid drying of fuels from increased sun exposure. To the north and east of the project lies mountainous terrain and to the south and west lie the valley region.

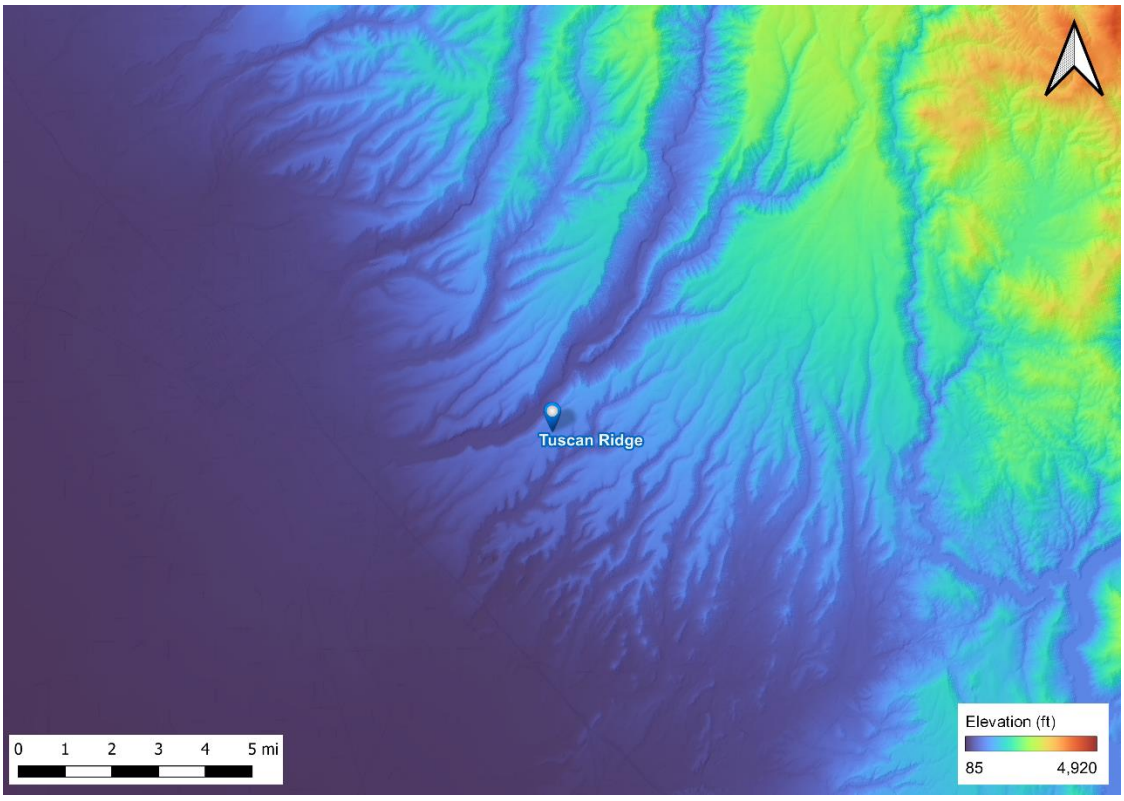


Figure 6. Elevation of the project site and surrounding environs.

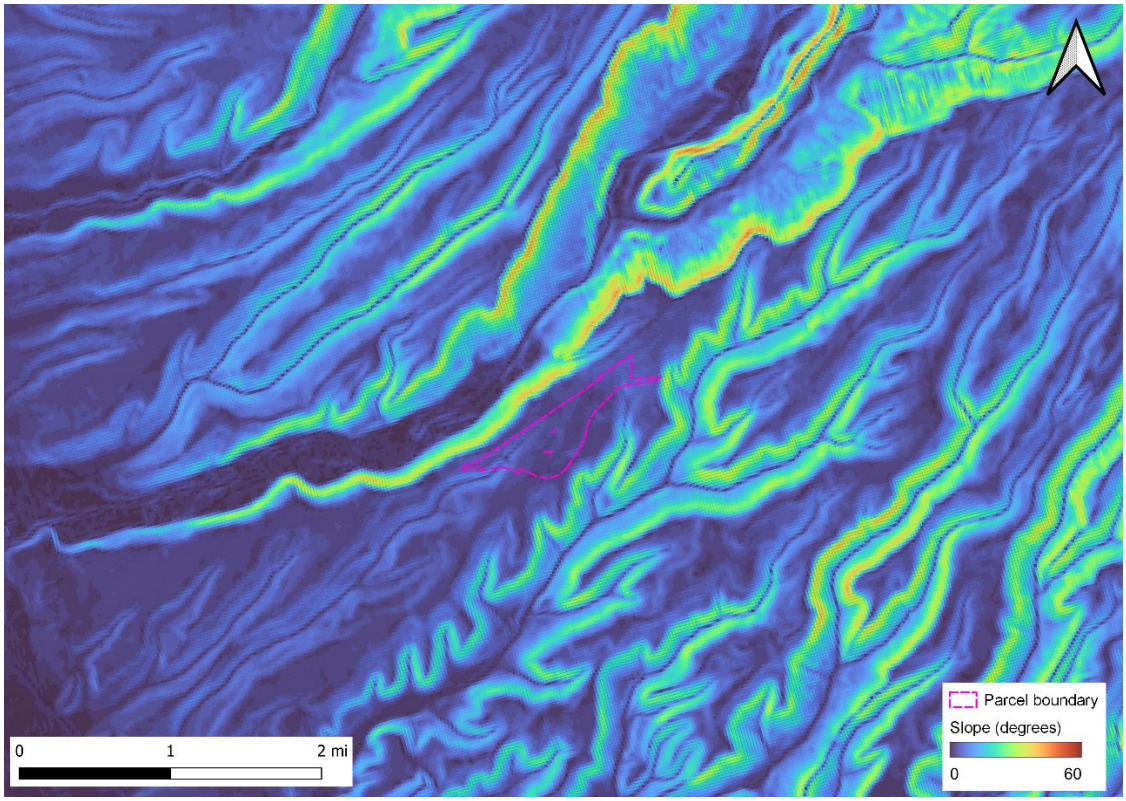


Figure 7. Slopes within the project site and surrounding environs.

3.0 METEOROLOGY

3.1 Climate

The project area is generally characterized by hot, dry summers of a Mediterranean-like climate and cool, wet winters. The average maximum temperature between July and September, when temperatures are hottest, ranges from 90°F to 95°F. Record highs for the same months range from 105°F to 110°F. Precipitation falls predominantly between October and April. Average annual precipitation is approximately 50 inches with dry years receiving a little as 13 inches and wet years receiving over 100 inches at higher elevations.

3.2 Average winds

More detailed weather analysis in the project area throughout the year was determined using Fire Family Plus (FF+) [7]. FF+ is a computer application that analyzes hourly historical weather datasets from weather stations across the country. In analyzing weather in the project region, available data captured from the Cohasset, Chico, and Jarbo Gap Remote Automatic Weather Stations (RAWS) [8] for the time period between January 1, 2002, and the present day was used. Data from Chico RAWS was available starting in 2014. Both individual and composite analysis of measurements from these three stations was considered as the project site lies nearly equidistant to each (Figure 8).

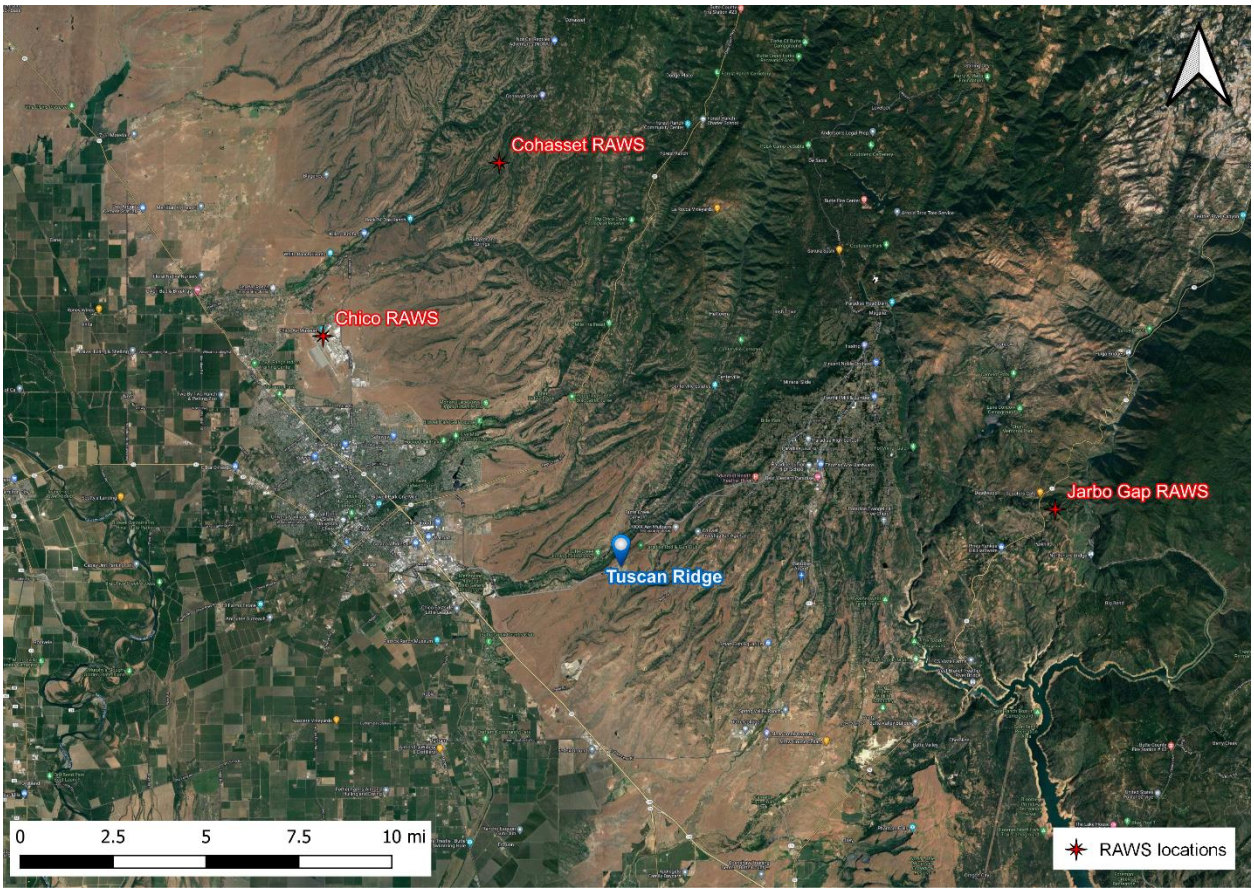


Figure 8. Location of RAWS stations used for weather analysis in relation to the project site.

Winds in the project area are predominantly out of the southwest with speeds typically ranging up to 13 mph with lower speeds occurring more frequently (Table 2). Winds from 13 to 19 mph occur about 7% of the year and from 19 to 32 mph approximately 5% of the time. Winds greater than 32 mph and less than 39 mph occur approximately 0.3% of the time. Winds from the west-southwest to south-southeast occur approximately 30% of the time with winds from the northeast occurring 18% of the time (Figure 9).

Table 2. Average sustained wind speeds and frequency at Cohasset, Chico, and Jarbo Gap RAWS.

Sustained Wind Speed (mph)	Frequency (%)
1-4	22.2
4-8	42.4
8-13	20.4
13-19	7.2
19-25	3.5
25-32	1.5
32-39	0.3
Calm (< 1)	2.5

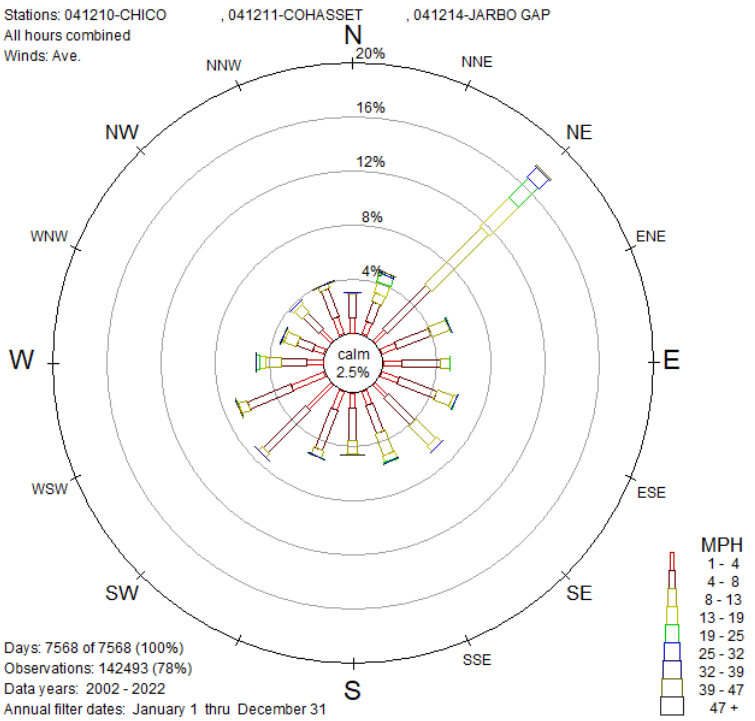


Figure 9. Wind rose of composite analysis sustained wind speeds

Perhaps a more useful way to interpret the wind speed data is through percentiles. A percentile is the value below which a certain amount of data falls. The 50th percentile means 50% of the data points are less than or equal to the 50th percentile value. Wind speeds expressed as percentiles are shown in Table 3. The percentile wind speeds were used in determining inputs to the fire spread modeling discussed in Section 5.0 of this report.

Table 3. Weather station wind speeds as percentiles

Range (mph)	Percentile
0-0.9	0.01
1-1.9	0.79
2-2.9	5.54
3-3.9	16.82
4-4.9	31.45
5-5.9	48.07
6-6.9	61.42
7-7.9	69.99
8-8.9	77.08
9-9.9	83.14
10-10.9	88.47
11-11.9	92.41

12-12.9	95.15
13-13.9	96.91
14-14.9	98.07
15-15.9	98.92
16-16.9	99.34
17-17.9	99.63
18-18.9	99.75
19-19.9	99.81
20-20.9	99.92
21-21.9	99.96
22-22.9	99.97
23-23.9	99.99
24-24.9	99.99
25-25.9	100

3.3 Extreme winds

Diablos are hot and dry winds that blow through Northern California each year, usually between the months of October and April. Diablos occur when high pressure forms in the Great Basin (Western Utah, much of Nevada, and the Eastern border of California) with lower pressure off the coast of California. This pressure gradient drives airflow toward the Pacific Ocean (Figure 10). As air travels West from the Great Basin, orographic lift dries the air as it rises in elevation over mountain ranges. As air descends from high elevations in the Sierra Nevada, its temperature rises dramatically (~5 °F per 1000 ft decrease in elevation). A subsequent drop in relative humidity accompanies this rise in temperature. This drying/heating phenomenon is known as a katabatic wind. Relative humidity in Northern California during Diablos is often 10% or lower. Diablo winds typically blow from the Northeast toward the Southwest. Sustained Diablo winds of 40+ mph with gusts of 60+ mph are not uncommon in Northern California.

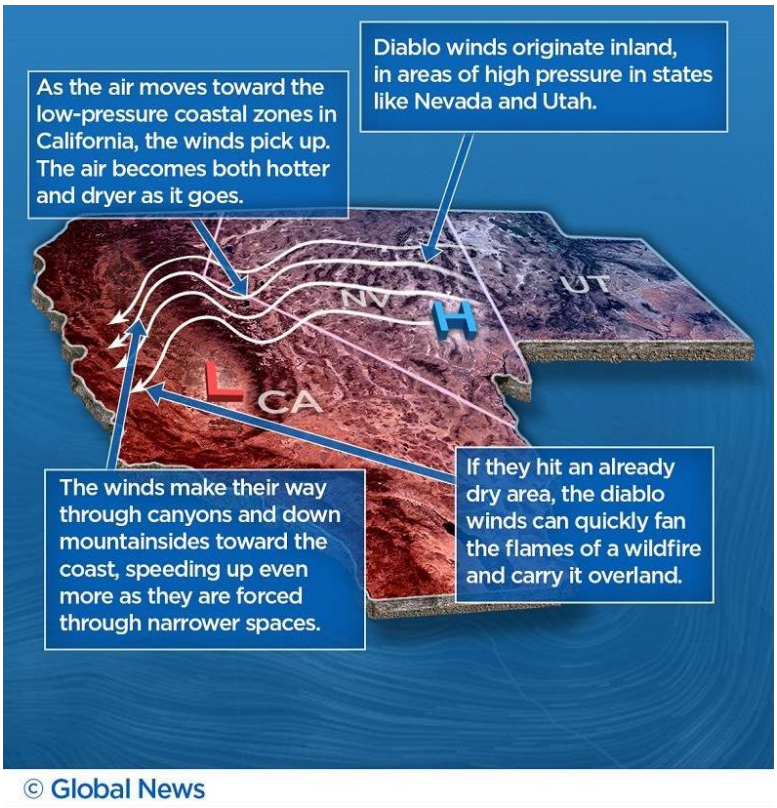


Figure 10. Diagram of Diablo wind event progression [9].

4.0 FUELS

Fuels in the context of wildland fire consist of dead and live vegetation [10]. The fire behavior of different fuels depends primarily on the moisture content, with other contributing factors such as fuel loading (weight of fuel per unit area), bulk density (mass of available fuel per unit volume of fuel), heat content (net amount of heat produced if fuel burns when dry), and moisture of extinction (fuel moisture content at which fire will not spread), among others [10]. The complexity and variety of fuels based solely on these factors would lead to an infinite number of fuel designations, therefore spatial maps of stylized fuel models are used to provide landscape-scale fuel properties. The Scott and Burgan 40 fuel models [11] were published in 2005 and are widely used by federal and state agencies in fire modeling applications.

The federal LANDFIRE program [12] provides geospatial data over the contiguous United States at a resolution of 100 feet (30 meters). Available layers related to fuels include surface fuel models, canopy base height, canopy bulk density, canopy cover, and height. One of the limitations of LANDFIRE data is that it is updated infrequently, usually once every two years, although annual fuel model capabilities are starting to become available. For that reason, LANDFIRE inputs must often be manually modified to reflect recently burned areas, tree mortality, and other landscape-scale disturbances that have occurred since the most recent refresh. To assess peak fuel loading conditions, the fuel data layers from LANDFIRE from before the Camp Fire (2018) are used here.

4.1 Surface fuel models

The predominant vegetation in the project area is shown in Figure 11 as described by fuel load in Table 4. The immediate area of Tuscan Ridge has annual grasses mixed with sparse shrubs whereas further beyond there is greater presence of forested lands that create litter surface fuels.

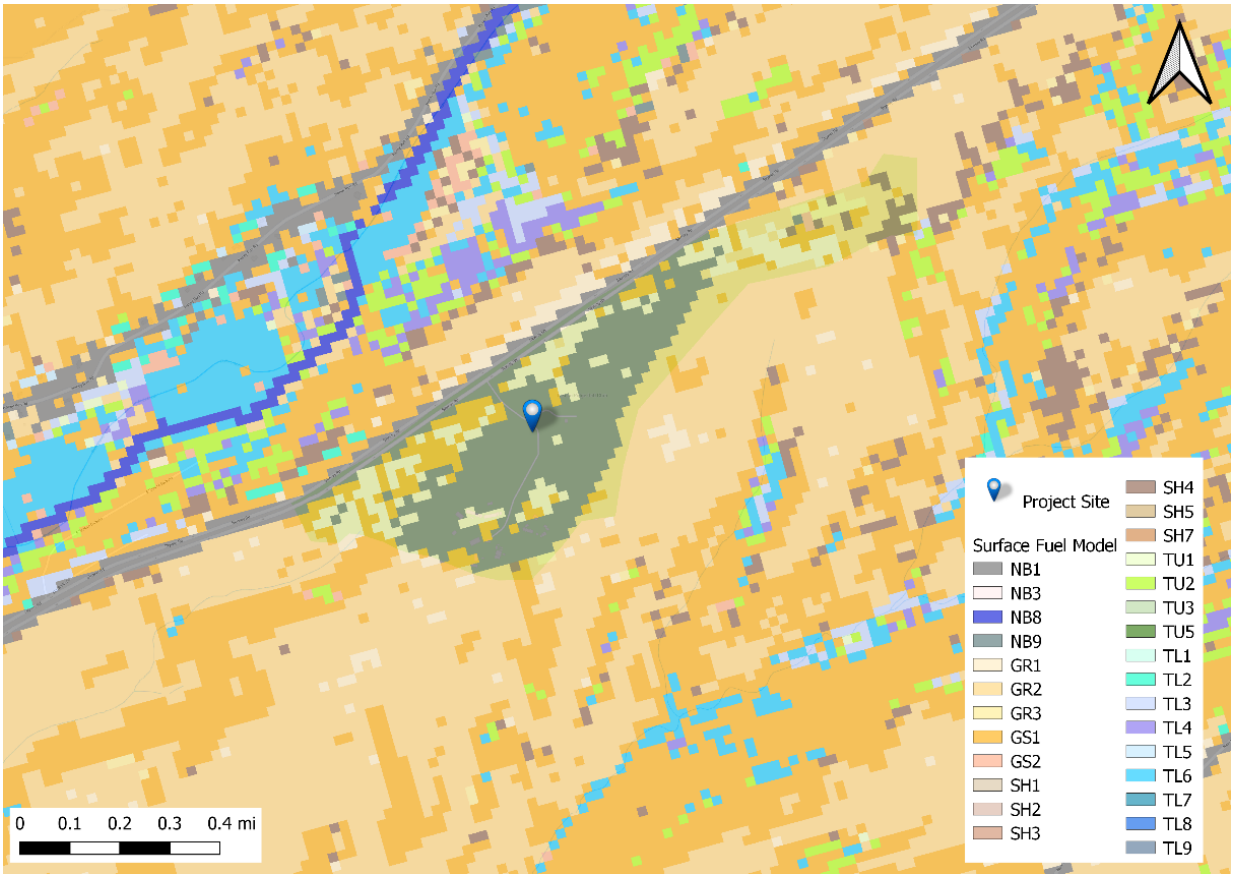


Figure 11. Predominant vegetative fuels classified per surface fuel model at ~100 ft resolution [12].

Table 4. Description of surface fuel models in the project area [11].

Fuel Model	Fuel Model Description	Fire Spread Rate	Flame Length
NB1	Non-burnable: Urban/Developed	--	--
NB3	Non-burnable: Agriculture	--	--
NB8	Non-burnable: Water	--	--
NB9	Non-burnable: Barren	--	--
GR1	Short, sparse, dry climate grass	Moderate	Low
GR2	Low load, continuous, dry climate grass	High	Moderate
GR3	Low load, very coarse, humid climate grass	High	Moderate
GS1	Low load, dry climate grass-shrub	Moderate	Low
GS2	Moderate load, dry climate grass-shrub	High	Moderate
SH1	Low load shrub, woody shrubs and shrub litter	Very low	Very low
SH2	Moderate load, dry climate shrubs and shrub litter	Low	Low
SH3	Moderate load, humid climate shrubs and litter	Low	Low
SH4	Low load, humid climate timber-shrub	High	Moderate
SH5	Heavy shrub load	Very high	Very high
SH7	Very heavy shrub load	High	Very high
TU1	Low load, dry climate timber-grass-shrub	Low	Low
TU2	Moderate load, humid climate timber-shrub	Moderate	Low

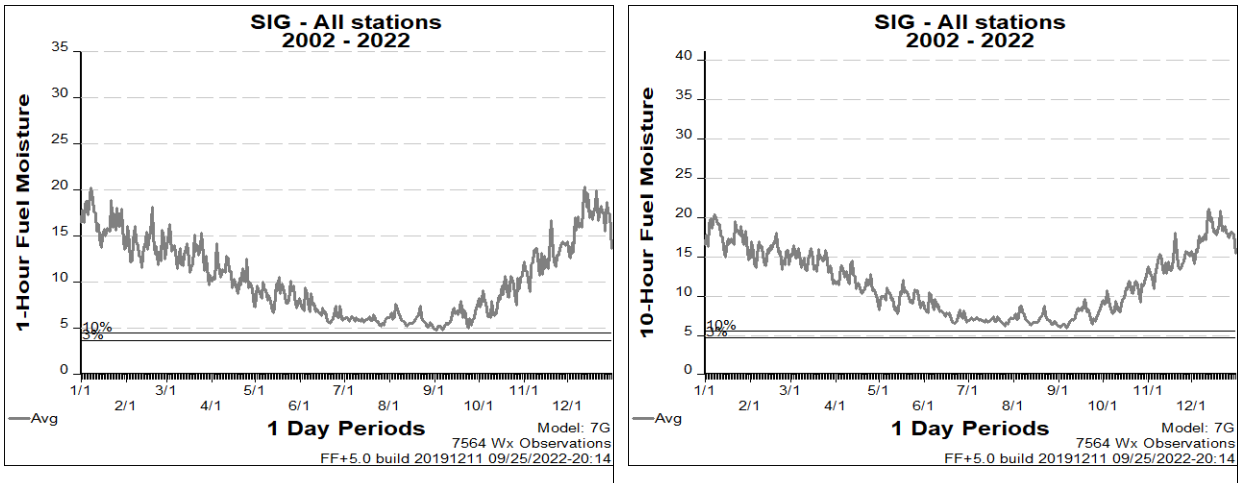
Fuel Model	Fuel Model Description	Fire Spread Rate	Flame Length
TU3	Moderate load, humid climate timber-grass-shrub	High	Moderate
TU5	Very high load, dry climate timber-shrub	Moderate	Moderate
TL1	Low load compact forest litter	Very low	Very low
TL2	Low load broadleaf litter	Very low	Very low
TL3	Moderate load conifer litter	Very Low	Low
TL4	Moderate load, small downed logs	Low	Low
TL5	High load conifer litter, light slash or dead fuel	Low	Low
TL6	Moderate load broadleaf litter	Moderate	Low
TL7	Heavy load, large downed logs	Low	Low
TL8	Moderate load, herbaceous litter	Moderate	Low
TL9	Very high load broadleaf litter, light slash, dead fuel	Moderate	Moderate

4.2 Fuel moisture content

The fuel moisture content (FMC) of local vegetation can be used as an indicator of developing hazardous fuel conditions. FMC is the ratio of water mass to oven dry fuel mass and is expressed as a percentage (Eq. 1). Moisture content in live fuels is estimated according to herbaceous and woody fuel types. Dead fuel moisture content is estimated according to the diameter size of the fuel and can be described by the timelag between environmental conditions (i.e., temperature and relative humidity) and fuel response. FMC of 1-hour, 10-hour, 100-hour, and 1000-hr values correspond to dead fuels of less than 0.25 inches in diameter (0.6 cm), 0.25 to 1 inches in diameter (0.6 - 2.5 cm), 1 to 3 inches in diameter (2.5 - 7.6 cm), and 3 to 8 inches in diameter (7.6 – 20.3 cm), respectively.

$$FMC(\%) = \frac{(weight\ of\ water\ in\ sample)}{(dry\ weight\ of\ sample)} \times 100 \quad (1)$$

Average values for live and dead FMC of vegetation in the project area throughout the year were determined using FF+ [7]. Hourly historical weather data spanning a 20-year period (2002-2022) from Cohasset, Chico, and Jarbo Gap RAWS [8] was used as input to FF+. Figure 12 shows the calculated FMC values for each of the six relevant fuel classes. In the late summer, both dead and live fuel moistures drop to critical levels that facilitate rapid rates of fire spread.



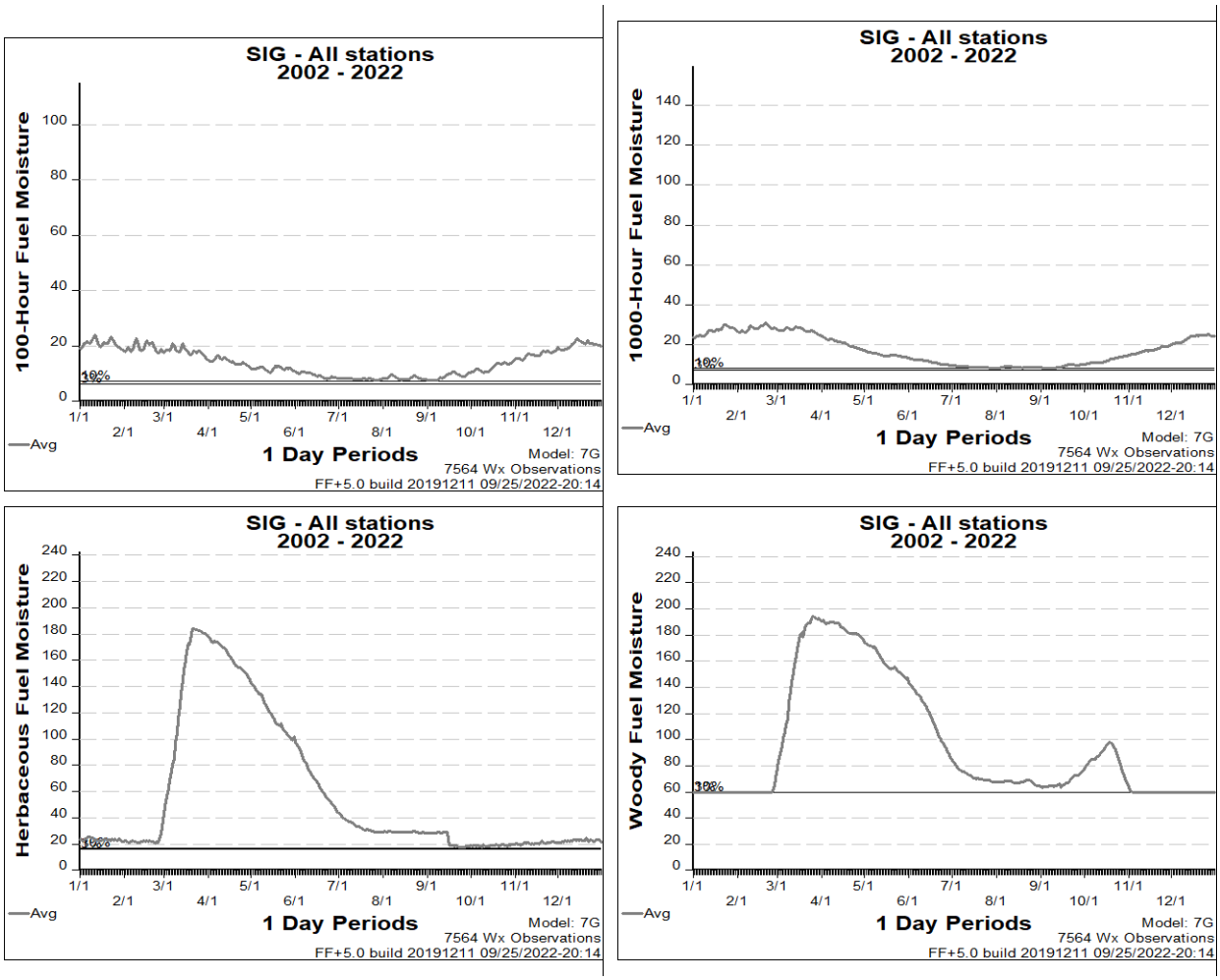


Figure 12. Average dead and live fuel moisture contents calculated by composite historical data from Cohasset, Chico and Jarbo Gap RAWS [8].

5.0 FIRE BEHAVIOR ANALYSIS

5.1 Methodology

Property can be exposed to wildland fire by three primary means: radiant heat, direct flame impingement, and ember storm[1]. Given a set of input conditions that define the local fire environment (*i.e.*, topography, fuels, weather) fire behavior modeling can be used to quantify these potential exposures. Two scenarios were identified for fire behavior modeling that represent historical "average" and "extreme" fire weather conditions in the project region. A spatial analysis of local winds was carried out prior to fire modeling and incorporated into the fire modeling so as to generate localized results.

Fire encroachment scenarios are specified and assessed in the section following based on results from the fire behavior modeling presented here and ignition history analysis discussed previously.

[1] Fire smoke also poses far-reaching threat to indoor and outdoor air quality, building equipment, sensitive electronics, agriculture, animals, and human health; however, fire smoke evaluation is outside the scope of this report.

5.1.1 Spatial wind analysis with WindNinja

Wind is one of the most influential environmental factors on wildfire behavior. Despite advances in large-scale weather modeling capabilities, terrain causes localized wind behavior that is not predicted at the scale of operational weather models. WindNinja [13] was used to calculate spatially dynamic wind fields for purposes requiring higher local resolution in complex terrain, such as wildfire behavior modeling. An average wind vector was applied over the entire computational domain in WindNinja. This was to refine spatial wind analyses over local terrain (topography and vegetation), resulting in a more accurate assessment of nuanced wind conditions that influence local fire behavior. These nuanced wind vectors were subsequently used in fire behavior modeling as shown in Figure 13 and Figure 14.

5.1.1.1 Average wind conditions

Predominant site winds were determined from individual and composite analysis of data from Cohasset, Chico, and Jarbo Gap RAWS [8], to be an average high sustained wind speed of 13 mph from the southwest (Figure 13).

5.1.1.2 Extreme wind conditions

Witness reports of wind speeds during summer Diablo winds were used for spatial extreme wind condition analysis. Three recent examples of extreme Diablo winds occurred during the Tubbs, Camp, and Kincade fires (2017, 2018, and 2019, respectively). RAWS stations tend to record anomalously low values during peak Diablos. Sustained wind speed during these fires were 30+ mph, corresponding to gusts of 65 mph or higher. Sustained wind speeds of 25 mph were used for input to the WindNinja model as a compromise between probability and frequency of extreme winds (Figure 14).

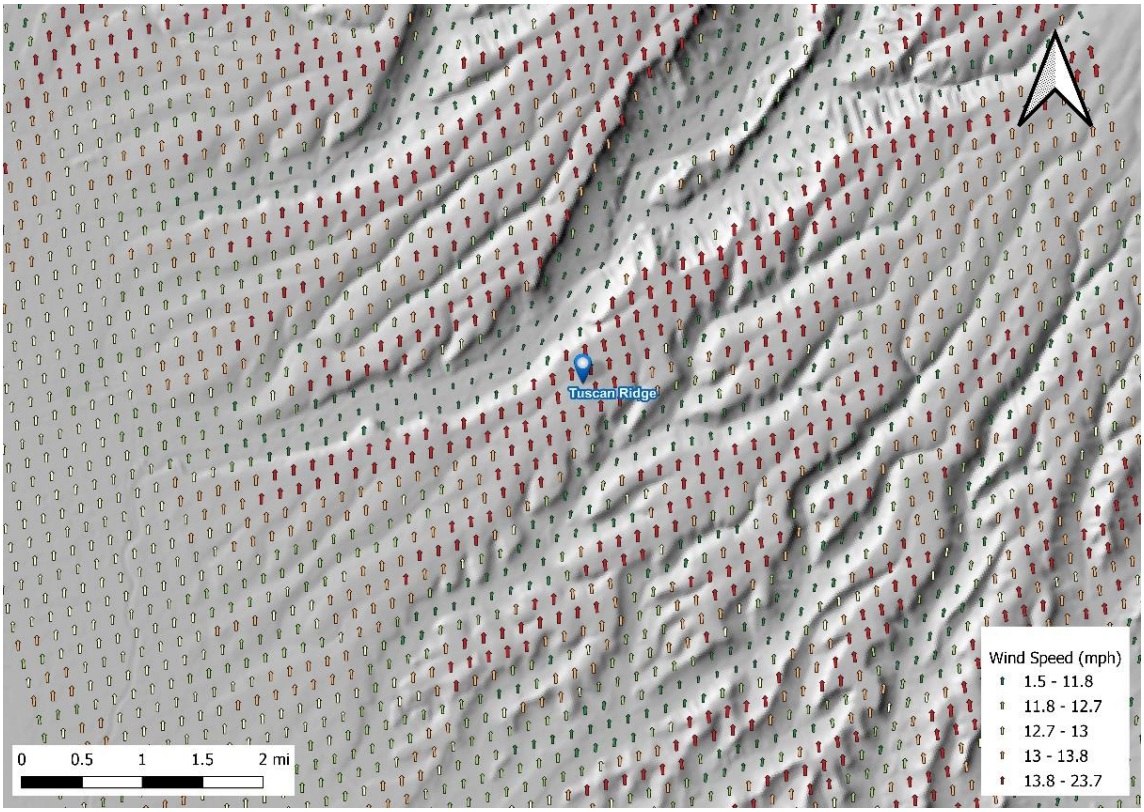


Figure 13. Average 13 mph southwest wind vectors as spatially resolved with WindNinja.

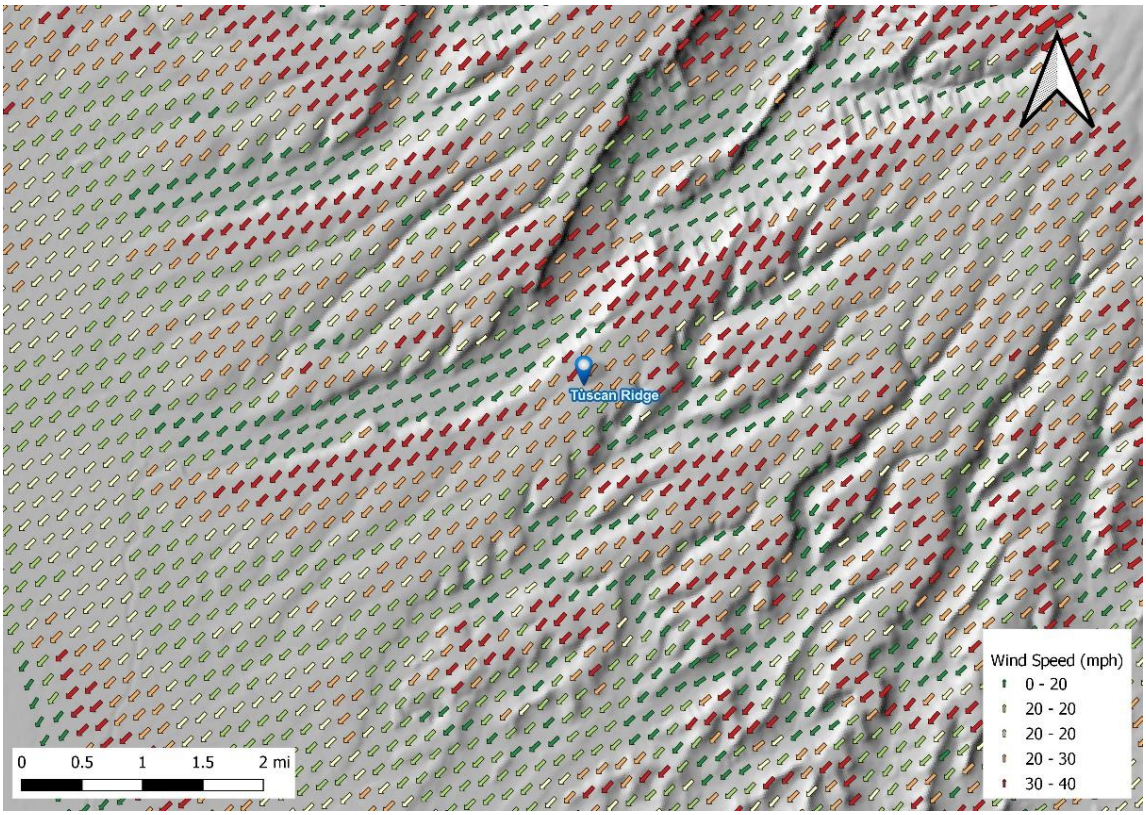


Figure 14. Extreme 25 mph northeast wind vectors as spatially resolved with WindNinja.

5.2 Fire behavior modeling with FlamMap

FlamMap [14] is a fire analysis application used to simulate potential fire behavior characteristics under environmental conditions. FlamMap uses geospatial inputs such as fuel and topography layers to approximate real-world conditions. The fuel data layers from LANDFIRE from before the Camp Fire (2018) were used to simulate peak fuel loading conditions. LANDFIRE includes elevation, slope, aspect, surface fuel model, canopy height, canopy cover, canopy base height, and canopy bulk density. Together these 8 layers constitute a "landscape file", the fundamental input for all existing fire modeling programs. Dynamic inputs that were altered to capture the two fire scenarios include wind speed, wind direction, and fuel moisture content.

Fire behavior metrics, including flame length and rate of spread, among several other available outputs, were calculated for each pixel on the landscape independently. Because of the constant environmental conditions, FlamMap does not model temporal variations caused by weather or diurnal effects. The scenarios considered for modeling are conservative in the sense that meteorological changes that would be expected over any period of time are not accounted for.

5.3 Fire scenarios

The dynamic parameter inputs for the two fire scenarios are summarized in Table 5. The fuel moisture values selected for modeling in Scenario A conservatively reflect the observed average annual lower-bound values as determined from the climatology analysis discussed above. Values in Scenario B represent a period of extreme dryness due to prolonged drought conditions, which are projected to become more frequent due to climate change [15]. Rationale for the chosen wind values was discussed above.

Table 5. Dynamic fire model input parameters per fire hazard scenario.

Scenario	Wind Speed*	Wind Direction*	Fuel Moisture Content				
			1-Hour	10-Hour	100-Hour	Live Herbaceous	Live Woody
A: Average	13 mph	SW (225°)	5%	7%	8%	30%	60%
B: Extreme	25 mph	NE (45°)	4%	5%	6%	30%	60%

*Computational domain average input values

5.4 Results

5.4.1 Ember spotting distance

Embers are glowing or burning pieces of debris that become airborne during a fire. Depending on wind conditions, embers can be carried more than a mile ahead of the main fire front. These embers can land on vegetation and create new fires, cause structural ignitions to vulnerable construction such as roofs or decks, or enter a structure through vents, and open windows and doors.

Risk from embers is related to how far ahead of the main fire front winds can transport embers. Under Scenario A conditions, potential maximum spotting distance of fire brands was 1,780 ft (0.34 miles) with more common distances around 890 ft (0.17 mi) (Figure 15). The winds in this scenario would be of minimal assistance in lofting embers due to the relative weakness of the wind. The elevated wind speeds of Scenario B were conducive to longer-range spotting with a maximum spotting distance of 4,100 ft (~0.8 mile) and a more common spotting distance of 2,000 ft (0.38 miles) (Figure 16).

Long-range spotting complicates property protection from ember ignitions as the area of ember origin may not be within the property's boundaries and therefore may not be under the direct control of property owners' fuel mitigation efforts. Structure hardening against embers then becomes of greater importance as a means of preventing ember ignition. Coordinating with neighboring properties and working with the local fire department for vegetation management in areas adjacent to the property can also help reduce risk of ignition from embers generated off the property.

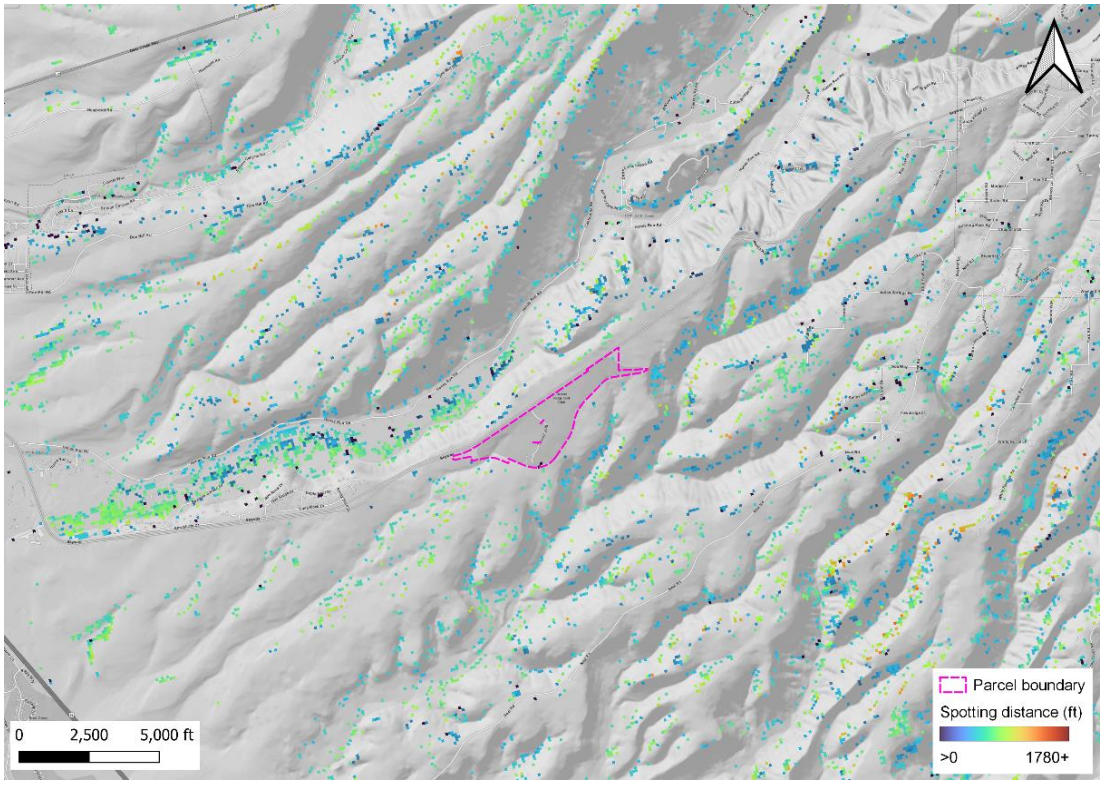


Figure 15. Spotting distances under average wind conditions.

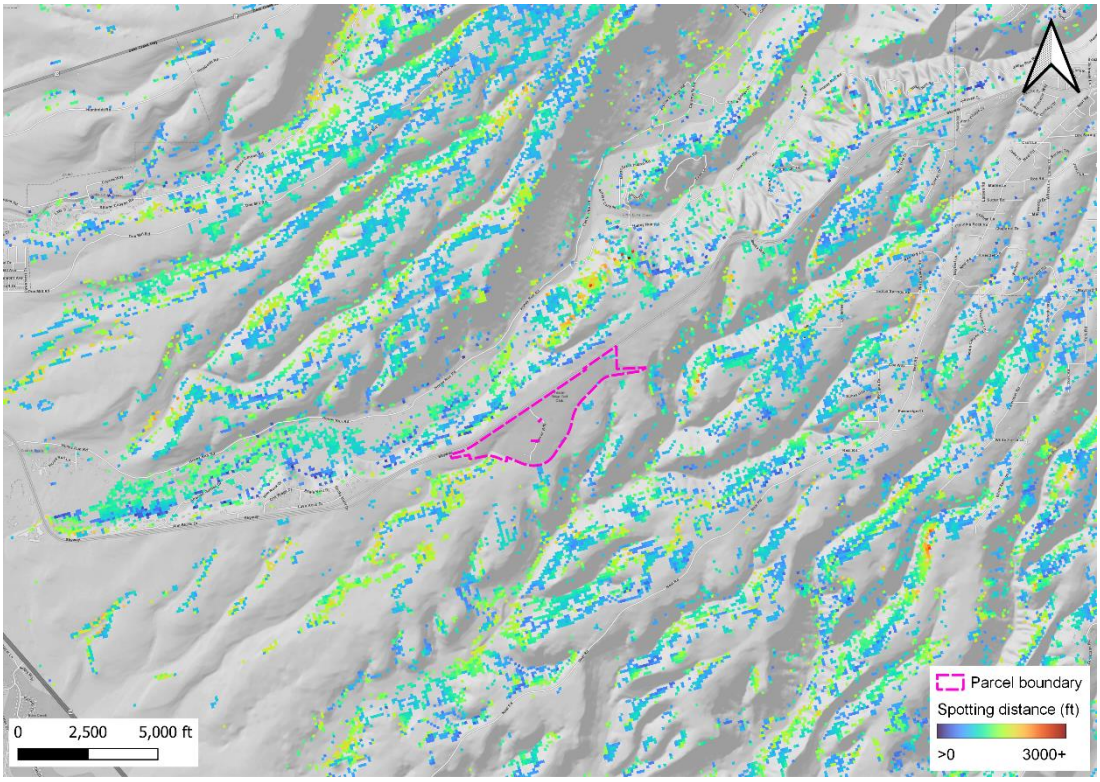


Figure 16. Spotting distance under extreme Diablo winds. Note the difference in scale between the previous figure for average conditions results.

5.4.2 Flame length

Direct flame impingement heats building materials, potentially to the extent that those materials ignite or, in the case of glass, break. To assess potential exposure by direct flame impingement, expected flame lengths were determined via modeling.

Flame lengths under Scenario A reached a maximum of 80 ft with the average flame length being 8 ft (Figure 17). Scenario B conditions may reach well over 140 feet, although average values were nearer 40 ft (Figure 18). The fuels adjacent to the property were capable of flame lengths that would directly impact buildings on the project site if inadequate mitigation measures were taken to reduce and remove hazardous fuels. Even where modeling results showed direct flame contact was not a threat to structures, longer flame lengths correlate with more intense heat and increased potential for ember generation, and therefore still pose danger when encroaching on defensible space.

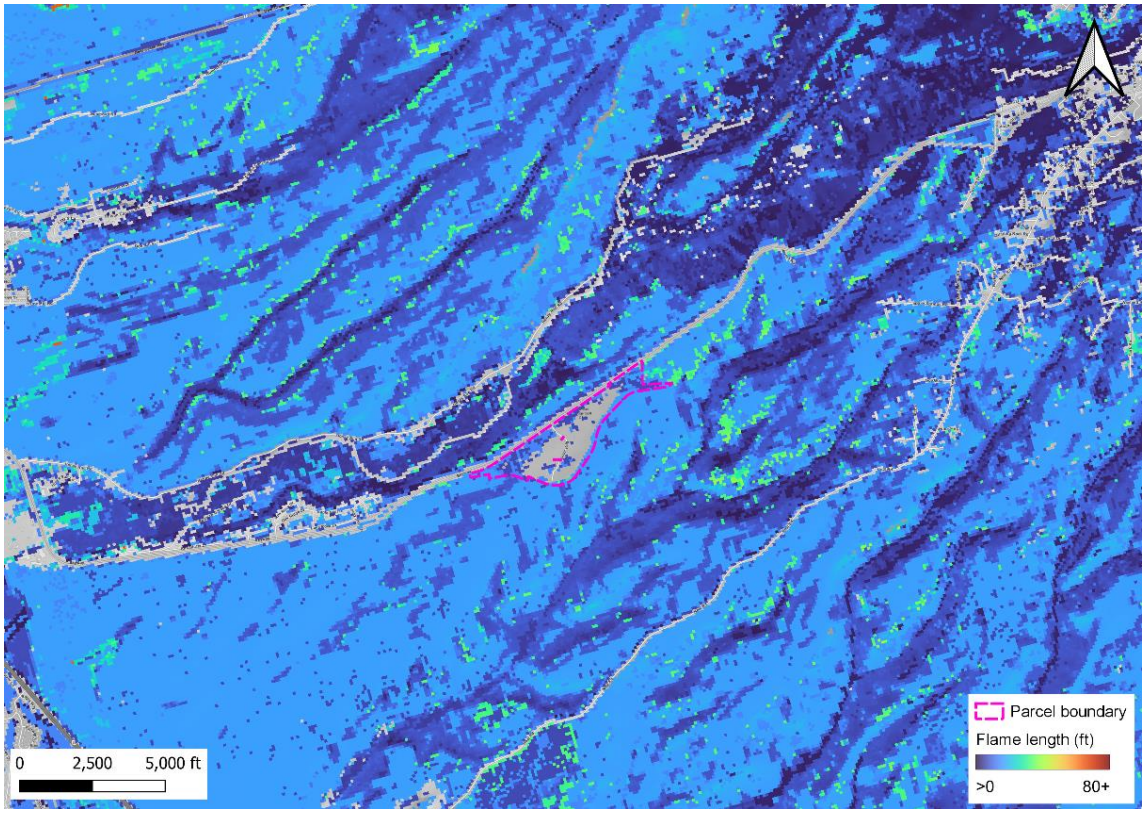


Figure 17. Flame lengths under average wind conditions

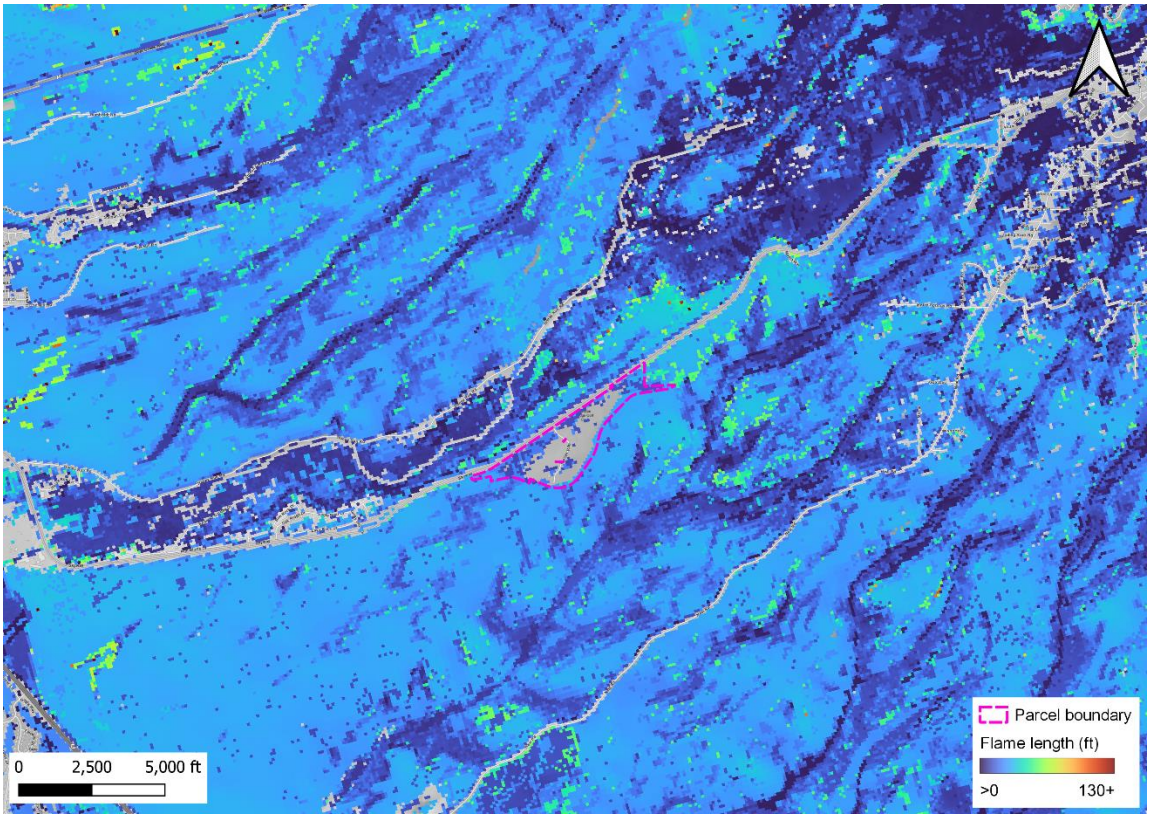


Figure 18. Flame lengths under extreme Diablo winds. Note the difference in scale between the previous figure for average conditions results.

5.4.3 Rate of spread

The surface rate of spread (ROS) is defined as the speed with which the fire is progressing away from a point. Wind, fuel moisture, and slope drive the rate of spread, creating a wide divergence in rates with small changes in any of these factors. ROS is a valuable metric for estimating the time available for evacuation or time available for the fire service to protect a structure or community.

Maximum spread rates in Scenario A were 2.5 mph with average rates of approximately 0.8 mph (Figure 19). Maximum spread rates in Scenario B were over 5 mph with average rates of approximately 2 mph (Figure 20). For both scenarios, fire was expected to spread across vegetation more rapidly upslope in areas with more grass and shrub-type fuels. These fuel-types are typical of residential landscaping and can carry fire quickly. Note that these values were specific to surface fires. The presence of spot fires and/or crown fires could create more severe spread conditions than those identified by surface fire characteristics alone.

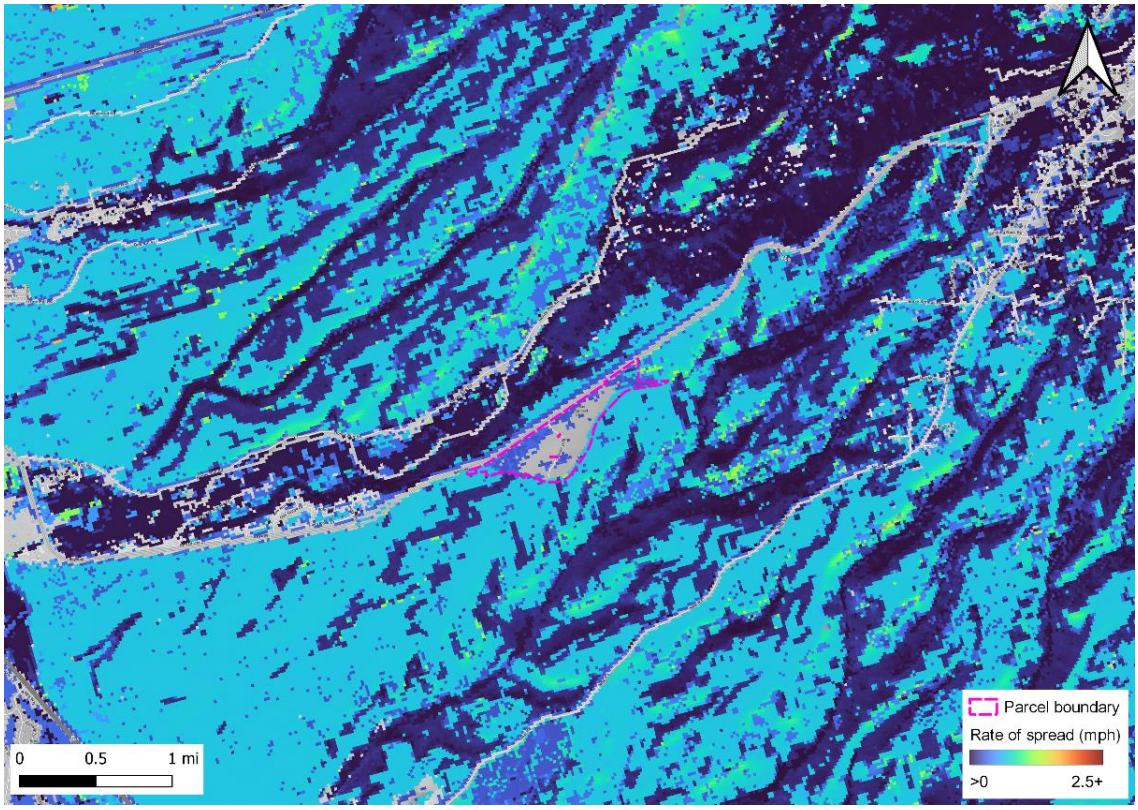


Figure 19. ROS under average wind conditions

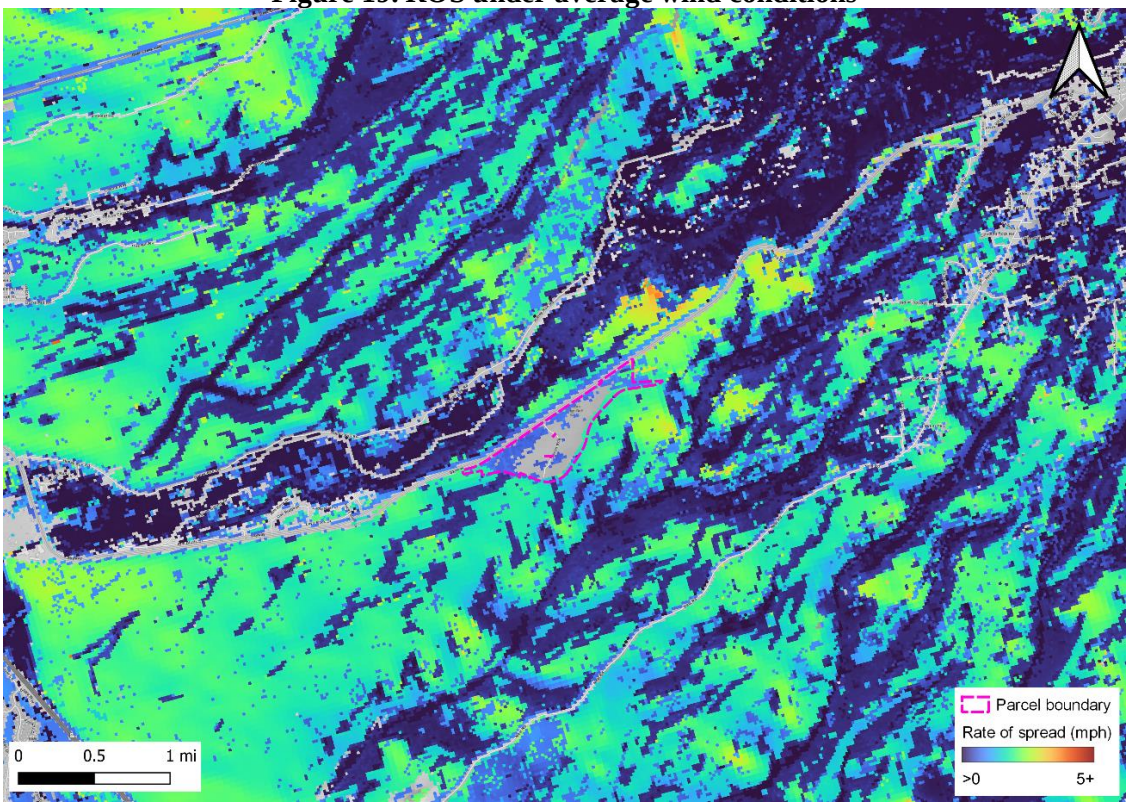


Figure 20. ROS under extreme Diablo winds. Note the difference in scale between the previous figure for average conditions results.

6.0 FIRE SPREAD SCENARIO FOR INPUT TO PROJECT EVACUATION IMPACT STUDY

In addition to the two fire scenarios modeled and evaluated previously, a third fire scenario is modeled for input to an evacuation study subsequently carried out by traffic consultants Fehr & Peers. The overall purpose of the study is to provide a general assessment of the Tuscan Ridge project impacts on potential evacuations due to a wildfire affecting the greater region, accounting for the expected increase in traffic as a result of the project development in comparison to pre-project conditions. The goals are to provide insight on evacuation impacts and to determine if mitigations beyond code requirements are necessary based on analysis findings. This work is conducted as part of assessment requirements for new developments set forth by the California Environmental Quality Act (CEQA) Appendix G Checklist.

The fire spread modeling effort conducted by Reax Engineering is intended for coordination with the Fehr & Peers memorandum dated 5 January 2023, titled, *Tuscan Ridge Transportation Impact Study – Wildfire Assessment* (attached as Appendix A: Fehr & Peers Transportation Impact Study – Wildfire Assessment). Key information provided and described herein includes the description of a fire scenario in which wildfire development and spread triggers evacuations and/or impedes evacuation roadways and associated quantitative metrics of fire arrival time across the landscape. Together, the fire spread scenario and project traffic evacuation impact study constitute a novel approach in assessment methodologies for the emerging field of community-wide wildfire evacuation analysis. The devised approach and interpretation of results are informed by the latest scientific research and expert judgement. Due to the constraints in existing fire modeling technologies and uncertainty associated with extreme wildfire events, the study is advisory in nature and findings should be interpreted so as to provide a general understanding.

6.1 Methodology: Available Safe Egress Time

An evacuation analysis methodology that is widely used in the field of fire protection engineering is the concept of Safe Egress Time. In order to ensure safety of those evacuating, it is necessary for the Available Safe Egress Time in the wildland-urban area (WASET) to be greater than the Required Safe Egress Time in the wildland-urban area (WRSET). This concept is depicted in Figure 21 as a timeline involving subevents following an ignition [16]. The three core components of the timeline include:

1. fire development and spread,
2. household and pedestrian evacuation decision-making, and movement to transport systems; and
3. transport/traffic movement to safety, including notification or warning to the public, travel time to a vehicle, and traffic movement time.

If evacuation of a town is complete before a fire reaches it or conditions become untenable, then it can be stated that WRSET < WASET, which is the ideal circumstance. *The assessment conducted herein aims to provide a quantitative understanding of the first component of the WASET/WRSET timeline listed above, namely, the time associated with fire development and spread in a scenario that would cause evacuations in the project region.*

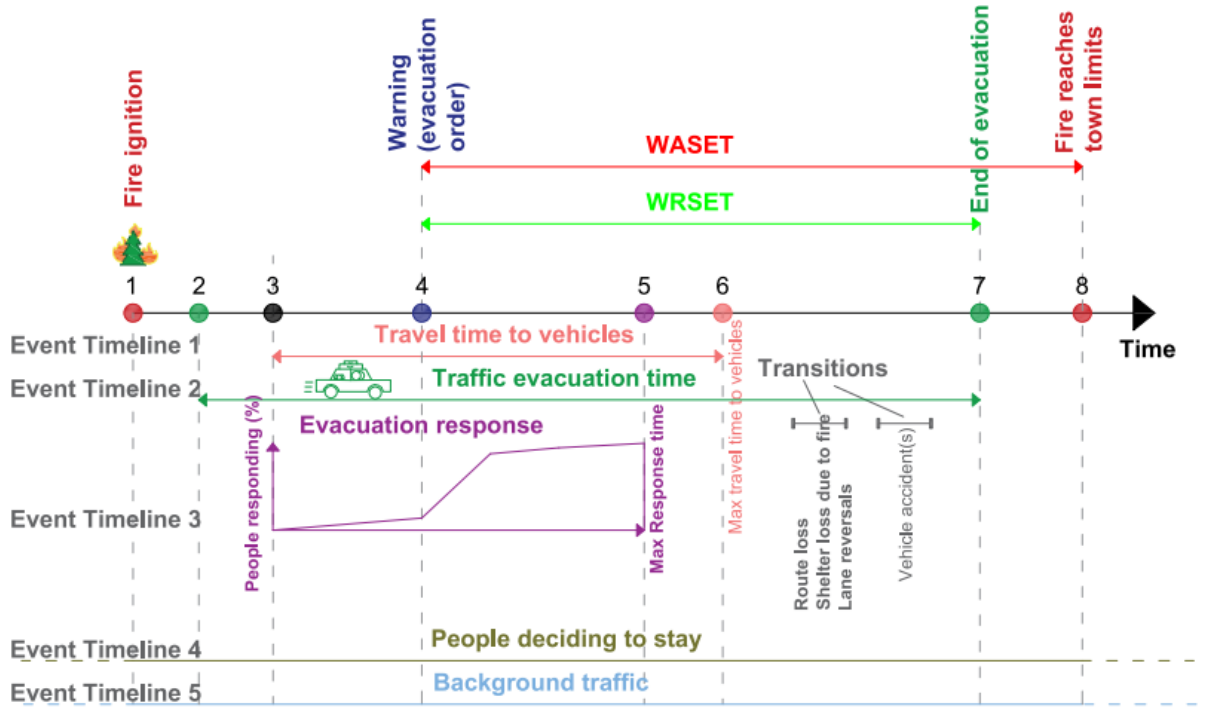


Figure 21. Timeline of events for consideration in a wildfire evacuation. WASET refers to the Available Safe Egress Time in the wildland urban interface area and WRSET refers to the Required Safe Egress Time in the wildland urban interface area. Image from [16].

6.2 Methods and tools

The method selected to quantify the fire development and spread component of the Available Safe Egress Time is by calculating the fire front Minimum Travel Time (MTT) using the available module included with the FlamMap software [14]. A fire scenario is developed based on historical environmental and ignition data as described below.

6.2.1 MTT fire spread model

The Minimum Travel Time (MTT) module of the FlamMap software is a two-dimensional fire growth model. It calculates the fire arrival time across the landscape by searching for the set of pathways with minimum fire spread times from point, line, or polygon ignitions. The growth and behavior of the fire edge is treated as a vector or wave front according to Huygen's principle, similar to the FARSITE fire spread model [17]. The MTT analysis is performed under constant weather and fuel moisture conditions, enabling analysis of the effects of spatial patterns in fuels and topography [18]. In comparison to techniques that model fire growth cell-to-cell on a gridded landscape, the MTT method results in less distortion of fire shape [17]. The MTT algorithm includes heading, flanking, and backing fire spread calculations.

6.2.2 Scenario description and model inputs

A scenario is selected in which a wildfire is spreading under historical-average severe environmental conditions. The intent is to provide plausible spatiotemporal estimates of fire arrival times that can be subsequently used in a traffic analysis to inform potential cascading impacts to evacuation routes and procedures. It is not feasible to predict and plan for every scenario that would cause a wildfire to impact evacuation routes, thus, assessment of a Severe Impact scenario is considered for conservatism.

6.2.2.1 Environmental conditions

The key environmental conditions that are input in the fire model are provided in Table 6. The input values in the table reflect severe fuel moisture conditions for the location as discussed in Section 4.2. The wind

speed of sustained 25 mph exceeds the 99th percentile of historical observed conditions (Table 3), however, was chosen to facilitate a more conservative fire spread scenario. The wind speed and wind direction are resolved over the landscape using WindNinja to account for topographical effects; ultimately, wind speeds across the simulation range up to 90 mph as calculated by WindNinja.

Table 6. Key environmental conditions input to MTT fire model simulation using FlamMap.

Scenario	Wind Speed*	Wind Direction*	Fuel Moisture Content				
			1-Hour	10-Hour	100-Hour	Live Herbaceous	Live Woody
Severe Impact	25 mph	NE (45°)	4%	5%	6%	30%	60%

*Computational domain average input values

6.2.2.2 Fuel model

The landscape fuel model data input is taken from LANDFIRE Version 140 [12] which represents vegetation and landcover conditions from 2016. This is done so that the model simulation reflects fire spreading through vegetation conditions that existed prior to the 2018 Camp Fire. The post-fire land cover conditions that are present in more recent years of available LANDFIRE data do not represent the full potential of vegetation growth in the area, thus, would result in limited fire growth throughout the area that is under evaluation in the current modeling analysis. It is important to note that post-fire burned areas of forest and vegetation do not always regrow in the same manner or with the same species as pre-fire conditions. Thus, the 2016 land cover conditions are note expected to be a 1:1 reflection of future conditions, however, are a conservative assumption to facilitate a severe fire spread scenario in comparison to using land cover conditions with large areas that are still burn scarred.

6.2.2.3 Ignition location

Three simultaneous ignitions are set north of Paradise to initialize the fire model. This is done to enable fire growth in the simulation such that would be severe enough to cause widespread evacuations and that require Skyway Road to be utilized. First attempts at running the model with just one or two ignitions resulted in simulations with insignificant fire spread. The selected location of the ignitions is based on historical ignition frequencies (see Section 1.2, Figure 3), noting that an ignition to the northeast of the project site under a Diablo wind event would result in the greatest impact to evacuations affecting the project region.

6.2.3 Limitations and assumptions

There are limitations in applying fire models for simulating fire spread in urban areas for several reasons. For one, structures are considered a "non-burnable" fuel type. There is also uncertainty associated with the underlying models that drive fire behavior since the physical phenomena are complex and not well understood, including ember generation and transport, fire whirls, and other extreme behavior. There is also a loss of accuracy and confidence in results when modeling fire spread for more than a few hours. This is due to constantly changing weather and winds conditions, which are not recursively fed into the model to reflect ambient conditions as a fire evolves. Fire suppression efforts are also not modeled; this is a limitation of fire modeling capabilities. Thus, quantitative results should not be heavily relied upon when evaluating ASET as the assumptions and limitations of such an analysis are scenario specific.

Limitations are accounted for by applying conservative environmental conditions, as discussed above, and by converting the urban fuel model NB1 to the burnable fuel type TL6, which represents a moderate load broadleaf litter fuel. TL6 was selected for the fuel type conversion because it has the highest presence in the Paradise region out of all the other fuel models, except for NB1. Note that both structures and other urban land cover such as roadways are converted to TL6 using this method. While not an accurate representation of land cover, this method facilitates fire spread in urban areas, including spot fire ignition, which was otherwise not possible using the NB1 fuel model.

6.3 Simulation results and discussion

The MTT model provides fire arrival times indicating the time at which a fire reaches locations across the landscape following assumed ignition at the start of the simulation time. The modeling results of the Severe Impact scenario are presented below with a discussion following that includes operational insight from CAL FIRE as well as a comparison to the fire growth conditions observed during the Camp Fire.

6.3.1 Fire arrival time

The model results in Figure 22 show simulated fire growth that spreads from the three ignition locations and the associated fire arrival times over a 30-hour period. The model outputs are overlaid with Butte County geospatial data showing evacuation routes [19] in solid pink lines and evacuation zone boundaries [20] in solid black lines so that a visual and quantitative evaluation of potential impacts can be made. The evacuation zone ID values in Figure 22 are unique identifiers for each of the evacuation zones.

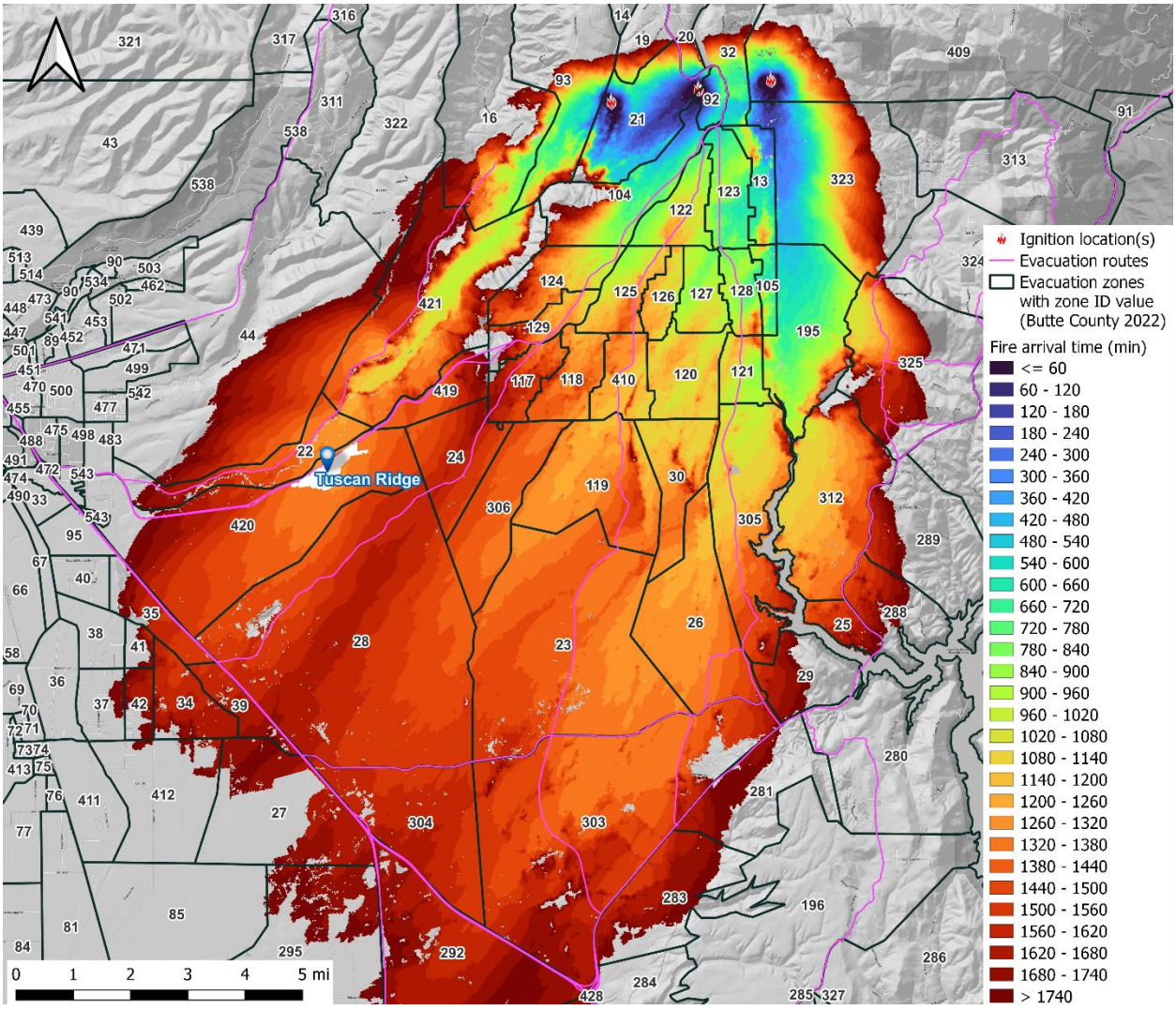


Figure 22. MTT fire spread model results showing fire arrival time for the Severe Impact scenario.

Following ignition, the fire takes approximately 1300 minutes (21.7 hours) to reach the project site ~7 miles away; this equates to an average rate of surface fire spread (ROS) of 0.32 mph. The maximum ROS that is produced in the scenario is approximately 3.8 mph, observed to the southeast of the project site. Average

ROS values throughout the domain are closer to 1.2 mph. Skyway Road is the evacuation route that will serve the project site; a fire spreading under a severe northeast Diablo wind event, as modeled, is not likely to prohibit evacuation along Skyway Road for those in the area of the Tuscan Ridge development for the first 21 hours of fire growth. Once evacuees reach Highway 99, both north and south directions are available for evacuation for the first 25 hours following ignition. These results do not account for potential impediments due to smoke, the time it takes to send evacuation notification, or the time it takes for occupants to take protective action.

6.3.2 Discussion of results

The simulation results for fire arrival time indicate overall relatively low ROS values based on historical-average severe environmental conditions. Based on feedback from CAL FIRE Captain Chris Boyd in an email correspondence to Raney Management dated 16 December 2022, a critical ROS is considered over 3 mph. Speeds greater than this indicate a fire situation that is more difficult to control and generally requires increased response resources. Despite the assumption of conservative input conditions, there are limited areas in the simulation where the ROS reaches over 3 mph, and the average ROS is approximately 1.2 mph. This assumes that the fire remains a surface fire as the MTT fire model is limited to calculating *surface* fire spread rate and thus does not account for potential increased spread rates that might be associated with crown fires and extreme ember spotting.

Due to the limitations of modeling wildland-urban fire spread using simulation tools, observed fire spread conditions during the 2018 Camp Fire are reviewed for an understanding of a potential extreme scenario of significance. For reference, peak wind gusts recorded during the Camp Fire exceeded 50 mph and sustained winds ranged from 12 to 27 mph. The overall rate of fire spread from Pulga to Highway 99 was approximately just over 1 mph [21]. This aligns with the modeling inputs and results discussed above. However, reports of spotting ignitions ahead of the main fire front indicate rate of spread as high as 18 mph at some points during the Camp Fire development [21]. The potential for this level of extreme fire behavior is not capable of being reflected in the MTT fire model.

The results also show that, given the input conditions and model assumptions, an oncoming wildfire that originates north of Paradise would take approximately 20 hours until it reached the evacuation zone where Tuscan Ridge is located. Yet, within the first hour, a wildfire developing as modeled would trigger the evacuations of several zones that would also rely on Skyway Road for evacuation. The evacuation impact scenario detailed in the study by Fehr & Peers assumes that evacuation would take place in two phases, with the first phase addressing the immediate areas of concern, followed by a larger geographic area evacuating two hours later. As such, it is expected that Tuscan Ridge occupants evacuating along Skyway would encounter some level of traffic when ordered to evacuate or if doing so voluntarily early. With a two-phase evacuation, Fehr & Peers study estimates an associated maximum travel time forecast of 51 minutes on Skyway from east of Neal Road in Paradise to Fair Street in Chico. This evacuation travel time assumes the addition of the Tuscan Ridge development. With no project conditions, the same maximum estimated travel time is 47 minutes.

Thus, given that the proposed project adds only 4 minutes to the estimated travel times and that evacuations would be complete within 3 hours of initial evacuation orders, it can be implied that a fire spreading under the modeled severe conditions would be capable of being managed with sufficient time to respond and evacuate even with the additional traffic that would be created by the Tuscan Ridge development.

SECTION 2: FIRE RISK REDUCTION

This section outlines fire protection regulations and code requirements, in addition to recommended strategies based on analysis findings presented in Section 1, for reduction of wildfire risk to the proposed Tuscan Ridge development and surrounding areas. Vegetation management and structure hardening measures are discussed in depth, and available evacuation strategies are highlighted. The guidance provided in this plan is intended to complement the existing Butte County Community Wildfire Protection Plan [22], which is applicable to the Tuscan Ridge area and broadly covers fire planning topics including pre-fire treatments, fuels reduction, prescribed burning, defensible space inspections, fire-resistant building construction standards enforcement, land use planning, and fire safety education. As the project progresses through planning and design stages, a project emergency response plan can be developed as necessary.

7.0 VEGETATION MANAGEMENT PLAN

Incorporating fire safe concepts into the landscape is critical for property survival in a wildfire. Under the right environmental conditions, the grasses, shrubs, trees, and other vegetation become fuel sources. When fire encounters areas of heavy fuel loads (continuous brush, downed vegetation or small trees) it can burn these surface and ladder fuels and may quickly move from a ground fire into a more intense and dangerous crown fire involving aerial fuels. Surface fuels are those on the surface of the ground, including everything from grasses to logs and stumps. Ladder fuels are those combustible materials (both live and dead) that provide a path for a surface fire to climb up into the crowns of shrubs or trees. Standing dead trees with many limbs near the ground are an example of ladder fuels. Aerial fuels are fuels that are not in contact with the ground, including limbs, foliage, and branches, as well as any dead material caught up in the branches of other plants. Needles draped over the branches of shrubs are an example of an aerial fuel.

Vegetation management and fuel treatments generally involve reduction of hazardous surface, ladder, and aerial fuels, and thinning out of dense tree stands. Reducing fire intensity through such treatments can be accomplished using prescribed fire, biological methods, chemical and/or mechanical treatments. These processes inherently generate waste material (slash) that is a potential fuel for fire and must be treated in some manner to reduce fuel loading or its ignition or heat potential. If implemented and maintained appropriately, vegetation management can substantially aid in fire containment and control while creating safety zones for firefighter and citizen safety.

The following subsections detail a vegetation management plan for the Tuscan Ridge development including requirements for defensible space zones, recommended maintenance frequencies, and additional mitigation recommendations based on findings from the fire behavior modeling presented in Section 5.4. It is important that the tasks within the vegetation management plan are strategically timed with local, seasonal environmental conditions to effectively reduce fuels and mitigate fire risk. As such, two general seasons that are referenced within the plan are defined as follows:

- Season 1: November through April
- Season 2: May through October

Ultimately, the goal of vegetation management is to enhance wildfire protection for life safety and structures while also protecting the landscape, watershed, wildlife, and cultural resources.

7.1 Defensible space

Applicable state and county codes (PRC 4291 and BCC Chapter 38A) require defensible space around structures and along roadways to be maintained at all times, whenever flammable vegetative conditions exist. One hundred feet of defensible space clearance is to be maintained, at minimum, in two distinct

"Zones" around structures. The defensible space zones around structures and along travel ways are as follows and shown in Figure 23:

- Noncombustible Zone from 0 to 5 feet.
- Firebreak Zone from 5 to 100 feet.
- Roadside Clearance Zone from 0 to 10 feet along travel ways.

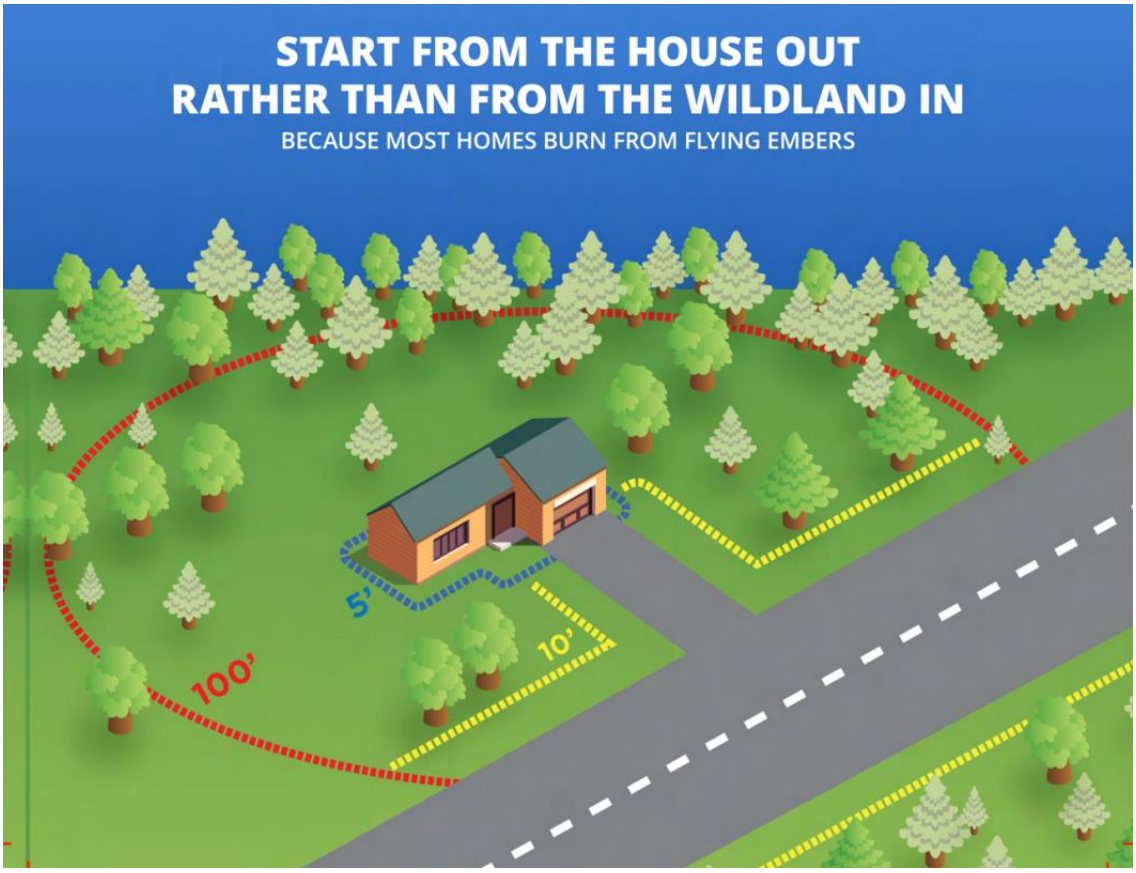


Figure 23. Defensible space zones [23].

7.1.1 Noncombustible Zone

The zone within 5 feet of any structure is termed the Noncombustible Zone (also called the Ember Ignition Zone or Ember Resistant Zone). The Fire Prevention and Protection Ordinance Chapter 38A requires all structures in unincorporated areas of Butte County to maintain the area 5 feet immediately around the structure free of combustible material to reduce structural ignitability by flames or embers. During the Camp Fire the majority of the homes destroyed were ignited by embers well ahead of the main fire front. Embers ignited combustible materials surrounding structures such as pine needles and leaves that had accumulated in rain gutters and on the roof, under decks and in corners on the exterior of the home, yard furniture, and any debris stacked near to the home.

As the nearest area to the structure, the consistent, proactive management of encroaching vegetation is required in this zone. Hard surfaces like concrete walkways or gravel are recommended. Vegetation may include well-irrigated lawns and low-growing, fire-resistive herbaceous plants. Any vegetation in this zone should be placed in a manner that, if ignited, fire will not spread to the structure. Specific tasks for vegetation management within this zone and the recommended maintenance frequencies are provided in Table 7.

Table 7. Vegetation management and maintenance frequency, Noncombustible Zone.

VEGETATION MANAGEMENT TASK		RECOMMENDED FREQUENCY
☐	Remove dead plant material that has accumulated around structures, and on or underneath decks, such as leaves, needles, and twigs.	Biweekly during Season 2
☐	Maintain the gutters and roof of a structure free of vegetative materials and debris.	Biweekly during Season 2
☐	Trim back overhanging limbs and dead branches at least 10 feet from the roof and outlet of a chimney or stovepipe.	Annually in Season 1
☐	Avoid placing vegetation next to exterior siding, windows, under vents or eaves, under or near exterior decks, or where tree limbs can extend over the roof.	Regularly
☐	Remove all combustible materials from within 10 feet of the structure and no combustible materials are to be stored under decks.	Regularly

7.1.2 Firebreak Zone

The Firebreak Zone extends at least 100 feet away from the structure in all directions, or to the property line, and should be kept "Lean, Clean, and Green". Lean means that trees and shrubs are maintained at a low density and other vegetation is fire resistive. Clean means there is no accumulation of dead vegetation or flammable debris within this area. Green means that plants are kept healthy, green, and sufficiently watered during fire season. The goal of creating a Firebreak Zone is to limit the energy and speed of an approaching wildfire by creating horizontal and vertical spacing between vegetation. Fuel modification projects for this zone include the removal, thinning and/or separating of fuels to force any crowning fire to the ground or to slow the spread of a surface fire.

Masonry, gravel, or stone walls can be used to break up fuel continuity and achieve "Lean" landscape in areas with high vegetation density. Separation of plant groups with these materials adds variety and limits the potential for fire to spread from group to group. Decorative rock, steppingstone paths, cement, and retaining walls are other available options.

Specific tasks within this zone and recommended maintenance frequencies are provided in Table 8. More aggressive measures, including greater fuel spacing and increased maintenance frequency, than suggested below should be implemented as necessary based on actual conditions.

Table 8. Vegetation management and maintenance frequency, Firebreak Zone.

VEGETATION MANAGEMENT TASK		RECOMMENDED FREQUENCY[a]
☐	All specimens should be fire-resistive vegetation, single trees, ornamental shrubbery, or similar plants used as ground cover that do not form a means of rapidly transmitting fire.	Regularly
☐	Allowable specimen shrubs are to be spaced at a distance equal to no less than 3 times their widest diameter and are not less than 15 feet from other specimens or buildings.	Regularly
☐	All specimens should be trimmed of limbs to a minimum of 6 feet from the ground or 1/3 of their height from the ground, whichever is lesser.	Annually in Season 1
☐	Space and prune trees so that crowns are not interlaced with the distance between crowns increasing with slope.	Annually in Season 1
☐	Remove ladder fuels (grass, brush, shrubs, and small trees) under mature trees to reduce vertical continuity.	Annually in Season 1

☐	Break up the horizontal continuity of fuels by thinning out dense patches of trees and shrubs or by creating islands of vegetation, in order to slow the spread of fire.	Annually in Season 1
☐	Keep vegetation watered and grass mowed to 4 inches.	Regularly[b]
☐	Remove dead plant material such as leaves, needles, and twigs. Maintain trees, shrubs, or other plants free of dead or dying wood.	Biweekly during Season 2
☐	Remove combustible materials and storage (*e.g.*, trash, patio furniture cushions, gas grills, wood piles, etc.).	Regularly during Season 2

a. Maintenance tasks like thinning and pruning can be done over the whole area every few years, or a portion of the area can be treated each year. How much is done each year depends on the amount and speed of vegetative regrowth, as well as availability of economic resources and physical capacity.
b. During fire season, restrict mowing to early morning hours. Mowing may be prohibited entirely under extreme conditions, check with local fire district for current restrictions.

7.1.3 Roadway Defense Zone

Hazardous vegetation and combustible fuels along and above roadways should be treated to minimize the chance of ignition from vehicles, and to limit the likelihood that a fire originating elsewhere encroaches on the roadway creating inaccessible conditions for evacuation and/or firefighting operations. The Roadway Defense Zone follows the Firebreak Zone guidelines and extends from 10 feet horizontally and 14 feet vertically from the paved street surface. Where a parcel is adjacent to an identified evacuation route, the Firebreak distance requirement increases to 20 feet from the edge of the roadway.

It is recommended to prioritize fuel reduction projects along the roadways including Skyway Road as it is the only artery for evacuation from the project site. Specific tasks for vegetation management in this zone are similar to the Firebreak Zone and provided in Table 9.

Table 9. Vegetation management and maintenance frequency, Roadway Defense Zone.

	VEGETATION MANAGEMENT TASK	**RECOMMENDED FREQUENCY[a]**
☐	Create a minimum 10-foot buffer on both sides by clearing all flammable vegetation down to 4 inches or less.	Regularly[b]
☐	A 20-foot firebreak measured from the edge of the roadway is required along parcels adjacent to identified wildfire evacuation routes.	Regularly
☐	Trim back overhanging limbs at least 14 feet from the surface of the roadway.	Annually in Season 1
☐	Remove all dead vegetation within 10 feet of the roadside.	Regularly
☐	Remove combustible materials and storage (*e.g.*, trash, wood piles, etc.).	Regularly

a. Maintenance tasks like thinning and pruning can be done over the whole area every few years, or a portion of the area can be treated each year. How much is done each year depends on the amount and speed of vegetative regrowth, as well as availability of economic resources and physical capacity.
b. During fire season, restrict mowing to early morning hours. Mowing may be prohibited entirely under extreme conditions; check with local fire district for current restrictions.

7.1.4 Additional required clearances

All utility generators, privately owned power poles and petroleum-based products (gasoline, diesel, liquid propane, etc.) must have a maintained Firebreak of no less than 10 feet in all directions around, above, and below. The furthest measurement should include any connections or ground contact points.

7.2 Local resources for vegetation management

Butte County is on the Fire Risk Reduction Community List because it is considered a local agency that meets best practices for local fire planning per state regulations. As such, it is prioritized for local assistance grant funding by CAL FIRE. Common projects include fire break construction and other fire fuel reduction activities that lessen the risk of wildfire to communities. This may include brush clearance around communities, along roadways and evacuation routes. Local available resources to aide in vegetation fire risk reduction efforts are highlighted here.

Butte Unit Fuels Crew

Text from [22]: The Butte Unit Fuels Crew is one of 10 CAL FIRE dedicated fuels reduction crews. It is staffed with a Fire Captain, an Engineer, an Equipment Operator, and up to eight Forestry Technicians. Equipment for the crew includes a skid steer masticator, excavator with a masticator head, and both tow and track chippers. While this crew is fire-line qualified and available for emergency response, its primary responsibility is to reduce wildland fuels using broadcast burning, pile burning, mastication, and chipping.

Butte County Fire Safe Council

Text from [22]: The Butte County Fire Safe Council (BCFSC) is the County's largest ally in educating and assisting the public with wildfire preparedness. The BCFSC is a non-profit community organization funded by grants and community donations. The organization operates in cooperation with local, state and federal fire agencies throughout Butte County. The BCFSC is the "parent" organization to several active local fire safe councils and nationally recognized FIREWISE Communities throughout the County. FIREWISE communities include: Yankee Hill, Berry Creek, Merry Mountain, Forbestown, Paradise and Forest Ranch. Local fire safe councils have been established for Town of Paradise, Yankee Hill/Concow, Berry Creek, Forbestown, Feather Falls, Cohasset, Little Chico Creek, Lake Wyandotte and Forest Ranch. The BCFSC Board of Directors is comprised of representatives from the local councils and representatives of many public and private stakeholders throughout Butte County, including CAL FIRE/Butte County Fire Department. Several defensible space assistance programs are provided by the BCFSC. The Fire Safe Home Visit Program allows residents to receive free expert advice to improve their home's chances of surviving a wildfire. The Chipping Program is available to chip brush and tree trimming slash for community members. The Residents Assistance Program assists Butte County residents who are physically and financially unable to maintain defensible space around their home and have no other person to assist in the clearance. Additional information regarding the BCFSC and the programs and resources it provides can be obtained at their website buttefiresafe.net or by calling 530-877-0984.

In addition, a potential project that is undergoing review for funding from FEMA is a fuels reduction project that has been proposed by Butte County and BCFSC [24]. The project involves hazardous fuels reduction efforts along 12 miles of Skyway Road. The project would remove brush and small trees up to 35 feet from the edges of the roads using masticators mounted on excavators. The project would include brush removal, pruning of trees, removal and chipping of understory trees, and thinning of overstory trees. If awarded, the funding would assist Butte County and BCFSC in implementing the project, which would reduce the risk of wildfire spread and potential impacts to evacuations via Skyway Road.

8.0 STRUCTURE FIRE PROTECTION DESIGN

Implementing structure hardening strategies that reduce the risk of building ignition from exterior fire exposure can improve property protection against an oncoming wildfire. Presented in this section are general fire protection design requirements and strategies for increased resistance against ember ignitions and direct flame impingement. Combined with adequate defensible space maintenance, these measures are intended to bolster safety of the residential and commercial buildings proposed for the Tuscan Ridge development. The guidance provided in this section follows the requirements of CBC Chapter 7A and CRC Chapter 337 and may be considered as a basis for building material and assembly design compliance. A

complete set of design requirements would need to be produced for the various proposed buildings during a later stage of project development.

8.1 Construction materials and methods

The use of fire-resistive construction materials and methods gives buildings an intrinsic, passive resistance against exterior fire exposures. Structure hardening is crucial to reduce the risk of damage or loss due to exterior fire exposure, in addition to creating and maintaining defensible space around buildings. The most vulnerable components of a structure in the face of a wildfire are the roof, vents, windows, decks, siding, and nearby combustible materials such as vegetative debris, wood piles, patio furniture, etcetera. Embers are the biggest threat to structures in the wildland-urban interface yet can be effectively mitigated through holistic implementation of measures that together can significantly reduce overall structural vulnerability and property fire risk.

The terms “noncombustible” and “ignition-resistant” are used throughout this section to describe material properties and are defined in CBC as follows.

Noncombustible as applied to building construction material means a material which, in the form in which it is used, is either one of the following:

1. Material of which no part will ignite and burn when subjected to fire. Any material passing ASTM E136 shall be considered noncombustible.
2. Material having a structural base of noncombustible material as defined in Item 1 above, with a surfacing material not over $^1/_8$ inch (3.2 mm) thick which has a flame-spread index of 50 or less.

"Noncombustible" does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to flues, heating appliances or other sources of high temperature shall refer to material conforming to Item 1. No material shall be classed as noncombustible which is subject to increase in combustibility or flame-spread index, beyond the limits herein established, through the effects of age, moisture or other atmospheric condition.

Ignition-resistant describes a type of building material that resists ignition or sustained flaming combustion sufficiently so as to reduce losses from wildland-urban interface conflagrations under worst-case weather and fuel conditions with wildfire exposure of burning embers and small flames, as prescribed in Section 703A and [State Fire Marshal] SFM Standard 12- 7A-5, Ignition-Resistant Material.

✻**Note:** A list of approved building assemblies and materials that meet State Fire Marshal testing requirements for exterior protection against fire is located at: https://osfm.fire.ca.gov/divisions/fire-engineering-and-investigations/building-materials-listing/

8.1.1 Roofing

- ☐ Install Class A fire-rated roofing assemblies. Roof features, such as eaves, overhangs, soffits, rafters, and gutters, should also be constructed of or protected with noncombustible or ignition-resistant materials for optimal protection.
- ☐ Spaces created between roof coverings and roof decking should be fire stopped by approved materials or have one layer of minimum 72lb mineral surfaced non-perforated cap sheet complying with ASTM D 3909.
- ☐ Install noncombustible, corrosion-resistant metal gutter covers or debris guards to prevent the accumulation of leaves and debris in roof gutters.
- ☐ Provide and maintain a screen over the outlet of every chimney or stovepipe that is attached to any fireplace, stove, or other device that burns any solid or liquid fuel. The screen should be constructed of nonflammable material with openings not more than 1/2 inch.

- ☐ Install metal flashing where two sloped roof surfaces meet, as this is a weak point. Where valley flashing is installed, the flashing is not less than 26 gage and installed over not less than one layer of minimum 72lb mineral surfaced non-perforated cap sheet and at least 36 inches wide running the full length of the valley.
- ☐ Enclose overhangs with soffits that have a minimum 1-hour fire-resistance rating. Use flat, horizontal soffits instead of attaching the soffits to the sloped joists, which creates sloped soffits. A flat soffit reduces the potential for entrapment of embers and hot gases.

8.1.2 Vents

- ☐ Ventilation openings shall be fully covered with Wildfire Flame and Ember Resistant vents approved and listed by the State Fire Marshal or tested to ASTM E2886. This applies to ventilation openings for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening intended to permit ventilation, either in a horizontal or vertical plane.
- ☐ Vents installed on a sloped roof should be covered with 1/8-inch or 1/16-inch noncombustible, corrosion-resistant wire mesh.

8.1.3 Exterior wall coverings

- ☐ Exterior wall coverings should be constructed of noncombustible or ignition resistant material, or fire-retardant-treated wood.
- ☐ Exterior wall coverings should extend from the top of the foundation to the underside of the roof sheathing, terminate at 2-inch nominal solid wood blocking between rafters at all roof overhangs, or in the case of enclosed eaves, terminate at the enclosure.
- ☐ Exterior wall assemblies that are not covered by a covering that complies with the above requirements must meet requirements of CBC Chapter 707A.4.

8.1.4 Exterior glazing

- ☐ Install glazing that conforms to the test performance requirements of SFM Standard 12-7A-2 "Exterior Window Test Standard" or multilayered glazing with minimum of one tempered pane, glass block or other window assemblies having a fire protection rating of not less than 20 minutes when tested to NFPA 257.

8.1.5 Exterior and garage doors

- ☐ Exterior doors should either have a surface or cladding of noncombustible material, ignition-resistant material, constructed of solid wood core, or meet one of the approved testing requirements per CBC 708A.3.
- ☐ Exterior garage doors should be constructed to resist the intrusion of embers from entering by preventing gaps between doors and door openings, at the bottom, sides and tops of doors, from exceeding 1/8 inch (3.2 mm).
- ☐ Gaps between doors and door openings should be protected by approved weather-stripping materials, door overlaps, or metal flashing.

8.1.6 Decks, patios, and other attached wooden structures

- ☐ Remove debris and combustible items from underneath and atop attached wooden features.
- ☐ The walking surface material of decks, porches, balconies and stairs within 10 feet of the building should be of ignition resistant material, fire-retardant-treated wood, noncombustible material, or other approved material tested in accordance with CBC Chapter 709A.3.
- ☐ Protect the exposed underside of porch ceilings with noncombustible or ignition-resistant material.

- ☐ Under floor areas, the underside of cantilevered and overhanging appendages, and floor projections should maintain the fire-resistant integrity of exterior walls, or the projection should be enclosed to the grade.

8.2 Secondary measures

8.2.1 Exterior sprinkler systems for protection against wildfire exposure

Exterior sprinkler systems for structure and property protection against wildfire exposure are relatively new to the market and not yet regulated by any recognized industry codes or standards. Available systems for residential installation are of bespoke or proprietary design; they can be installed, and are often installed, without undergoing due diligence processes such as engineering peer review or third-party certification, nor are they subject to inspection and approval by fire authorities. Although there is great promise in the concept of exterior sprinkler systems, and the need is now more critical than ever, there are many challenges in the effort to standardize such technology. An overarching issue is the lack of validation data on system efficacy since experimental testing must include evaluation of performance under an incredibly large amount of exposure conditions, which is not wholly feasible.

Nonetheless, wildfires are a real and current threat and there is anecdotal evidence that exterior sprinkler systems can provide some level of increased property protection, yet there is also evidence to the contrary. They are generally intended to work by dousing protected areas and creating high-moisture environmental conditions that will limit, slow, or entirely prohibit fire ignition and spread. Similar to interior fire protection, exterior fire protection requires an integrated systems approach, which includes the components of effective sprinkler spray design, fuel management, passive structural hardening, and adequate infrastructure. Infrastructure in this context includes water supply, fire detection system, and automatic or manual controls for sprinkler system activation and notification to owner and fire department.

This section provides general recommendations for exterior fire protection system design and infrastructure components. As there is no guarantee in the level of safety that an exterior sprinkler system can provide, the most important and proven mitigation measures remain as structure hardening and fuel management.

8.2.1.1 Structural protection

An exterior structural sprinkler system is recommended to provide direct structural defense against the effects of flames, heat, and ember intrusion and thereby reduce the chance of external ignition and damage to the building. General design considerations are provided as follows; actual design of a system would require consultation with a wildfire sprinkler system designer/supplier.

- The system should be capable of wetting the exterior of the structure that it is designed to protect. Of high importance are areas vulnerable to ember build-up and ignition, such as the roof, gutters, and eaves.
- Sprinkler spray nozzles can be either fixed, rotary, or oscillating and should be placed directly onto the structure and/or along the perimeter of the structure in a manner such that when discharged every point on the protected area is covered.
- The system should be firmly attached to the structure (or to the ground) such that it can withstand high winds and tampering by other potential nuisances (*e.g.*, animals).

8.2.1.2 Property perimeter protection

Protection of the property perimeter is another active defense method against flame spread, radiative heating, and ember ignition of combustible fuels surrounding the structures. General design considerations are provided as follows; actual design of a system would require further evaluation.

- The water distribution lines should be placed along the entire perimeter of the protected area. It is generally possible to multi-purpose a landscape irrigation system to also serve as an emergency property perimeter protection system.

- The water distribution lines should be of a non-combustible, durable material such as lay flat hose, which is commonly used by the fire service. Avoid the use of PVC or other materials that are subject to degradation in high temperatures.
- The system should be firmly secured into the ground such that it can withstand high winds and tampering by other potential nuisances (*e.g.*, animals, vehicles).

8.2.1.3 Water supply

Water supply to the property and required system pressure should be sufficient to serve the fire protection systems installed, whether that is one or both of a property perimeter sprinkler system and an exterior structural sprinkler system. Water-based fire suppressing agents (*i.e.*, environmentally safe gel or foam concentrate mixed with water) are commonly used with these active systems in lieu of pure water to increase agent volume and system efficacy. An on-site pump, either electrically driven or fuel-powered, is used to pressurize the sprinkler system to achieve an effective spray distribution. General water supply and pump system considerations are provided as follows; actual design of the systems would require further evaluation and compliance with local codes.

- The recommended minimum volume of water or wetting agent should be adequate to provide 2 inches of precipitation for property protection, which equates to approximately 2,500 gallons for a typical single residence building and surrounding terrain.
- If existing water supply on the site is deemed insufficient for an exterior fire protection system, alternative water sources can be considered such as a dedicated above-ground, emergency water storage tank.
- As a powerline fire ignition mitigation measure, utility entities may enable Public Safety Power Shutoffs (PSPS) during extreme fire weather conditions. Thus, it is recommended to use a portable fire pump with a standalone power supply that is not reliant on main electrical utility distribution.

8.2.1.4 Fire detection, system activation and monitoring

Exterior sprinkler systems can be activated by automatic or manual means following fire detection and should be designed to minimize accidental or premature sprinkler discharge. An effective exterior wetting system relies on appropriate and timely discharge of the sprinkler spray nozzles. For ease of operations and improved situational awareness, automatic detection and actuation controls, as well as system status monitoring, should be coordinated through a central control interface that can be accessed by the homeowner and fire authorities. Again, due to anticipated PSPS events, it is recommended to install a system with a standalone power supply that is not reliant on main electrical utility distribution.

8.2.1.5 Installation, testing, and maintenance of systems

Proper and regular testing and maintenance of the exterior sprinkler spray and controls systems are critical to ensure that the system components remain free of debris, are in good condition, and will function as designed during an emergency. Ensure that the sprinkler system vendor provides a plan for ongoing system testing and maintenance.

9.0 RISK MITIGATION RECOMMENDATIONS BASED ON FIRE BEHAVIOR ANALYSIS

Local fire hazard and risk analysis findings are interpreted to inform risk reduction measures for the proposed project that are recommended beyond the minimum requirements set forth by code as outlined above. Implementation of these additional mitigation strategies aim to address existing fire hazards and limit future potential fire risk.

9.1 Vegetation management and defensible space

- Due to the potential for a rapidly spreading fire during a Diablo wind event, and since Skyway Road is the sole evacuation route serving the proposed development, prioritize vegetation management efforts to the northeast of the project site and along Skyway and all connecting evacuation roadways.
- Based on the potential fire behavior modeled under Scenario B conditions, flame lengths can reach well over 140 feet in the project area with average values nearer 40 feet (Section 5.4.2). Therefore, it is recommended that guidelines of the Firebreak Zone are applied throughout the Tuscan Ridge development (other than where the Noncombustible Zone is required). In addition, a Firebreak Zone is recommended to extend outward from the development boundary to, at minimum, 50 feet or as permitted by the local fire official and environmental agencies.
- Based on fire modeling Scenario A, flame lengths of 8 feet are likely to occur under even average environmental conditions (Section 5.4.2). To minimize the chance of direct flame contact from a surface fire to tree canopies, prune tall trees up to 8 feet from the ground, which is 2 feet higher than the code-required 6 feet.

9.2 Structure and property protection

- Since the proposed subdivided lots are generally spaced in a manner that provides less than 100 feet of defensible space between structures, exterior structural fire protection design is critical to limit the chance of urban conflagration. All of the main structures including residential, commercial, industrial and other occupancy-type buildings that are planned for the development must comply with the construction design requirements of CBC Chapter 7A or CRC Chapter 337. It is further recommended that all miscellaneous and accessory structures follow these design standards regardless of if there are applicable exceptions stated in the chapters.

10.0 AVAILABLE EVACUATION STRATEGIES

Based on the findings from the traffic evacuation analysis by Fehr & Peers (*Tuscan Ridge Transportation Impact Study – Wildfire Assessment*, 5 January 2023), the proposed project is expected to have negligible local impacts on a potential future emergency evacuation due to wildfire. Their analysis estimates that a maximum of 4 minutes would be added to the travel time on Skyway Road during an afternoon evacuation scenario when comparing no project versus project conditions. Therefore, the evacuation strategies for the Tuscan Ridge development will be in alignment with existing County evacuation procedures and plans, and in accordance with applicable codes and regulations.

In the event of a disaster or large-scale incident, the Butte County Office of Emergency Management (OEM) coordinates the overall response through the Emergency Operations Center (EOC). The County OEM is to alert and notify appropriate partner agencies and the public once aware of any threat to the Operational Area. When activated, the EOC provides a central location for responding and supporting agencies to collaborate response and recovery efforts. This allows for effective and efficient information dissemination and resource deployment. In non-disaster times, the Butte County OEM supports and coordinates disaster planning, community preparedness, mitigation, and training.

Emergency communications

Key communications systems currently in place to help notify residents and businesses of emergencies and evacuation orders in Butte County include emergency radio station 1460 AM, emergency information via phone networks through dialing 2-1-1, a reverse 911 notification system, Code Red, the Integrated Public Alert & Warning System (IPAWS) through FEMA, and Alert FM. Code Red is an opt-in mass notification system that provides emergency alerts, including evacuation zones, via cellphones, landlines, email, and text messages. This system provides emergency alerts through the Butte County Sherriff's office in English,

Spanish, and Hmong. The IPAWS system provides alerts to the public through mobile phones using Wireless Emergency Alerts, and through radio and television using the Emergency Alert System and National Oceanic and Atmospheric Administration Weather Radio.

- Property owners and visitors of Tuscan Ridge are to be instructed to sign up for emergency notifications at www.buttecounty.net/massnotification
- Additional Butte County emergency communications resources are available at www.buttecounty.net/Portals/19/EvacuationMaps/StayInformed/180613_Stay_Informed_WEB.pdf

Evacuation procedures

Tuscan Ridge lies in the Butte County Evacuation Zone BUT-CSE-367, which includes the area from Butte Creek, south to just north of Neal Rd, and Hwy 99, east to just east of the former Tuscan Ridge Golf Club. If an evacuation is ordered due to a large-scale disaster such as a wildfire, Tuscan Ridge occupants would be directed to evacuate via Skyway Road. Butte County has developed evacuation plans and maps for sub-regions of the county; those that apply to Skyway Road include the Butte Creek Canyon/Butte Valley and Paradise Evacuation Maps and Plans, which are provided as attachments to this report in Appendix B.

The Butte County Sheriff or his or her designee has the authority to order evacuations and/or shelter-in-place across the County, per California Penal Code § 409.5. Operational procedures for major evacuations are detailed in the Butte County Emergency Operations Plan (EOP) – Functional Annex E. It is the responsibility of the Director of Emergency Management to implement the procedures through the County EOC. The procedures define the circumstances under which evacuations in the County may be necessary, as well as the roles and responsibilities of local response agencies. Relevant operational procedures from the County EOP are excerpted below. In general, any event that requires widespread evacuations including the Tuscan Ridge area would be managed on a situation-by-situation basis depending on the nature of the emergency and its dynamic development.

Operations

- The staff of the County EOC will monitor hazardous situations as they develop. Regular conference calls will be held between the Operational Area EOC, other potentially affected area emergency operations centers (risk and host) and appropriate state and federal agencies as to the degree of threat to Butte County and the potential for escalation. In addition, the County EOC will coordinate with local agencies as to whether the hazard will require coordination and implementation of protective actions including evacuations across multiple jurisdictions. If so, the County EOC and potentially affected jurisdictions' emergency operations centers will begin implementation of the evacuation process.
- The County EOC will coordinate and reach consensus on the area(s) most likely to be impacted. The County EOC will then notify all agencies potentially involved in the response, and request that the Director declare a Local Emergency. Working together, the County and other affected agencies and organizations will then initiate the evacuation in accordance with the provisions of this procedure, including the pre-deployment of personnel and equipment resources, if applicable.
- Under circumstances involving evacuations of multiple areas, the EOC Director may recommend to the Operational Area that a county-directed evacuation is necessary. At the EOC Director's discretion, language may be included in the EOC Director's Declaration identifying an evacuation warning or an immediate evacuation order and directing a coordinated response from the County EOC among all local response agencies. County direction of the evacuation may also occur when some or all of the following conditions are present:
    - In support of evacuations, response operations including sheltering, traffic management, and emergency public information may be required in areas not threatened by the hazard;
    - Multiple jurisdictions will use a limited number of evacuation routes necessitating central coordination and direction;

    - The threat will necessitate evacuation of large numbers of people, requiring the coordination of emergency operations among two or more counties;
    - The EOC Director has issued a Declaration of a Local Emergency; and
    - The Butte County Emergency Operations Center has been activated.
- The County EOC will monitor the progress of the evacuation and exchange information on an established time schedule to promote effective coordination by all involved. Through this procedure, the County and local EOC will coordinate the efficient deployment of resources when needed, efficient use of available evacuee shelter capacity, and effectively address modifications to evacuation routes, if necessary.

Roles and Responsibilities

- Butte County will respond to each situation requiring evacuation on an individual basis using the protocols listed in this Annex. Formation of an Evacuation Strategy Team may require representation from the following agencies:
    - Butte County Sheriff's Department
    - Butte County Fire
    - Butte County Department of Public Health
    - County Traffic Engineer
    - County Public Works
    - R.A.C.E.S.
    - County EMS Providers
    - California Highway Patrol
    - CALTRANS
    - Transit/Mass Transportation Providers

Concept of Operations (CONOPS) Support

- Immediately preceding an event that may necessitate an evacuation, and under a Local Emergency declared by the EOC Director, the County may implement response efforts through the pre-positioning of resources. The County will coordinate with other jurisdictions' Emergency Operations Centers regarding the dissemination of appropriate public information.
- During implementation, local response agencies will monitor the progress of the evacuation and exchange information on the level of traffic on routes and the use of public shelter space. Ongoing public information will be provided through the broadcast media to inform the evacuees of any change in evacuation routes, the availability of hotel and public shelter space in host jurisdictions, and similar information.

Pre-positioning Necessary Resources

- Implementation of an evacuation will require substantial personnel, equipment and supplies at various locations along the evacuation routes and at facilities designated as shelters. Further, mutual aid resources necessary for initiating and sustaining the evacuation process may need to be pre-positioned prior to or concurrently with the EOC Director's emergency declaration. Therefore, the incident action plan must include procedures regarding the pre-deployment of resources, the agencies involved, and the coordination process that will occur.
- Pre-positioning County law enforcement personnel in support of local traffic management plans should occur consistent with the resources available and the magnitude of the event. Upon implementation of this procedure, the County EOC will instruct the responsible agencies to pre-position resources as specified in the Incident Action Plan or as agreed to during local coordination conference calls.

Evacuation Protocol

The implementation of an evacuation will occur through three operational phases:

- The **Decision Phase** is initiated when the EOC, the Unified Command leadership and threatened areas determine that implementation of evacuations of vulnerable residents is necessary to preserve life. Tasks identified in this phase will be implemented prior to the initiation of an evacuation. Upon receiving a recommendation from the Unified Command that a regional evacuation may be necessary, the following actions will be implemented:
    - The EOC will coordinate with potential risk and host area EOCs regarding identified vulnerable areas, populations at risk, available evacuation routes, and possible host sheltering destinations;
    - EOC staff will coordinate with local agencies regarding evacuation and sheltering resource needs;
    - The EOC will continually monitor the event for changes that may affect the movement of evacuees and potential impacts to evacuation and sheltering resources;
    - The EOC will coordinate the release of emergency public information through the EOC Public Information Officer and conference calls;
    - Field units will identify and communicate to the EOC any issues that may impact the implementation of an evacuation or sheltering operation (holidays, high tourism season, roadway construction, etc.);
    - Local EOCs will notify the Butte County Operational Area of the potential need for an evacuation and ensure that a Local Emergency and all necessary emergency ordinances and resolutions are in effect;
    - The EOC will activate emergency information telephone lines, if necessary, to respond to inquiries from the affected population; and
    - The Operational Area EOC will notify the REOC of potentially impacted risk and host areas.
- The **Evacuation Phase** is initiated at the time the decision to implement an evacuation is finalized. Tasks identified under this phase are implemented throughout the evacuation process until the evacuation is completed. Upon reaching a decision by the Unified Command and threatened areas that an evacuation and sheltering operation must be initiated, the following actions will be implemented:
    - The EOC will instruct agencies to begin pre-positioning personnel, equipment and supply resources to support local operations (this may occur during the Decision Phase if events warrant);
    - All affected agencies and organizations will coordinate and finalize designation of risk and host areas involved in the evacuation;
    - The EOC will make estimations regarding initiation time for the evacuation and notify all affected agencies and organizations accordingly;
    - The EOC will mobilize all necessary resources, direct the use of resources in non-threatened areas (if necessary), and coordinate deployment of available mutual aid resources to support the implementation of the evacuation and sheltering operation;
    - The EOC Public Information Officer will continue to coordinate the release of emergency public information through public information conference calls; the EOC will support local efforts to provide emergency information to vulnerable residents by all available means;
    - Risk and host areas will be identified by the EOC, and when the evacuation is completed for that area the EOC will relay this information to all affected agencies and organizations; and
    - The EOC will support local law enforcement agencies with security for evacuated areas. All nonemergency access to evacuated areas will be denied during this phase.
- The **Re-entry Phase** begins immediately following the completion of an evacuation. The decision to allow re-entry into impacted areas following an evacuation will be made jointly by the EOC Director, Law Enforcement and the Unified Command. Re-entry traffic control will be directed by law enforcement, with support and coordination provided through the EOC. Re-entry will not be

allowed until the Unified Command agrees that conditions within evacuated areas are favorable for residents to return. Upon completion of initial impact assessments, appropriate agencies will initiate the actions listed below to develop and implement a re-entry plan:

- The EOC will facilitate re-entry coordination conference calls with all affected risk areas, host areas, and the Unified Command and identify which, if any, evacuated areas are in a condition to permit re-entry;
- The EOC, as well as other relevant County agencies, will provide to PIO information on the condition and accessibility of designated evacuation routes, the EOC Director authorizes the release of all information via the PIO;
- The EOC will coordinate with appropriate county and state agencies to map the regional routes available for re-entry into evacuated areas, identify traffic control resource needs, and prepare a reentry traffic management plan;
- The EOC will coordinate with the risk and host areas to identify the impact in areas throughout the planning process and support agency and organization planning efforts for re-entry traffic control within its jurisdiction;
- The EOC will finalize the re-entry plan as needed and initiate traffic control resource mobilization based on agency and organization input;
- The EOC will coordinate re-entry times into each risk and host area and arrange for publicly announced re-entry;
- The EOC PIO will prepare and release consistent, appropriate public information regarding the time re-entry is to be allowed, the areas opened, and the routes to be used by returning residents; and
- The EOC in conjunction with local law enforcement will monitor re-entry traffic on a County-wide basis, identify any needed adjustments in the re-entry plan, and take corrective action.

Additional resources for evacuation preparation and procedures are available at the following links:

- http://www.buttecounty.net/Portals/19/WildfireEvacuationChecklist.pdf
- https://www.buttecounty.net/Portals/21/Safety/Preparedness/Programs/EmergencyEvacuationList.pdf
- http://www.buttecounty.net/Portals/19/EvacuationTips.pdf
- http://www.buttecounty.net/Portals/19/EvacuationNotificationCategories.pdf

In the event of a one-way evacuation, procedural guidance is provided in the brochure linked here:

- https://www.townofparadise.com/sites/default/files/fileattachments/community/page/22281/one-way_evac_brochureweb.pdf

Emergency preparedness

Resources for guidance on general emergency preparedness, also available from Butte County websites, are collated below for reference:

- http://www.buttecounty.net/publichealth/Programs/EmergencyPreparedness/Personal-Preparedness
- http://www.buttecounty.net/oem/disasterpreparedness
- http://www.buttecounty.net/Portals/19/DisasterSuppliesKitChecklist.pdf
- https://www.buttecounty.net/Portals/21/Safety/Preparedness/Programs/72HourPlan.pdf
- https://www.buttecounty.net/Portals/21/Safety/Preparedness/Programs/Access%20_FunctionalNeedsResourceDirectory.pdf

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APPENDIX A: FEHR & PEERS TRANSPORTATION IMPACT STUDY – WILDFIRE ASSESSMENT

FEHR PEERS

Memorandum

Date: January 5, 2023

To: Nick Pappani, Raney Planning & Management

From: Ali Kothawala, Meredith Milam, and Sonia Anthoine, Fehr & Peers

Subject: Tuscan Ridge Transportation Impact Study – Wildfire Assessment

RS21-4133

Introduction

The purpose of this memorandum is to summarize the effect of the proposed Tuscan Ridge project on evacuation travel time along Skyway during a wildfire. The need for this analysis is based on recent California Environmental Quality Act (CEQA) court decisions whereby EIRs were deemed to be inadequate due to the lack of a sufficient analysis around the project's effect on the ability of the local community to evacuate due to a wildfire or similar disaster.

Background

While many types of disasters and hazards could require an evacuation, wildfires are a common hazard in California. During critical fire weather conditions of low humidity, high temperatures, and sustained winds, small fires may rapidly expand in size, burning large areas of land in a short amount of time. In rural areas with human encroachment into undeveloped, natural areas, the likelihood that wildfires will cause injuries, death, and/or property damage increases. As such, there is the possibility that the population within the hazard area may need to evacuate during a wildfire event.

Butte County has a significant history of large wildfires. Recently, the Camp Fire in 2018 destroyed 95% of buildings within the Town of Paradise, burned about 150,000 acres, and resulted in 85 fatalities. The entire town of Paradise and surrounding rural communities evacuated downhill to the southwest towards Chico and SR 99, using Skyway as the major evacuation route. Evacuees ultimately made the decision to drive contra-flow as the fire caught up to vehicles gridlocked on Skyway. Contra-flow operations and narrow shoulders blocked emergency personnel from driving eastbound towards Paradise.

The proposed Tuscan Ridge project site is located along Skyway between Chico and Paradise. The project site is located in Moderate and High Fire Hazard Severity Zones (FHSZ) in a State Responsibility Area (SRA), as determined by CalFire in 2007. CalFire recently released a 2022 draft update to the previously adopted 2007 State Responsibility Area (SRA) maps and expect the updated maps to be adopted in early 2023. The 2022 draft maps upgrade the project site to High and Very High FHSZ.

The proposed residential and commercial land uses for the Tuscan Ridge development would create additional vehicle trips on Skyway during an evacuation event. The added trips would affect the evacuation travel time on Skyway especially for affected populations east of the project site. The project's site access intersections could also influence travel time as they create new turning movement conflicts. More discussion of these conflicts and potential intersection control resolutions to reduce potential for collisions is offered in the memo *Tuscan Ridge Safety Assessment and Intersection Control Evaluation Summary* (Fehr & Peers, December 15, 2022). Therefore, the remainder of this memorandum focuses on evacuation travel time effects of the project.

Disclaimer

Emergency evacuations can occur due to a variety of events. Any emergency movement involves some uncertainty because individual behavior depends on personal risk assessment for the specific type of emergency event and associated evacuation instructions that will be specific to the context of that event. As such, this assessment is intended to provide a broad understanding of the travel time expectations using Skyway during an evacuation scenario and what effect the Tuscan Ridge project will have on those times. The analysis does not provide a guarantee that evacuations will follow modeling that is used for analysis purposes, nor does it guarantee that the findings are applicable to any or all situations. The analysis will isolate the general effect of the project on evacuation travel times.

Moreover, as emergency evacuation assessment is an emerging field, there is no established standard methodology. Fehr & Peers has adopted existing methodologies in transportation planning that, in our knowledge and experience, we believe are the most appropriate for this particular project considering available data, models, analysis budget and schedule, as well as current state of the practice.

This assessment is intended to help the county better understand the project's effect on evacuation travel time. As such, the results are based on a limited set of scenarios and modeling. Fehr & Peers cannot and does not guarantee the efficacy of the analysis beyond a general assessment of the project's effect on evacuation travel time. Any other use of the information would be beyond our professional duty and capability given the uncertainty of evacuation events and analysis limitations noted above.

Evacuation Scenario Identification

Fehr & Peers coordinated with Reax Engineering to identify potential wildfire evacuation scenarios – including the specific areas to be evacuated, the key routes between evacuation areas and the final destinations outside the hazard area. The evacuation areas are assumed to be bounded within Paradise, Magalia, and other nearby "North Ridge" communities. Scenarios are analyzed for the No Project and Plus Project conditions.

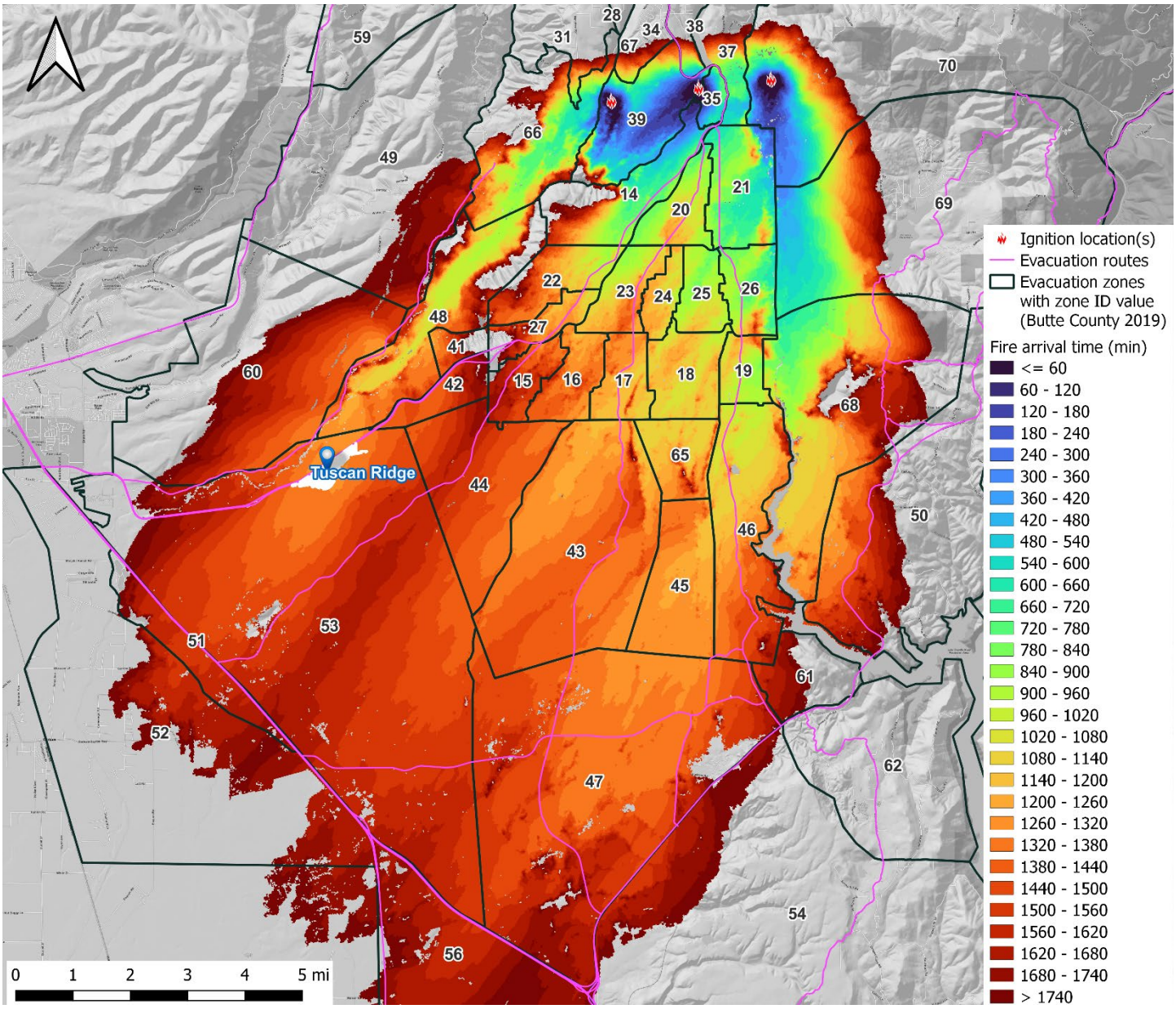
The first Scenario analyzed was decided to be a severe case where fire ignited in three locations near Magalia, spread south through Paradise all the way to SR 99. See **Figure 1** for the fire ignition time of the Severe Impact Scenario, created by fire modeling performed by REAX Engineering.

Based on this proposed fire ignition and subsequent burning pattern, Christopher Boyd, CalFire Butte Unit Fire Captain, provided insights to further define evacuation of the severe scenario:

- Given the single evacuation route from Magalia south (Skyway), a phased evacuation would be the best approach, with only the immediately affected zones in Magalia and Paradise placed under an evacuation order or warning.
- The Incident Commander or Chief Officer trigger/decision points would dictate when subsequent zones would move from a warning to an order. As the fire progressed to pre-determined decision points, those in an evacuation warning would become an evacuation order, and the zones further to the southwest would become evacuation warnings.
- Contraflow evacuation on Skyway would be key to the success of moving those in harm's way out of the area if many evacuations zones were ordered to evacuate at once.[1]
- In terms of evacuating vehicle trips, Mr. Boyd estimated:
    - 75% of vehicles would evacuate on Skyway
    - 15% of vehicles would evacuate on Clark Road/SR 191
    - 5% of vehicles would evacuate on Pentz Road
    - 5% of vehicles would evacuate on Neal Road

[1] For purposes of this analysis, contraflow conditions were not included. The resulting scenario relies solely on the capacity of the existing westbound lanes on Skyway.

Figure 1. Fire Arrival Time – Severe Scenario



Source: REAX Engineering, December 5, 2022.

Table 1 shows the general parameters of the Severe Impact Scenario, which is evaluated with and without the Tuscan Ridge project. The scenario is broken up into two evacuation phases, with the first phase (Phase 1) addressing the immediate areas of concern, followed by a larger geographic area evacuating two hours later (Phase 2). Two time periods are introduced in order to forecast the impacts of a morning (AM Scenario) versus afternoon/evening (PM Scenario). Because the AM Scenario starts in the early morning, employee trips were excluded. The PM Scenario, which starts in the midafternoon, includes employee trips.

Table 1: Severe Scenario Parameters and Details

Parameters	Overall	Phase 1	Phase 2
Zones Evacuated*	Phased evacuation of Evacuation Zones 39, 35, 37, 70, 14, 66, 20, 21, 22, 23, 24, 25, and 26	Evacuation Zones 39, 35, 37, 70, 14, 66, 20, and 21	Evacuation Zones 22, 23, 24, 25, and 26
Time of Day	AM Scenario: 6:00 AM – 12:00 PM PM Scenario: 3:00 PM – 9:00 PM	AM Scenario: 6:00 AM start PM Scenario: 3:00 PM start	AM Scenario: 8:00 – 12:00 PM PM Scenario: 5:00 – 9:00 PM
Population	8,685	2,107	6,578
Households	3,378	786	2,592
Evacuation Vehicle Trips	Residential: 5,379 Employee: 4,767	Residential: 1,295 Employee: 4,767	Residential: 4,083 Employee: 0
Trip Distribution	South: 20% via Clark Road, Neal Road, and Pentz Road, exiting on SR 99 and SR 70 West: 80% via Skyway Road and Neal Road, exiting on E Park Ave and SR 99		

Household and population estimates for the study area are provided by the American Community Survey (U.S. Census Bureau). The number of vehicles evacuating per home was also determined based upon vehicle availability by household size data from the American Community Survey. Employment trips were calculated using total employment estimates in each Traffic Analysis Zone (TAZ), the BCAG RTP/SCS model-estimated automobile mode share and average vehicle occupancy.

All roadways in the sub-area have a capacity reduction of 50% to reflect unideal evacuation conditions, including stopped/stalled vehicles and limited visibility due to smoke.

TAZs and Butte County Evacuation Zones do not perfectly overlap. See Figure 2 for details.

Source: Fehr & Peers, 2022

Historical Data

To forecast evacuation travel times, data is needed related to the capacity, speed, and travel demand on the affected roadway segments during an evacuation event. Data collection during evacuation conditions is not typically available as it could interfere with the evacuation. However, passive data collection through mobile devices was considered along with direct observation from first responders as discussed below.

StreetLight Data

Fehr & Peers pulled origin-destination data and travel time data from StreetLight Data during the Camp Fire evacuation. Preliminary analysis of the data revealed that the data was not appropriate to use for evacuation time estimates. StreetLight Data uses location-based services (LBS) data from apps and cellular phones, monitoring the overall sample size of LBS data on a month-by-month basis. Prior to 2019, the LBS sample size was limited in select locations. Beyond the overall low sample size of data before 2019, issues that arose during the Camp Fire further exacerbated data collection. Because the data is derived from cell phones, the communications infrastructure must be intact and operating to collect data. The Camp Fire caused power outages in the region, so data could not be properly collected to estimate travel time data or origin-destination data.

First Responders Survey

A survey of first responders and emergency service professionals that had participated in the Camp Fire response or currently work in the region was circulated to gather travel time estimates on Skyway between Paradise and Chico during the Camp Fire and under current conditions, given the reduced population of Paradise. Full survey responses can be found in **Appendix A**.

Key findings from the survey include:

- Evacuation travel times were perceived to be elongated due to bottlenecks caused by traffic signals on Skyway, primarily at the State Route (SR) 99 ramp intersections, causing queueing and gridlock upstream on Skyway. To avoid gridlock, it was suggested that different signal timing to encourage throughput on Skyway be implemented in the event of an evacuation.
- Contra-flow on Skyway should only be used in extreme cases and with caution due to safety concerns for both civilians and emergency responders. Fire personnel need adequate space for emergency vehicle access – Skyway does not currently have adequate shoulder width to accommodate this, so shoulders should be widened.
- Downed trees, powerlines and telecommunication lines and infrastructure were blocking roadway access and inhibiting communication. They suggest permanent electronic/solar powered communication signage along roadways to give information on contra-flow and evacuation instructions
- During the Camp Fire, roughly 30,000-50,000 people evacuated, and first responders observed 2 to 5 hour evacuation travel times for evacuees on Skyway to get from Neal Road in Paradise to Bruce Road in Chico.

- With the current population in Paradise, Magalia, and other rural communities in unincorporated Butte County, first responders suggest the smaller population size and wildfire awareness of the civilian population would result in evacuation travel estimates (ETE) shorter than the Camp Fire evacuation. However, Paradise is rebuilding, and the population is growing. There are more areas of the Southern Buttes to burn that could trigger evacuations in surrounding communities above Paradise, such as Magalia, Sterling, and Inskip that could still trigger a large-scale evacuation.

Methodology

Forecasting evacuation travel times relies on similar methodology to what is used in conventional travel demand forecasting and traffic operations analysis albeit with modifications to account for the unique circumstances of an evacuation event. The basic steps involving forecasting the demand across specific time periods, determining the distribution of associated trips, assigning the trips to specific routes, and analyzing the capacity of the routes to accommodate those trips. Since evacuation events can generate substantial demand in a short period of time, the ability of the roadway network under typical operations can be challenged to accommodate that demand without causing substantial delays such as those reported during the Camp Fire. With ample notice, an evacuation event could occur with minimal impact to roadway traffic operations and usual travel times. For this study, a short evacuation window is analyzed to isolate the project's effect on evacuation travel times during more severe conditions.

EVAC+

The Fehr & Peers EVAC+ tool was utilized to forecast travel time for two evacuation scenarios. The model uses inputs from the BCAG RTP/SCS travel demand model (version 1.2) for a typical weekday and modifies the travel demand and transportation network to represent the evacuation condition. EVAC+ is built in TransCAD 7.0 and is a dynamic traffic assignment (DTA) model sensitive to how high demand flows in short periods of time affects the speed of travel on the roadway network and the resulting ability of individual roadway segments and intersections to accommodate that demand. After determining the evacuation travel demand and associated transportation network, EVAC+ applies the DTA in 15-minute intervals to capture the demand and capacity relationship that produces resulting travel speeds and evacuation travel times. Note that this model does not include the time people may need to prepare for the evacuation. The EVAC+ workflow can be broken down into three steps:

1. Preparing the sub-area network representing the study area and the associated background trips (some background travel demand occurs on portions of the network from people traveling for common activities and not affected by the evacuation);
2. Forecasting evacuation vehicle trips during the wildfire; and
3. Dynamically assigning trips to the sub-area network.

Forecast Trips During an Evacuation Event

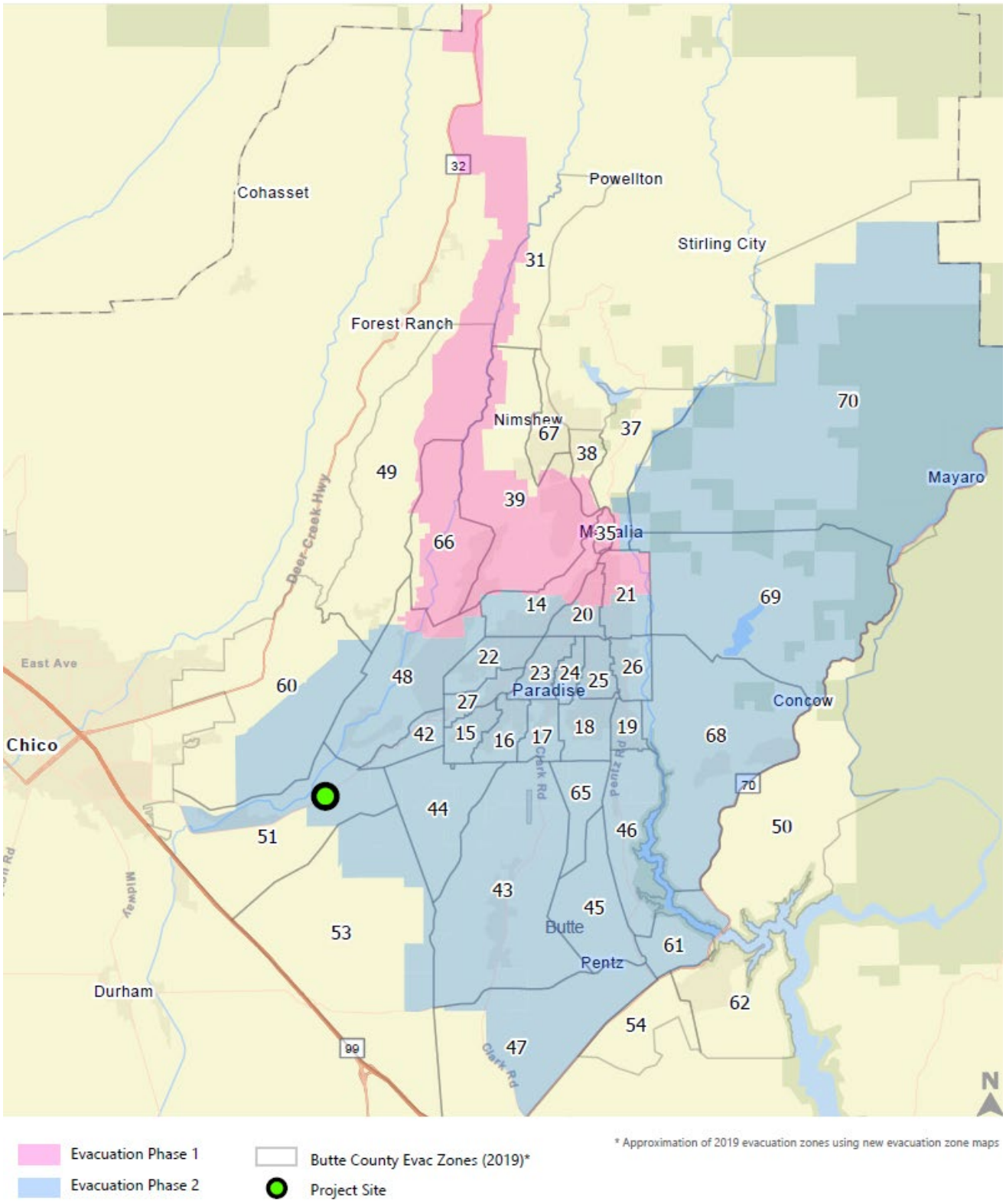
The BCAG RTP/SCS model (version 1.2) uses land use and socio-economic data (SED) inputs from Census data to estimate and forecast vehicle trips. The land use and SED data is organized by Traffic Analysis Zones (TAZs). The TAZs are polygons representing geographic areas typically consisting of similar land use contexts and travel behavior. For this study, the land use and SED data from the 2020 post-Camp Fire version of the model was used. The TAZs typically encompass a smaller geographic area than Butte County evacuation zones. **Figure 2** shows a comparison between current Butte County evacuation zones and BCAG travel demand model TAZs.

It should also be noted that trip-making behavior for an evacuation event depends on the time of day. For example, an evacuation event during the middle of the night would create an evacuation trip for most that would begin at their residence and end at either the evacuation center or somewhere external to the hazard area. The severe scenario proposed is analyzed for two different periods, one with a start time of 6 AM, when most people would be evacuating from their homes, and another starting at 3 PM, when some people evacuating from home but others evacuating as employees or visitors from non-residential areas.

Trip Assignment

Trips were assigned using the TAZs and existing roadway network extracted from the BCAG RTP/SCS model Version 1.2. The tool then references trip tables for areas outside of the impacted area to form the "background" traffic estimates on the roadways not affected during an evacuation event. Areas affected by the evacuation event are then processed through the EVAC+ tool to predict the number and sequencing of vehicle trips that occur due to the event. The sub-area extracted network and new trip tables are then input into the DTA model. The DTA model forecasts traffic, speeds, and travel times in 15-minute intervals and, as link congestion builds (roads fill with cars), it dynamically reassigns traffic to less congested routes. In this way, the DTA is sensitive to building congestion in the network that can occur quickly during an evacuation event.

Figure 2. Evacuation Zones and Model TAZs



Modeling Results

The EVAC+ travel time forecasts on Skyway from east of Neal Road in Paradise to Fair Street in Chico during the two evacuation periods modeled (6 AM to 12 PM, and 3 PM to 9 PM) are summarized for both no project and with project scenarios in **Table 2.**

Table 2: Evacuation Travel Time Forecasts on Skyway from Neal Road, Paradise to Fair Street, Chico

	Evacuation Travel Time 6 AM – 12 PM		Evacuation Travel Time 3 PM – 9 PM	
	No Project	**With Project**	**No Project**	**With Project**
Minimum	16.0 minutes	16.0 minutes	16.0 minutes	16.0 minutes
Median	19.1 minutes	19.7 minutes	19.5 minutes	20.3 minutes
Mean	18.4 minutes	18.7 minutes	24.5 minutes	26.1 minutes
Maximum	20.9 minutes	21.1 minutes	47.0 minutes	51.0 minutes

Source: Fehr & Peers, 2023.

The first evacuees would likely experience limited congestion and would have the shortest travel times, closer to 16 minutes in the AM and PM scenarios. As more demand is added to the network, speeds would decline, and travel times would get longer, with the highest travel times reaching approximately 21 minutes in the AM scenario and 51 minutes in the PM scenario. As shown above, travel times increase in the 'with project' scenario compared to the 'no project' scenario under either evacuation scenario.

The median travel time for the evacuation scenarios analyzed above is higher than the travel time estimates for 8 AM and 5 PM on an average weekday[2]. Generally, it takes between 12 and 20 minutes to traverse 11 miles on Skyway from Neal Road to Fair Street. At free-flow speeds, the model estimated travel time for the same trip is 16 minutes. During the simulated AM scenario, the median travel time is estimated to be approximately 23% higher than free-flow conditions in the AM scenario, and approximately 27% higher than free-flow conditions in the PM scenario.

Compared to the Camp Fire, where roughly 30,000 people evacuated in under a day, the EVAC+ results show shorter total evacuation times commensurate with an affected population of about 8,600. The Camp Fire resulted in evacuees experiencing total travel times of 2 to 5 hours. With roughly one third of that population evacuating in the post-Camp Fire scenario analyzed, a travel time less than one third of what it was during the Camp Fire is reasonable. This does not indicate that

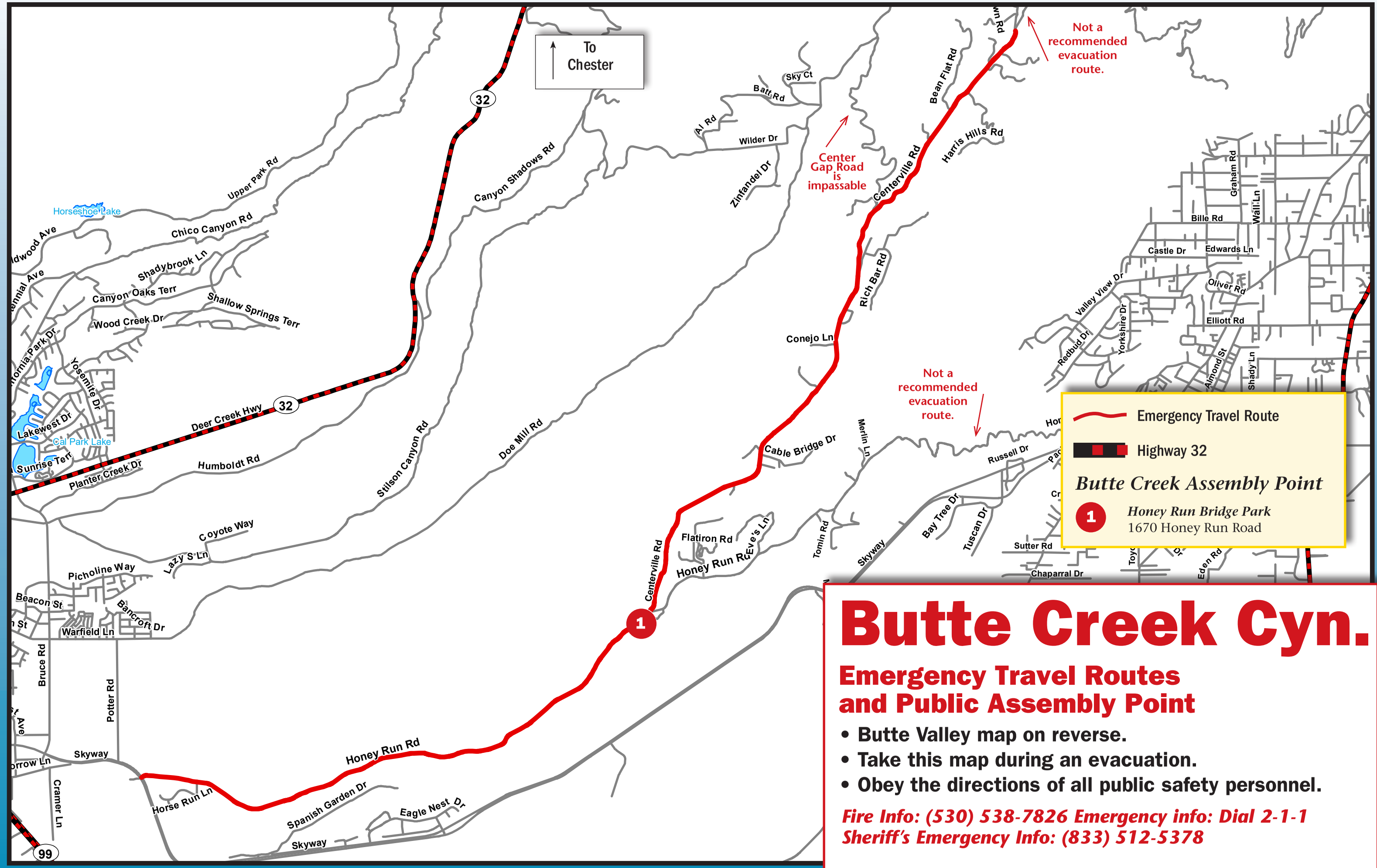
[2] Neal Rd & Skyway, Paradise, CA 95969 to Fair Street & E. Park Avenue, Chico, CA 95928 - Google Maps

longer travel times would not occur. The EVAC+ results do not include potential unknown factors that could produce much longer travel times such as road closures due to stalled or inoperable vehicles or other blockages such as falling trees.

The addition of project trips to the evacuation scenario would cause a measurable increase in evacuation travel times, increasing the median travel times in the AM and PM scenarios by under a minute. The increase in travel time due to the project is roughly proportional to the project's share of evacuation scenario vehicle trips. The residential uses of the project would add approximately 308 vehicle trips, representing roughly 6% of the total residential evacuation vehicle trips, while the employment uses of the project would add approximately 103 vehicle trips, representing roughly 2% of the total employment evacuation vehicle trips.

APPENDIX B: EVACUATION PLANS AND MAPS

Attached are the Butte Creek Canyon/Butte Valley and Paradise Evacuation Maps, along with the published local Evacuation Plan. The provided Butte Creek Canyon & Butte Valley Evacuation Plan is identical to the Paradise Evacuation Plan, thus only one is included in the set of attachments.



Butte Creek Cyn.

Emergency Travel Routes and Public Assembly Point

- Butte Valley map on reverse.
- Take this map during an evacuation.
- Obey the directions of all public safety personnel.

Fire Info: (530) 538-7826 Emergency info: Dial 2-1-1
Sheriff's Emergency Info: (833) 512-5378

Butte Valley

Emergency Travel Routes and Public Assembly Point

- Butte Creek Canyon map on reverse.
- Take this map during an evacuation.
- Obey the directions of all public safety personnel.

Fire Info: (530) 538-7826 Emergency info: Dial 2-1-1
Sheriff's Emergency Info: (833) 512-5378

NOTE: Roads on ridgetops are not all represented on this map. Those roads are on the Paradise/Upper Ridge Evacuation Plan because residents in those areas will need to evacuate north toward Paradise.

Emergency Travel Route

Highways 70, 191, 99

Butte Valley Assembly Point

1 ***Earthworm Soil Factory***
2552 Clark Road

2 ***Spring Valley School***
2771 Pentz Road

N

Lower Clark
Lower Neal
Morgan Ridge
Lake Oroville
To Paradise
To Chico
To Highway 70 & Oroville
191
99
149
70
1
2
Durham-Pentz Rd
Pentz Rd
Wheelock Rd
Messilla Valley Rd
Dry Creek
Round Valley Ranch Rd
Old Stage Rd
Clements Ridge Rd
Circle "J" Rd
Adobe Ln
Dulcinea Dr
Lehi Ln
Addys Ln
Echo Mt. Dr
Adell Ln
Hidden Valley Rd
Clear Creek Cemetery Rd
Runaway Rd
1st St
"A" St
Foxtail Ln
Williams Rd
Cory Canyon Rd
Butte Campus Dr
Lake Hills Dr
Circle 4 Ct
Cassandra Dr
Myvalli Dr
Woodrose Dr
Prairie Dr
Slickens Rd
Flag Canyon Rd
Flag Creek Rd
Coal Canyon Rd
Smith Hill Ln
Lucky 7 Ln
Morgan Ridge
Dry Creek Rd
Pioneer Trl
Silvera Ct
Lime Saddle Rd
Sunview Rd
Miocene Ct
Oroville Chico Hwy
Durham-Dayton Hwy
Book Farm Rd
Falager Ct

Mapping provided by Butte County Geographic Information Systems (GIS).

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Paradise

Emergency Fire Zones and Assembly Points

- Map of Upper Ridge on reverse.
- Take this map during an evacuation.
- Obey the directions of all public safety personnel.

Paradise Area Assembly Points

ASSEMBLY POINT

- **A** *Paradise Alliance Church*
  6491 Clark Road
- **B** *Paradise Auditorium*
  777 Nunneley Road
- **C** *Magalia Community Church*
- **D** *Pine Ridge School*

Not a recommended evacuation route.

Skyway To Hwy 99 & Chico

Clark To Hwy 70 & Oroville

Pentz To Hwy 70 & Oroville

Emergency Travel Route

Fire Info: (530) 538-7826
Emergency info: Dial 2-1-1
Sheriff's Emergency Info: (833) 512-5378

Emergency radio stations:*
1500 AM —Paradise Town Radio
1460 AM —Upper Ridge Radio

* ***May not be operating***

Mapping provided by Butte County Geographic Information Systems (GIS).

Find your zone:
Paradise: www.TownOfParadise.com/findmyzone
Butte County: www.ButteCounty.net/OEM click "Find My Zone"

My zone is: _____

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2020

Butte Creek Canyon & Butte Valley

"Ready, Set, Go" Evacuation Plan

Get ready!

Prepare your family...

Create an evacuation plan that includes:

- A designated emergency meeting location outside the fire or hazard area. This is critical to determine who has safely evacuated from the affected area.
- Several different escape routes from your home and community. Drive these routes often so everyone in your family is familiar with them.
- An evacuation plan for pets and large animals such as horses and other livestock. Go to NVADG.org
- A Family Communication Plan that designates an out-of-area friend or relative as a point of contact to act as a single source of communication among family members in case of separation. (It is easier to call or message one person and let them contact others than to try and call everyone when phone, cell, and internet systems can be overloaded or limited during a disaster.)
- Sign up for Emergency Notifications at www.buttecounty.net/massnotification

MASS NOTIFICATION

Be Prepared:

- Have fire extinguishers on hand and train your family how to use them (check expiration dates regularly).
- Keep your gas tank at least half full at all times.
- Assemble a Go Bag (emergency supply kit) for your family and pets.
- Keep a list of emergency contact numbers available.
- Post your address by your driveway so it's clearly visible.
- Obtain street maps for the city and county; keep them in your car or download them to your smart device.
- Keep a Go Bag in your car in case you cannot get to your home.
- Ensure that your family knows where your gas, electric, and water main shut-off controls are located and how to safely shut them down in an emergency.
- Make your home/property more fire safe; find resources at www.buttefiresafe.net and www.readyforwildfire.org

Our household safety plan *(complete before an emergency incident):*

Our address _____ Phone _____

In the event of an evacuation, we will meet at _____

Animals: North Valley Animal Disaster Group (NVADG) Hotline: 530-895-0000; NVADG.org

During an evacuation, we'll take our animals to _____

Local contact (neighbor/relative): In the event that roads are closed, our local contact to care for children and pets is

Name _____ Phone _____

Out of area contact/phone _____ School phone _____

Other important contacts _____

We have neighbors who may need help *(persons with disabilities or persons with access and functional needs)* _____

Fire info: (530)538-7826 Sheriff's Emergency info: (833)512-5378

Get set!

If you feel threatened, evacuate!

Home Evacuation Checklist – How to Prepare for Evacuation

Prepare for Evacuation

- Alert family and neighbors.
- Dress in appropriate clothing (i.e. clothing made of cotton or wool and work boots). Have gloves, goggles, a dry bandana and dust mask handy.
- Grab your Go-bag and add last minute items.
- Check official social media sites, tv stations, local radio and the emergency phone numbers on page one of this plan.
- Drink plenty of water and prepare your family and pets.

Inside the house

- Shut all windows and doors, leaving them unlocked.
- Remove flammable window shades and lightweight curtains. Close metal shutters.
- Move flammable furniture to the center of the room, away from windows and doors.
- Shut off gas at the source (meter or tank). Turn off pilot lights.
- Leave your lights on so firefighters can see your house under smoky conditions.
- Shut off the air conditioning.

Outside the house

- Put your Go Bag in your vehicle.
- Back your car into the driveway with vehicle loaded and all doors and windows closed. Carry car keys with you and have a spare. Leave gates open for access.
- Check on neighbors and make sure they are preparing to leave.
- Gather up flammable items from the exterior of the house and bring them inside (patio furniture, toys, door mats, trash cans, etc.) or place them in your pool.
- Turn off propane tanks.
- Move propane BBQs and appliances away from structures.
- Connect garden hoses to outside water valves or spigots for use by firefighters. Fill water buckets and place them around the house.
- Don't leave sprinklers on or water running, they can affect critical water pressure.
- Leave exterior lights on so your home is visible to firefighters in the smoke or darkness of night.
- Have a ladder available and place it at the corner of the house so firefighters can quickly access roof.
- Seal attic and ground vents with pre-cut plywood or commercial seals.
- Patrol your property and monitor the fire situation. **Don't wait for an evacuation order if you feel threatened.**

Animals: Go to NVADG.org

- Locate your pets; transport them with you. Need help? Call NVADG: 530-895-0000
- Prepare and transport large animals early to a safe location.

Remember the Six "P's"

People and pets

Papers, phone numbers, important documents

Prescriptions, vitamins, eyeglasses

Pictures and irreplaceable memorabilia

Personal computer, hard drive, discs

Plastic (credit & ATM cards), cash

Keep these six "P's" ready in case immediate evacuation is required.

Go!

It's time to leave...

When an evacuation order is issued by public safety officials or you feel threatened, leave immediately to avoid being caught in fire, smoke or road congestion. In an intense wildfire or other evacuation order, officials will not have time to knock on every door. Listen for high-low sirens.

- Advisements of potential evacuations will be given as early as possible. You must take the initiative to stay informed and aware when an evacuation is ordered or a warning has been issued. For announcements, call 2-1-1, listen to your radio, TV and monitor official social media sites from public safety and governmental agencies. For exact evacuation warnings and orders, call the Fire Info or Sheriff's Info phone numbers located on the first page.
- Areas to be evacuated and escape routes will depend upon the emergency's location, direction of travel and severity. Know your map as well as zone, if indicated. Look at the possilbe routes you might be directed to use.
- You may be directed to a designated Public Assembly Point for your immediate safety—and later to an evacuation shelter.

If you are trapped...

In your home:

- Stay calm, keep your family and pets together.
- Call 911 and inform authorities of your location.
- Keep doors and windows closed, but unlocked.
- Stay away from outside walls and windows.

On foot:

- Stay calm.
- Go to an open area clear of vegetation, a ditch or depression on level ground if possible.
- Lie face down, cover up your body.
- Use your cell phone to advise officials of your location—call 911.

In your vehicle:

- Stay calm.
- Park your vehicle in an open area clear of vegetation.
- Close all vehicle windows and vents.
- Cover yourself with a wool blanket or jacket.
- Lie on vehicle floor board.
- Use your cell phone to advise officials of your location—call 911.

***BE PREPARED.** During an evacuation you may be away from your home for an extended time. Be prepared with your completed Household Safety Plan (see page 1 of this document) and be ready to implement it. You may be directed to evacuate outside the area.*

Evacuation advisories to be prepared for:

Evacuation Order: Requires the immediate movement of people out of an affected area due to an imminent threat to life. Choosing to stay could result in loss of life. Staying may also impede the work of emergency personnel. Due to the changing nature of the emergency, an Evacuation Order may be the only warning that people in the affected area(s) receive.

Evacuation Warning: Alerts people in an affected area(s) of potential threat to life and property. People who need additional time should consider evacuating at this time. An Evacuation Warning considers the probability that an area will be affected and prepares people for a potential Immediate Evacuation Order.

Shelter in Place: Advises people to stay secure at their current location by remaining in place as evacuation will cause a higher potential for loss of life.

Rescue: Emergency actions taken within the affected area to recover and help injured or trapped citizens leave the area. Entry into this area is restricted to rescue workers only.

Be Prepared:

During an evacuation you may be away from your home for an extended time. Be prepared with your Household Safety Plan (see page 1 of this document) and be ready to implement it.

Assembly Point

A temporary asembly area for evacuees to assemble until conditions subside and evacuation routes are accessible, or for evacuees who otherwise cannot evacuate the community on their own and need assistance to be moved to a shelter. Note: Evacuees capable of evacuating on their own to designated shelters or other areas outside of their community do not need to go to Public Assembly Points unless directed by officials.

Keep a copy of this plan in your car and home.

Funding provided by North Valley Community Foundation and the Butte Strong Fund.

Butte Creek Canyon & Butte Valley "Ready, Set, Go" Evacuation Plan

Butte County Fire Safe Council
5619 Black Olive Drive
Paradise, CA 95969

NON-PROFIT
ORGANIZATION
US Postage
PAID
Cedar Creek

www.buttefiresafe.net 530-877-0984
www.readyforwildfire.org
Need more evacuation plans? Go to:
www.buttecounty.net/oem

One-Way Evacuation Operations

"One-Way Evacuation Operations" means that all the travel lanes on a designated section of road would proceed in one direction as residents and visitors leave the area in advance of a wildland fire or emergency.

Key Points

- Primary Evacuation Plans will be implemented first. If these plans are proving effective in handling the evacuating traffic, then a One-Way Evacuation Operation is not likely to be implemented. One-Way Evacuation Operations are most likely to be used in populated areas.
- Emergency responders will decide if One-Way Evacuation must be implemented based on the specific needs of the incident. Entry and termination points will be determined based on the location, direction and rate of the fire spread.
- Be sure to obey the officers' directions and follow the traffic cones and other route markers. All state highway safety regulations and traffic laws apply for the reversed lanes, including speed limits.
- Message boards may be used to provide key information at the beginning of the reversed lane to assist you with your choices.
- Law enforcement officers or other personnel will be at the entrance and termination of the route directing traffic. Do not stop to ask questions because officials will not answer questions and this will slow the evacuation process.
- Check social media sites, tune into local radio and TV stations or call 2-1-1 for emergency information about the One-Way Evacuation route.
- Vehicles entering the One-Way Evacuation route are expected to travel to the end of the route.
- Commercial vehicles, recreational vehicles and those towing boats or other trailers should remain in the right hand travel lanes.
- Stay with your vehicle at all times.

What Routes will be used for One-Way Evacuation?

- Routes will be based on the specific needs of the incident. Entry and termination points will be determined based on the location, direction and rate of the fire spread.

If your vehicle stops working, pull it as far off to the side of the road as you can.

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