MCMURTRY CREEK ESTATES PROJECT
DRAFT ENVIRONMENTAL IMPACT REPORT

APPENDICES

STATE CLEARINGHOUSE NO. 2024051142

VACAVILLE, CALIFORNIA

LSA

March 2025

APPENDIX A

NOP AND SCOPING SUMMARY

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CITY OF VACAVILLE
COMMUNITY DEVELOPMENT DEPARTMENT
650 Merchant Street • Vacaville, CA 95688 • CityofVacaville.gov • 707.449.5140

NOTICE OF PREPARATION

ENVIRONMENTAL IMPACT REPORT
THE MCMURTRY CREEK ESTATES PROJECT

DATE OF NOTICE:	**Friday, May 24, 2024**
MEETING DATE:	**Thursday, June 13, 2024**
MEETING TIME:	**6:00 PM**
SUBJECT:	**NOTICE OF PREPARATION (NOP) OF AN INITIAL STUDY AND ENVIRONMENTAL IMPACT REPORT (EIR) FOR THE MCMURTRY CREEK ESTATES PROJECT**
LEAD AGENCY:	City of Vacaville, Community Development Department
PROJECT TITLE:	The McMurtry Creek Estates Project (File No. 21-227)
PROJECT LOCATION:	4420 McMurtry Lane, unincorporated Solano County (APNs: 0105-200-150 and 0105-200-140)
COMMENT PERIOD:	Friday, May 24, 2024, to Monday, June 24, 2024

Notice is hereby given that the City of Vacaville (City) will be the lead agency and will prepare an Environmental Impact Report (EIR) for the proposed McMurtry Creek Estates (Project). The EIR will examine potential project impacts consistent with California Environmental Quality Act (CEQA) Section 15082. The City has prepared this Notice of Preparation (NOP) to provide information regarding the proposed project and areas of potential environmental effects proposed to be analyzed in the EIR.

A scoping session meeting will be held online via Zoom on Thursday, June 13, 2024, at 6 pm. The scoping session, which is part of the EIR process, is the time when the City gathers input from the public and agencies on specific topics that may need to be addressed in the environmental analysis. The scoping process is designed to enable the City to determine the scope and content of the EIR, identify the range of actions, and identify potentially significant environmental effects, alternatives, and mitigation measures to be analyzed.

Written comments on the scope of the EIR may be sent to:

Albert Enault
Senior Planner
City of Vacaville
650 Merchant Street
Vacaville, CA 95688
Phone: (707) 449-5364
albert.enault@cityofvacaville.com

The 30-day comment period for the NOP is from **May 24, 2024** through **June 24, 2024**. Comments on the NOP are due no later than 5:30 PM on June 24, 2024. Public agencies that provide comments are asked to include a contact person for the agency.

WEBSITE INFORMATION: https://bit.ly/McMurtryCreekEstates

PROJECT LOCATION AND EXISTING CONDITIONS: The project site (Assessor's Parcel Numbers 0105-200-150 and 0105-200-140) is located within unincorporated Solano County adjacent to northwestern city limits. The project site is within the City of Vacaville's Sphere of Influence and Urban Growth boundary. The project site is located at the end of McMurtry Lane, just north of Preserve Lane, and is currently vacant except for a single farmhouse and associated structures located in the western portion of the site. The project site is bounded by undeveloped lands to the north and west, and single-family residential uses to the east and south. To the south is Phase 3 of the Reserves at Browns Valley residential development, which is nearing completion. To the east and south is the greater Rice/McMurtry Development Area consisting of existing custom and semi-custom single-family residential homes, which is largely completed with the exception of a few custom home lots. There is one 0.31-acre constructed stock pond/seasonal wetland in the south-central part of the site and two ephemeral drainage channels in the southern portion of the site. A Pacific Gas and Electric (PG&E) easement with a transmission line is situated at the western and northern project boundaries.

PROJECT DESCRIPTION: The project proposal is to annex 15.73 acres of land from Solano County into the City of Vacaville to develop a subdivision consisting of 20 single-family residential estate lots, along with associated roadway and utility improvements. The residential estate lots would accommodate executive-style custom homes ranging in lot area from 12,412 to 63,749 square feet in size. The project proposal would require a General Plan Amendment to change the General Plan designation from Hillside Agriculture (HA) to Residential Estates (RE) and apply the Residential Estate (RE-12) pre-zoning district to the project site.

The proposed project would include approximately 3.7 acres of landscaping for fire protection, of which 2.44 acres would be designated as open space. A 150-foot irrigated landscape buffer would be installed between the property boundary and the fire access road along the northern boundary of the project site. Additionally, the proposed project would include a 15,000-square-foot detention pond. Primary access to the project site would be provided by an extension of Preserve Lane with a secondary emergency access route along McMurtry Lane. The proposed project would extend McMurtry Lane to the north and remove the existing cul-de-sac at Preserve Lane within the Reserves at Browns Valley Development to connect McMurtry Lane to the proposed extended Preserve Lane. A 22-foot-wide fire access road would be constructed around the perimeter of the development and connect to the new multi-use path on the eastern side of the proposed development, allowing access to White Stone Court, Rolling Sage Circuit, and Peacock Way within the Cheyenne Estates development.

PROJECT ENTITLEMENTS AND APPROVALS: The proposed project would require the following entitlement approvals from the City of Vacaville: (1) EIR Certification; (2) Annexation; (3) General Plan Amendment; (4) Zoning Map Amendment to Pre-Zone as Residential Estates (RE-12); (5) Tentative Subdivision Map Approval; and (6) Planned Development Approval. In addition, the proposal would require approval from the Solano Local Agency Formation Commission (LAFCO) since it would require annexation into the City. The Solano LAFCO is a separate agency from the City of Vacaville.

POTENTIAL ENVIRONMENTAL EFFECTS: The City has determined that the EIR should focus on addressing potential project-related impacts related to Transportation and Wildfire Evacuation. The EIR will include a discussion of the existing setting, thresholds of significance, evaluation of potential impacts, and if necessary, feasible mitigation measures to reduce or eliminate potentially significant impacts. Cumulative impacts will be addressed and project alternatives that would avoid or reduce identified impacts will also be analyzed. All other environmental topics will be evaluated in an Initial Study, which will be included as an appendix to the Draft focused EIR.

EIR PROCESS: Following the close of the NOP comment period, a Draft EIR will be prepared that will consider all NOP comments received. In accordance with State CEQA Guidelines Section 15105(a), the Draft EIR will be released for public review and comment for a required 45-day review period. Following the close of the 45-day public review period, the City will prepare a Final EIR, which will include responses to all substantive comments received on the Draft EIR. The Final EIR will be considered by the Planning Commission and City Council in making the decision to certify the EIR and approve or deny the project.

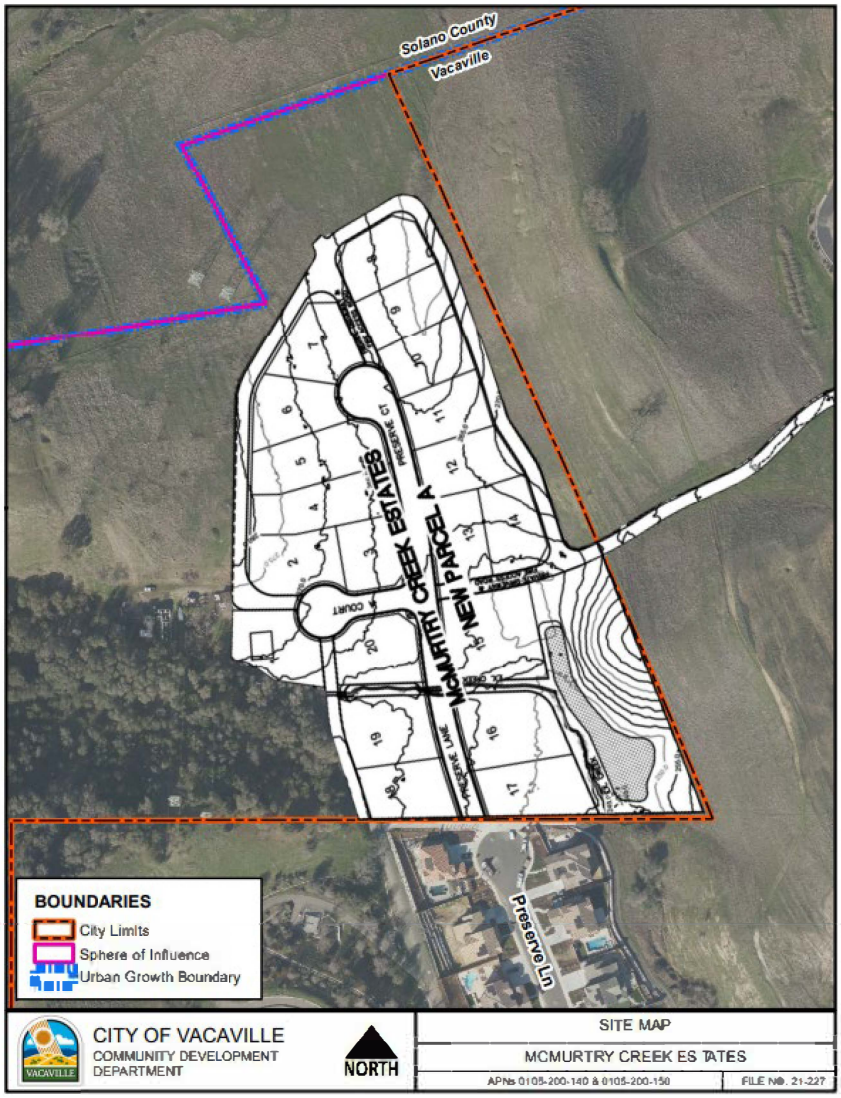
SCOPING MEETING INSTRUCTIONS

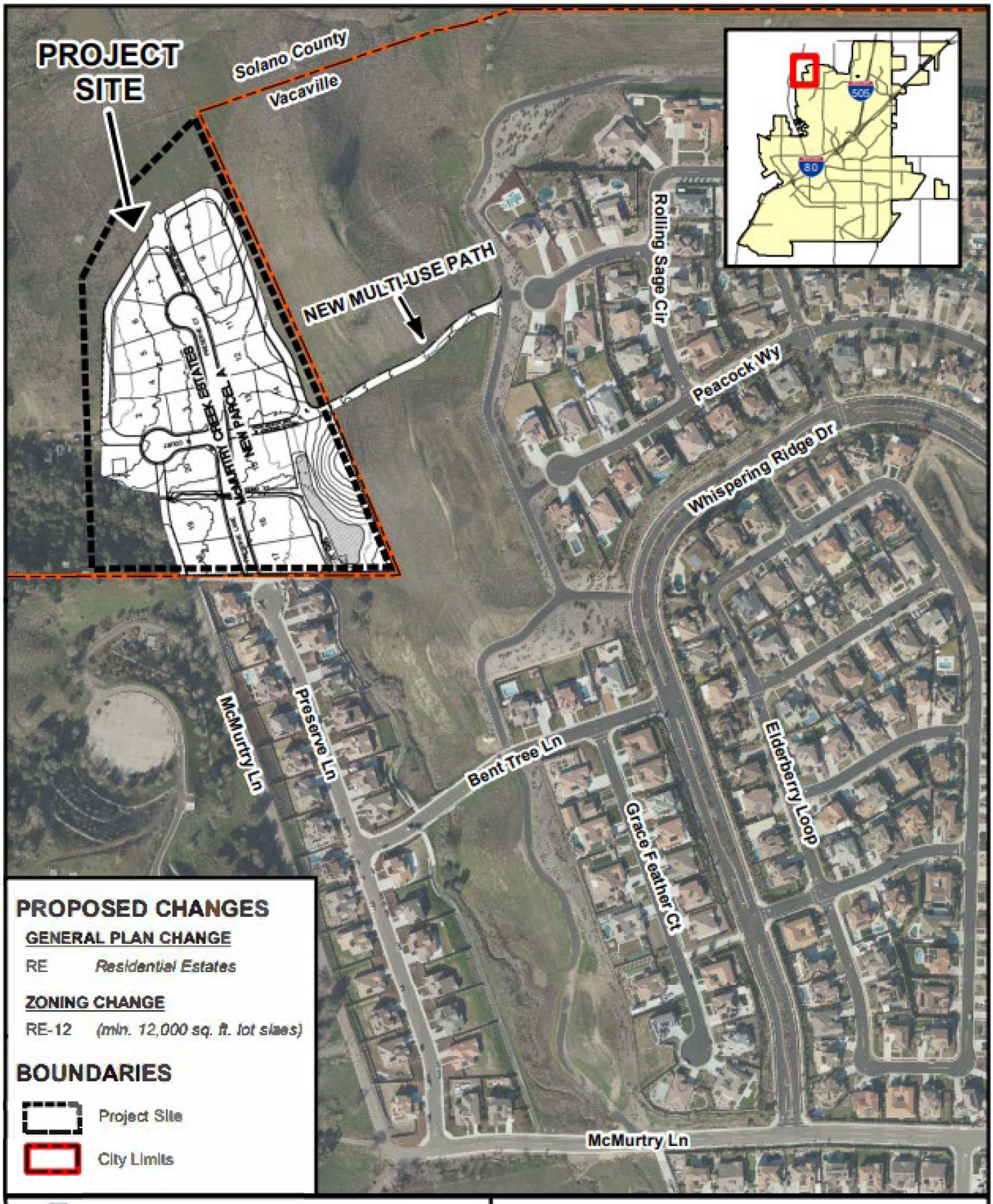
A Scoping Meeting will be held remotely via Zoom conferencing, which may be accessed using the instructions below:

Step 1) In an internet browser, go to **cov.zoom.us/join** and enter 11 digit meeting ID number **831 7251 9974**; and password **690047.**

Step 2) On the phone, call **877 853 5257** and dial meeting ID number **831 7251 9974**

This is an informational meeting, and no decision will be made on the project. Both City staff and the applicant will be present to review the plans and answer questions related to the proposal. We encourage your participation throughout the review process. You may submit comments by attending the meeting, emailing the Project Planner, or mailing them to the Community Development Department located at 650 Merchant Street prior to the scheduled meeting date listed above. Please feel free to contact the Project Planner, Albert Enault, to ask questions or be added to the mailing list. Additional information about the project is available on the website noted above. You may also visit the Community Development Department in City Hall located at 650 Merchant Street, Vacaville, CA 95688. Our offices are open between the hours of 8:00 a.m. to 5:30 p.m., Monday through Friday, excluding every other Friday such as May 31 and June 14.




PROJECT SITE
Solano County
Vacaville
NEW MULTI-USE PATH
Rolling Sage Cir
Peacock Wy
Whispering Ridge Dr
McMurtry Ln
Preserve Ln
Bent Tree Ln
Grace Feather Ct
Elderberry Loop
McMurtry Ln
505
80
PROPOSED CHANGES
GENERAL PLAN CHANGE
RE Residential Estates
ZONING CHANGE
RE-12 (min. 12,000 sq. ft. lot sizes)
BOUNDARIES
Project Site
City Limits
CITY OF VACAVILLE
COMMUNITY DEVELOPMENT DEPARTMENT
NORTH
LOCATION MAP
MCMURTRY CREEK ESTATES
APNs 0105-200-140 & 0105-200-150
FILE NO. 21-227

CARLSBAD
CLOVIS
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

MEMORANDUM

DATE: August 9, 2024

TO: Albert Enault Senior Planner, City of Vacaville

FROM: Edward Heming, Principal, LSA

SUBJECT: McMurtry Creek Estates NOP Public Scoping Meeting Comment Summary

On June 13, 2024, the City of Vacaville (City) help a virtual public scoping session via zoom at 6:00 PM. In total, 12 participants attended the virtual scoping session. Verbal comments are arranged in order of "appearance" of the commenter.

Public Comments:

Commenter 1: Joel Jorrish

- The commenter inquired about the projected timeline for the project.
- The commenter noted that the diagram in the scoping meeting showed a multi-use path and suggested converting this path into a road to avoid exclusive use of Preserve Lane.

Commenter 2: Isabell-Resident

- The commenter expressed concerns regarding construction crews and construction vehicles using Preserve Lane instead of McMurtry Lane.

Commenter 3: Brittany Myers -Resident

- The commenter stated that she lives on Preserve Lane and believes that the development is likely to proceed.
- The commenter mentioned that the biological assessment completed in January for the proposed project did not report the presence of White-tailed kites. However, the commenter stated that she has emailed pictures of the bird within a 5-mile radius of the project site. The commenter suggested that this species may be a protected species under California law.
- The commenter referred to another executive housing development by the same applicant on Vine Street, and asked how "dire" the housing situation is in Vacaville.

- The commenter asked about the project timeline, including the return of the EIR in September and the subsequent 45-day public comment period. The commenter also asked how soon a decision on the project's approval would be made**.**
- The commenter expressed concern regarding access to the proposed project and suggested a main entry point off White Stone Court. The commenter also asked if the scoping meeting suggestions would be considered.

Commenter 4: Anonymous-Resident

- The commenter noted that there was a square on Lot 1 of the project map and asked about its purpose.
- The commenter asked whether emergency vehicles would be able to access the project site.
- The commenter asked if the proposed project would extend the McMurtry Lane cul-de-sac to the end of the street.
- The commenter asked about the presence of a pond on Lots 16 and 17 and if the pond would remain. The commenter also expressed concern for the frogs and wildlife in the area near the pond.
- The commenter mentioned that the project will take a few years.

LSA

CARLSBAD
CLOVIS
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

MEMORANDUM

DATE: July 31, 2024

TO: Albert Enault, Senior Planner, City of Vacaville

FROM: Edward Heming, Principal, LSA

SUBJECT: McMurtry Creek Estates Project Scoping Summary

LSA has completed its review of the written comments submitted to the City of Vacaville (City) during the public review period for the Notice of Preparation (NOP) prepared for the McMurtry Creek Estates Project. The table below provides a summary of the specific issues raised by the commenter and indicates whether the comment will be addressed in the Environmental Impact Report (the City is not required to address comments that do not raise environmental issues).

Summary of Scoping Comments Received by the City of Vacaville

Date	Commenter	General Issue(s) Raised	Specific Issue(s) Raised	Comment to be Addressed in EIR?
May 28, 2024	Native American Heritage Commission (NAHC)	Tribal Cultural Resources	Outlined the City's tribal consultation requirements under Assembly Bill 52 and Senate Bill 18.	Yes
June 20, 2024	California Department of Fish and Wildlife (CDFW)	Biological Resources	Outlined the requirements under CEQA for the preparation of an EIR and outlined the City's regulatory requirements under the California Endangered Species Act and Native Plant Protection Act.	Yes
June 20, 2024	Solano Local Agency Formation Commission (LAFCO)	Land Use and Planning, Public Services, Agriculture	Outlined the City's annexation requirements under LAFCO. This letter also includes an attachment outlining the Standards and Procedures, Glossary of Terms, Fees and Forms, Meeting Schedule, and Map and Description Requirements of the Solano Local Agency Formation Commission.	Yes
June 24, 2024	Central Valley Regional Water Quality Control Board (RWQCB)	Hydrology and Water Quality	Outlined the City's permitting requirements under the Central Valley Regional Water Quality Control Board	Yes

CEQA = California Environmental Quality Act
EIR = Environmental Impact Report

Attachments: Native American Heritage Commission (NAHC)
California Department of Fish and Wildlife (CDFW)
Solano Local Agency Formation Commission (LAFCO)
Central Valley Regional Water Quality Control Board (RWQCB)

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Reginald Pagaling
Chumash

VICE-CHAIRPERSON
Buffy McQuillen
Yokayo Pomo, Yuki, Nomlaki

SECRETARY
Sara Dutschke
Miwok

PARLIAMENTARIAN
Wayne Nelson
Luiseño

COMMISSIONER
Isaac Bojorquez
Ohlone-Costanoan

COMMISSIONER
Stanley Rodriguez
Kumeyaay

COMMISSIONER
Laurena Bolden
Serrano

COMMISSIONER
Reid Milanovich
Cahuilla

COMMISSIONER
Bennae Calac
Pauma-Yuima Band of Luiseño Indians

EXECUTIVE SECRETARY
Raymond C. Hitchcock
Miwok, Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov

May 28, 2024

Albert Enault
City of Vacaville
650 Merchant Street
Community Development Department
Vacaville CA 95688

Re: 2024051142, McMurtry Creek Estates Project, Solano County

Dear Mr. Enault:

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 (https://ohp.parks.ca.gov/?page_id=30331) 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: Pricilla.Torres-Fuentes@NAHC.ca.gov.

Sincerely,

Pricilla Torres-Fuentes

Pricilla Torres Fuentes
Cultural Resources Analyst

cc: State Clearinghouse

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

DocuSign Envelope ID: 6253FEF5-F847-4CF9-BB5C-3EFC45B9C085

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
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GAVIN NEWSOM, Governor
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June 20, 2024

Albert Enault, Senior Planner
City of Vacaville
650 Merchant Street, Community Development Department
Vacaville, CA 95688
Albert.Enault@cityofvacaville.com

Subject: McMurtry Creek Estates Project, Notice of Preparation of a Draft Environmental Impact Report, SCH No. 2024051142, City of Vacaville, Solano County

Dear Mr. Enault:

The California Department of Fish and Wildlife (CDFW) reviewed the Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the McMurtry Creek Estates Project (Project).

CDFW is providing City of Vacaville (City), as the Lead Agency, with specific detail about the scope and content of the environmental information related to CDFW's area of statutory responsibility that must be included in the EIR (See: Cal. Code Regs., tit. 14, § 15082, subd. (b).).

CDFW ROLE

CDFW is a **Trustee Agency** with responsibility under the California Environmental Quality Act (CEQA) for commenting on projects that could impact fish, plant, and wildlife resources (Pub. Resources Code, § 21000 et seq.; Cal. Code Regs., tit. 14, § 15386). CDFW is also considered a **Responsible Agency** if a project would require discretionary approval, such as a permit pursuant to the California Endangered Species Act (CESA) or Native Plant Protection Act (NPPA), the Lake and Streambed Alteration (LSA) Program, and other provisions of the Fish and Game Code that afford protection to the State's fish and wildlife trust resources. Pursuant to our authority, CDFW has the following concerns, comments, and recommendations regarding the Project.

PROJECT LOCATION AND DESCRIPTION

The Project site is located at approximately 38.40217° N and -121.98848° W at the northern terminus of McMurtry Lane, Vacaville, CA 95688 in Solano County and on Assessor's Parcel Numbers 0105-200-150 and 0105-200-140. The Project would annex 15.73 acres of land from Solano County into the City of Vacaville to develop a subdivision consisting of 20 single-family residential estate lots, along with associated roadway and utility improvements and a new multi-use path. The residential estate lots

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would accommodate executive-style custom homes ranging in lot area from 12,412 to 63,749 square feet. The Project would require a General Plan Amendment to change the General Plan designation from Hillside Agriculture (HA) to Residential Estates (RE) and apply the Residential Estate (RE-12) pre-zoning district to the Project site.

The CEQA Guidelines (See: Cal. Code Regs., tit. 14, § 15000 et seq.) require that the EIR incorporate a full project description, including reasonably foreseeable future phases of the Project, that contains sufficient information to evaluate and review the Project's environmental impact (CEQA Guidelines, §§ 15124 & 15378). Please include a complete description of the following Project components in the Project description:

- Land use changes resulting from, for example, rezoning certain areas.
- Footprints of permanent Project features and temporarily impacted areas, such as staging areas and access routes.
- Area and plans for any proposed buildings/structures, ground-disturbing activities, fencing, paving, stationary machinery, landscaping, and stormwater systems.
- Operational features of the Project, including level of anticipated human presence (describe seasonal or daily peaks in activity, if relevant), artificial lighting/light reflection, noise, traffic generation, and other features.
- Construction schedule, activities, equipment, and crew sizes.

REGULATORY REQUIREMENTS

California Endangered Species Act and Native Plant Protection Act

Please be advised that a CESA Incidental Take Permit (ITP) must be obtained if the Project has the potential to result in "take" of plants or animals listed or candidate species under CESA or NPPA, either during construction or over the life of the Project. **The Project has the potential to impact tricolored blackbird (*Agelaius tricolor*) and Swainson's hawk (*Buteo swainsonii*), which are both state listed as threatened species; and Crotch's bumble bee (*Bombus occidentalis*), a state candidate species.** Issuance of a CESA ITP is subject to CEQA documentation; the CEQA document must specify impacts, mitigation measures, and a mitigation monitoring and reporting program. If the Project will impact CESA listed species, such as those identified in **Attachment 1**, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain a CESA ITP.

CEQA requires a Mandatory Finding of Significance if a project is likely to substantially restrict the range or reduce the population of a threatened or endangered species (Pub.

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Resources Code, §§ 21001, subd. (c) & 21083; CEQA Guidelines, §§ 15380, 15064, and 15065). Impacts must be avoided or mitigated to less-than-significant levels unless the CEQA Lead Agency makes and supports Findings of Overriding Consideration (FOC). The CEQA Lead Agency's FOC does not eliminate the Project proponent's obligation to comply with CESA.

Lake and Streambed Alteration

An LSA Notification, pursuant to Fish and Game Code section 1600 et. seq. is required for Project activities affecting lakes or streams and associated riparian habitat. Notification is required for any activity that will substantially divert or obstruct the natural flow; change or use material from the bed, channel, or bank including associated riparian or wetland resources; or deposit or dispose of material where it may pass into a river, lake or stream. Work within ephemeral streams, washes, watercourses with a subsurface flow, and floodplains are subject to LSA notification requirements. **The Project has the potential to impact Horse Creek and other streams, in which case an LSA Notification would be warranted.** CDFW, as a Responsible Agency under CEQA, would consider the CEQA document for the Project and may issue an LSA Agreement. CDFW may not execute the final LSA Agreement until it has complied with CEQA as a Responsible Agency.

Raptors and Other Nesting Birds

CDFW has jurisdiction over actions that may result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections protecting birds, their eggs, and nests include sections 3503 (regarding unlawful take, possession or needless destruction of the nests or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird). Migratory birds are also protected under the federal Migratory Bird Treaty Act.

Fully Protected Species

Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except as follows:

- Take is for necessary scientific research;
- Efforts to recover a fully protected, endangered, or threatened species, live capture and relocation of a bird species for the protection of livestock; or
- They are a covered species whose conservation and management is provided for in a Natural Community Conservation Plan (Fish & G. Code, §§ 3511, 4700, 5050, & 5515).

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Specified types of infrastructure projects may be eligible for an ITP for unavoidable impacts to fully protected species if certain conditions are met (See Fish & G. Code § 2081.15.). Project proponents should consult with CDFW early in the Project planning process.

The Project has the potential to impact golden eagle (*Aquila chrysaetos*) and white-tailed kite (*Elanus leucurus*), which are both state fully protected species.

ENVIRONMENTAL SETTING

The EIR should provide sufficient information regarding the environmental setting ("baseline") to understand the Project's, and its alternative's (if applicable), potentially significant impacts on the environment (CEQA Guidelines, §§ 15125 & 15360).

CDFW recommends that the CEQA document prepared for the Project provide baseline habitat assessments for special-status plant, fish and wildlife species located and potentially located within the Project area and surrounding lands, including, but not limited to all rare, threatened, or endangered species (CEQA Guidelines, § 15380). The EIR should describe aquatic habitats, such as wetlands or waters of the U.S. or State, and any sensitive natural communities or riparian habitat occurring on or adjacent to the Project site (for sensitive natural communities see:https://wildlife.ca.gov/Data/VegCAMP/NaturalCommunities#sensitive%20natural%20communities), and any stream or wetland set back distances the City may require. Fully protected, threatened or endangered, candidate, and other special-status species and sensitive natural communities that are known to occur, or have the potential to occur in or near the Project site, include but are not limited to those listed in **Attachment 1**.

Habitat descriptions and the potential for species occurrence should include information from multiple sources: aerial imagery, historical and recent survey data, field reconnaissance, scientific literature and reports, U.S. Fish and Wildlife Service's (USFWS) Information, Planning, and Consultation System, California Aquatic Resources Inventory (CARI), and findings from "positive occurrence" databases such as California Natural Diversity Database (CNDDB). Based on the data and information from the habitat assessment, the EIR should adequately assess which special-status species are likely to occur on or near the Project site, and whether they could be impacted by the Project.

CDFW recommends that prior to Project implementation, surveys be conducted for special-status species with potential to occur, following recommended survey protocols if available. Survey and monitoring protocols and guidelines are available at: https://www.wildlife.ca.gov/Conservation/Survey-Protocol.

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Botanical surveys for special-status plant species, including those with a California Rare Plant Rank (http://www.cnps.org/cnps/rareplants/inventory/), must be conducted during the blooming period within the Project area and adjacent habitats that may be indirectly impacted by, for example, changes to hydrological conditions, and require the identification of reference populations. More than one year of surveys may be necessary based on environmental conditions. Please refer to CDFW protocols for surveying and evaluating impacts to special-status plants available at: https://www.wildlife.ca.gov/Conservation/Plants.

IMPACT ANALYSIS AND MITIGATION MEASURES

The EIR should discuss all direct and indirect impacts (temporary and permanent) that may occur with implementation of the Project (CEQA Guidelines, § 15126.2). This includes evaluating and describing impacts such as:

- Land use changes that would reduce open space or agricultural land uses and increase residential or other land use involving increased development;
- Encroachments into riparian habitats, wetlands or other sensitive areas;
- Potential for impacts to special-status species;
- Loss or modification of breeding, nesting, dispersal and foraging habitat, including vegetation removal, alternation of soils and hydrology, and removal of habitat structural features (e.g., snags, roosts, vegetation overhanging banks);
- Permanent and temporary habitat disturbances associated with ground disturbance, noise, lighting, reflection, air pollution, traffic or human presence; and
- Obstruction of movement corridors, fish passage, or access to water sources and other core habitat features.

The CEQA document should also identify reasonably foreseeable future projects in the Project vicinity, disclose any cumulative impacts associated with these projects, determine the significance of each cumulative impact, and assess the significance of the Project's contribution to the impact (CEQA Guidelines, §15355). Although a project's impacts may be insignificant individually, its contributions to a cumulative impact may be considerable; a contribution to a significant cumulative impact – e.g., reduction of available habitat for a special-status species – should be considered cumulatively considerable without mitigation to minimize or avoid the impact.

Based on the comprehensive analysis of the direct, indirect, and cumulative impacts of the Project, the CEQA Guidelines direct the Lead Agency to consider and describe all

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feasible mitigation measures to avoid potentially significant impacts in the EIR, and/or mitigate significant impacts of the Project on the environment (CEQA Guidelines, §§ 15021, 15063, 15071, 15126.2, 15126.4 & 15370). This includes a discussion of impact avoidance and minimization measures for special-status species, which are recommended to be developed in early consultation with CDFW, USFWS, and the National Marine Fisheries Service. These measures can then be incorporated as enforceable project conditions to reduce potential impacts to biological resources to less-than-significant levels.

ENVIRONMENTAL DATA

CEQA requires that information developed in EIRs 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 CNDDB. The CNDDB online field survey form and other methods for submitting data can be found at the following link: https://wildlife.ca.gov/Data/CNDDB/Submitting-Data. The types of information reported to CNDDB can be found at the following link: https://wildlife.ca.gov/Data/CNDDB/Plantsand-Animals.

FILING FEES

CDFW anticipates that the Project will have an impact on fish and/or wildlife, and assessment of filing fees is necessary (Fish & G. Code, § 711.4; Pub. Resources Code, § 21089). Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW.

If you have any questions, please contact Nicholas Magnuson, Environmental Scientist, at (707) 815-4166 or Nicholas.Magnuson@wildlife.ca.gov; or Melanie Day, Senior Environmental Scientist (Supervisory) at Melanie.Day@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Erin Chappell
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Erin Chappell
Regional Manager
Bay Delta Region

Attachment 1: Special-Status Species

ec: Office of Planning and Research, State Clearinghouse (SCH No. 2024051142)

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ATTACHMENT 1: Special-Status Species

Scientific Name	Common Name	Status
Amphibians and Reptiles		
Rana boylii pop. 1	Foothill yellow-legged frog	SSC
Emys marmorata	western pond turtle	SSC
Birds		
Buteo swainsoni	Swainson’s hawk	ST
Agelaius tricolor	tricolored blackbird	ST, SSC
Circus hudsonius	northern harrier	SSC
Lanius ludovicianus	loggerhead shrike	SSC
Athene cunicularia	burrowing owl	SSC
Aquila chrysaetos	golden eagle	FP, WL, BGEPA
Elanus leucurus	white-tailed kite	FP
Invertebrates		
Bombus crotchii	Crotch's bumble bee	SC
Lepidurus packardi	vernal pool tadpole shrimp	FE
Branchinecta lynchi	vernal pool fairy shrimp	FT
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT
Mammals		
Taxidea taxus	American badger	SSC
Plants		
Trifolium amoenum	two-fork clover	FE, CRPR 1B.2
Lasthenia conjugens	Contra Costa goldfields	FE, CRPR 1B.1
Sidalcea keckii	Keck's checkerbloom	FE, CRPR 1B.1

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Scientific Name	Common Name	Status
Astragalus tener var. *tener*	alkali milk-vetch	CRPR 1B.2
Atriplex cordulata var. *cordulata*	heartscale	CRPR 1B.2
Delphinium recurvatum	recurved larkspur	CRPR 1B.2
Downingia pusilla	dwarf downingia	CRPR 1B.2
Extriplex joaquinana	San Joaquin spearscale	CRPR 1B.2
Hesperolinon breweri	Brewer's western flax	CRPR 1B.2
Legenere limosa	legenere	CRPR 1B.1
Navarretia leucocephala ssp. *bakeri*	Baker's navarretia	CRPR 1B.1
Plagiobothrys hystriculus	bearded popcornflower	CRPR 1B.1
Astragalus tener var. *tener*	alkali milk-vetch	CRPR 1B.2
Trifolium hydrophilum	saline clover	CRPR 1B.2
Fritillaria pluriflora	adobe-lily	CRPR 1B.2
Hesperevax caulescens	hogwallow starfish	CRPR 4.2

FP = state fully protected under Fish and Game Code; FE = federally listed as endangered under the Endangered Species Act (ESA); FT = federally listed as threatened under ESA; ST = state listed as threatened under CESA: SC = State Candidate Species; WL = CDFW Watch List; BGEPA = federal Bald and Golden Eagle Protection Act; SSC = state Species of Special Concern; CRPR = California Rare Plant Rank[1]

[1] CRPR 1B plants are considered rare, threatened, or endangered in California and elsewhere; CRPR 2B plants are rare, threatened, or endangered in California but more common elsewhere. CRPR 4 plants are of limited distribution or infrequent throughout a broader area in California, and their status should be monitored regularly. Further information on CRPR ranks is available in CDFW's *Special Vascular Plants, Bryophytes, and Lichens List* (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline) and on the California Native Plant Society website (https://www.cnps.org/rare-plants/california-rare-plant-ranks).

SOLANO LOCAL AGENCY FORMATION COMMISSION

Solano Local Agency Formation Commission
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Original via email

June 20, 2024

Albert Enault, Senior Planner
City of Vacaville
650 Merchant Street
Vacaville, CA 95688
Albert.enault@cityofvacavlile.com

Subject: Comments for NOP of an EIR for the McMurtry Creek Estates Project

Dear Mr. Enault:

We received the NOP for the McMurtry Creek Estates Project EIR. A full project review will be initiated when we receive the City's annexation application and relevant submittal documents. Until then, the following are comments we have based on the early status of the development project, and for the EIR. When the City is ready to submit the application, we can schedule a pre-application consultation.

The following are preliminary comments on the NOP for the McMurtry Creek Estates, and six highlights related to the future annexation application for LAFCO that might be of particular interest to the project.

1. EIR for Development Project

- LAFCO will be a Responsible Agency for the Project and must be identified as such within the document.

- In addition to annexation to the City of Vacaville, the boundaries of several special districts will be changed. The Project will include reorganization of services provided by the affected districts. Agencies affected by the reorganization include, but are not limited to, Solano Irrigation District, County Lighting Service Area, Vacaville Fire Protection District, Vacaville Elmira Cemetery District, Solano Resource Conservation District, and County Special Road.

    - Any potential impacts to the affected agencies should be addressed in the Public Services section of the EIR. Fiscal impacts on the special districts serving the project area may result in environmental impacts if services cannot be provided. Mitigations to address the potential environmental impacts of detachment from the affected districts should be included.

- Mitigation measures to address the loss of prime agricultural lands in the project area should be included for any land that meets the definition of prime agricultural land as defined by Government Code Section 56064 including (CKH definition):

1) Land the qualifies for a class I or class II rating in the USDA Natural Resources Conservation Service classification if irrigated or has potential to be irrigated.
2) Land with a Storie Index rating of between 80 and 100.
3) Land that supports livestock with a carrying capacity of one animal per acre.
4) Land planted with fruit or nut-bearing trees, vines, bushes or crops with a non-bearing period of less than 5 years with a return of at least $400 per acre.
5) Land that has returned from the production of unprocessed agricultural plant products $400 per acre for three of the last five years.

2. Pre-application process

Prior to any application submittal, the City shall consult with other affected agencies – such as Solano Irrigation District, Vacaville Rural Fire District, and Solano County. Consultation with these agencies will be necessary for agreements and actions related to a reorganization.

Additionally, a comprehensive review and analysis of existing land inventory, development projects, and construction/development rate should be included with the annexation request and to complete the findings necessary for approving a reorganization.

3. Sphere of Influence (SOI) Update

A Sphere of Influence is the "plan for the probable physical boundary and service area of a local government agency, as determined by the Commission" (Gov. Code Section 56076). Ths boundary is necessary to determine which governmental agencies can provide services in the most efficient way.

According to LAFCO's records, Vacaville last updated the Comprehensive Municipal Service Review (MSR) in 2017 and subsequently adopted the current Sphere of Influence. LAFCO law (Govt. Code 56000 et.al) requires that MSR and SOI are reviewed and updated every five years. Therefore, Vacaville must complete the comprehensive update to the MSR/SOI prior to or contemporaneously with any reorganizations (annexations).

Having reviewed the 2017 MSR, page 20 lists applicable General Plan Policies that specifically state that any area that is designated as Urban Reserve is to be identified as a long-term annexation area. For the proposed annexation to be internally consistent with the General Plan and the MSR, then Urban Reserve areas would need to be re-designated with a new General Plan Land Use Designation. Further, according to the 2017 MSR page 25, Urban Reserve designated areas are stated to require comprehensive planning with a General Plan amendment and creation of a specific plan.

According to the Findings and Determinations, the MSR did not analyze any of the six determination factors for areas identified as long-term annexation areas (page 26). The subject site will require an SOI update that includes a comprehensive municipal service review and analysis of the General Plan amendments and changes to the short-term and long-term annexation areas in the SOI.

4. CEQA for MSR/SOI

Consistent with CEQA regulations, any governmental agency's action is required to conduct a CEQA determination. CEQA determinations are required for SOIs and reorganizations. For LAFCOs, this typically means reaffirming the CEQA determination of

the applying/lead agency. Please include Solano LAFCO on any CEQA-related document notices.

The 2017 MSR was based on the 2015 General Plan EIR and land use assumptions, which included a complete analysis of areas identified as "short-term annexation areas" within the MSR, but not the "long-term annexation area." Further, according to the City of Vacaville's Community Development webpage, there have been amendments to the General Plan Land Use Designations that were also not considered in the 2017 MSR. As such, new CEQA determinations are also necessary for an updated SOI.

5. Solano LAFCO Standards 1-11

LAFCO law also encourages LAFCOs to adopt local policies and standards that address local regional concerns and goals. Solano LAFCO has eleven such standards. Standards 1- 6 are mandatory and require full compliance for a project to be approved. Standards 7- 11 are discretionary where LAFCO may make determinations of less than full compliance with one or more of the discretionary standards and still have the discretion to approve or deny a proposal.

Section IV of the attached Standards and Procedures contains complete explanations and discussions for each standard and defines the necessary documentation.

<u>Mandatory:</u>

1. Consistency with Sphere of Influence Boundaries
    - *Area affected must be in the agency's SOI as a "near-term" annexation area or may be considered concurrently with a request to amend/update SOI, such as changing "long-term" to "near-term" annexation areas. Updating the SOI will require a comprehensive MSR update as noted above.*
2. Change of Organization and Reorganization to the limits of the Sphere of Influence Boundaries
    - *Annexation to the limits of the SOI boundary shall not be allowed if the proposal includes land designated for open space use by the affected city's general plan for city change of organization or reorganization.*
3. Consistency with Appropriate City General Plan, Specific Plan, Area-wide Plan, and zoning ordinance.
    - *The determination of consistency shall be the responsibility of the affected agency, and shall be met by a resolution approved by the agency council certifying that the proposed change of organization or reorganization meets all applicable consistency requirements of State Law, including internal consistency between the agency's adopted plans and the zoning ordinance.*
4. Consistency with the County General Plan of the proposed change of organization of reorganization outside of a City's SOI.
    - {not applicable here}

5. Requirement for pre-approval

    - *Prior to approval by LAFCO of a city change or organization or reorganization, the affected agency shall have approved a specific plan, pre-zoning, or an equivalent level of detailed information for the affected area.*

6. Effect on natural resources.

    - *Agency shall take necessary CEQA action and include CEQA documentation with proof of filing fee payment.*

Discretionary:

7. Establishing proposal boundaries, map and geography description requirements, other required maps.

    - *LAFCO actions must assure planned, orderly, and efficient patterns of urban growth by avoiding annexing or detaching portions of parcels, avoiding conditions that would make the annexation of adjacent parcels difficult at a later date, and avoiding excluding parcels that are necessary to promote efficient patterns of urban growth. Inconsistencies with any of these requirements need to be thoroughly explained and justified.*

8. Likelihood of significant growth and effect on other incorporated or unincorporated territory.

    - *Prior to approving an annexation, LAFCO shall make a determination that the proposed conversion of open space lands to urban use is justified by probable urban growth within a 10-year period of time. A determination on the likelihood of significant growth justifying the conversion shall be based on an analysis of local and regional demand for the proposed use. (Open space lands are defined in Govt. Code Section 65560.)*

9. Protection of Prime Agricultural Land

    - *Prime Agricultural land is defined in Govt. Code. Section 56064 as any land that can be irrigated (regardless of current status) and has soil with USDA Natural Resources Conservation Service Land Class I or Class II; or Storie Index Rating of 80-100. (Please note that this is substantially different from CEQA definitions of agricultural land.)*

    - *Cortese-Knox Hertzberg policies call for "infill" on vacant lands within municipal boundaries before extending further out into agricultural areas. Page 23 of the Standards and Policies lists the six factors that must be analyzed in considering existing developable lands within a jurisdiction.*

10. Provision and cost of community services.

    - *Adequate urban services shall be available to areas proposed for a change of organization or reorganization.*

11. The effect of the proposed action on the adjacent, mutual social and economic interests, and on local governmental structure.

    - *The application shall describe the effect that the annexation could have on adjacent areas and outside the agency. It shall also describe any social and*

economic benefits, or detriments, which will accrue to the agency and other affected agencies.

6. Vacaville General Plan and Zoning

Any LAFCO proposal must identify the adopted pre-zoning for the site, and general plan amendments if applicable. Maps identifying the current and pre-approved General Plan Land Use Designation and Zoning Designation are required. Any reorganization requests are required to be consistent with the jurisdiction's general plan and land use regulations.

According to the City of Vacaville to the provided notice, the site has a General Plan Land Use designation of Hillside Agriculture and intends to be annexed for residential development. A careful analysis of consistency with the Vacaville General Plan will be necessary for LAFCO to incorporate in any considerations and determinations.

7. Findings for approval for Re-organizations

Gov. Code 56668 lists the 17 factors (a-q) that LAFCO Commissioners must consider when reviewing a proposal for reorganization (the complete list is included in the attached Standards and Procedures). Careful analysis of each factor should be included to assist LAFCO review. While all factors are important in the consideration, the following may be of particular interest:

a. Population, 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. (Analysis of vacant land inventory, approved developments, construction rate, and market analysis)

b. The 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; probable effect of the proposed incorporation, formation, annexation, or exclusion and of alternative courses of action on the cost and adequacy of services controls in the area and adjacent areas.

c. 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.

h. Consistency with city or county general and specific plans.

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 boundary change.

m. The extent to which the proposal will assist the receiving entity in achieving its fair share of the regional housing needs as determined by the appropriate council of governments.

o. Any information relating to the 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 of people of all races, cultures, and incomes with respect to the location of public facilities and the provision

of public services.

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.

We appreciate the opportunity to comment on the potential reorganization request. We hope you find these comments helpful in preparing your Project EIR and subsequent LAFCO application.

Sincerely,



Rich Seithel
LAFCO Executive Officer
(707) 439-3897

Attached: Solano LAFCO Standards and Procedures

SOLANO
LOCAL AGENCY FORMATION COMMISSION

STANDARDS AND PROCEDURES, GLOSSARY OF TERMS, FEES AND FORMS, MEETING SCHEDULE And MAP AND DESCRIPTION REQUIREMENTS

Adopted by the Solano Local Agency Formation Commission
March 1, 1999

Amended by the Solano Local Agency Formation Commission:
December 11, 2000, March 3, 2003, November 10, 2008, December 8, 2008, June 11, 2012, August 13, 2012, April 8, 2013, June 10, 2019

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SECTION I. INTRODUCTION

BACKGROUND

The Solano Local Agency Formation Commission (LAFCO) is a state mandated boundary commission responsible for coordinating logical and timely changes in local government boundaries. The Commission, in the consideration of proposals, has to observe four basic statutory purposes: the discouragement of urban sprawl; the preservation of open space and prime agricultural land resources; the efficient provision of government services; and the encouragement of orderly growth boundaries based upon local conditions and circumstances.

LAFCO's powers, procedures, and functions are set forth in the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000, (Government Code Section 56000 et seq.).

THE COMMISSION

Solano LAFCO consists of five voting members selected as follows: two members of the City Councils, who are chosen by the mayors of all cities in the County; two members of the Board of Supervisors, who are chosen by the entire Board; and a member representing the general public, who is selected by the other four LAFCO members. In addition, there are alternate city, county, and public members who vote whenever a regular member is absent or disqualified.

The Commission meetings are typically held on the second Monday of February, April, June, August, October, and December at 10:00 a.m. in the Board of Supervisors' Chambers, Government Center, 675 Texas Street, Fairfield, CA. If a holiday should fall on the second Monday of a month, the meeting is held on the following non-holiday Monday.

CHANGES OF ORGANIZATION AND REORGANIZATION

It is the role of LAFCO to either: approve, approve with conditions or deny proposals for changes of organization or reorganization after considering a number of factors. Among the issues to be considered are: The Legislature's policies and priorities for LAFCO, the proposal's relationship to the affected agency's Sphere of Influence; the application's compliance with the California Environmental Quality Act (CEQA); and the submitted responses to Solano LAFCO's Standards.

A change of organization includes any one of the following actions:

1) A city incorporation.
2) A district formation.
3) An annexation to or detachment from a city or district.
4) A disincorporation of a city.
5) A district dissolution.
6) A consolidation of cities or special districts
7) A merger or establishment of a subsidiary district
8) A reorganization which includes two (2) or more changes of organization initiated in a single proposal.

SPHERES OF INFLUENCE

Spheres of Influence are required to be established by LAFCO for each city and special district which must come before the Commission for boundary changes. A Sphere of Influence means "a plan for the probable physical boundary and service area of a local government agency, as determined by the Commission" (56076). Establishment of this boundary is necessary to determine which governmental agencies can provide services in the most efficient way to the people and property in any given area. An annexation proposal must be within the affected agency's Sphere of Influence in order for LAFCO to act favorably on the application. LAFCO must undertake a review and update, as necessary, of spheres of influence, no less than once every 5 years, and prepare written statements of determinations when adopting spheres.

SERVICE REVIEWS

In order to prepare and update spheres of influence, the commission must conduct a service review of municipal services provided in the county or other appropriate area as designated by the commission. The commission shall prepare a written statement of its determination with respect to each of the following:

1. Growth and population projections for the affected area.

2. Present and planned capacity of public facilities and adequacy of public services, including infrastructure needs or deficiencies.

3. Financial ability of agencies to provide services.

4. Status of, and opportunities for, shared facilities.

5. Accountability for community services needs, including governmental structure and operational efficiencies.

6. Any other matter related to effective or efficient service delivery, as required by commission policy

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Each proposal for a change of organization or reorganization must be reviewed to ensure that it complies with the requirements of CEQA. This involves the preparation of an environmental document which is normally processed by the annexing agency in advance of LAFCO consideration (see discussion in Chapter IV Pre-application considerations).

SECTION II. PURPOSE AND INTENT

The Cortese-Knox-Hertzberg Act Authorizes LAFCO to adopt written procedures for the evaluation of proposals, including definitions consistent with existing State laws. The Commission may adopt standards for any of the factors enumerated in Section 56668, [see Section VI of this manual]. Any Standards adopted by the Commission shall be written. (Section 56375 (g))

This report provides both general and specific standards in meeting the requirements of the Cortese-Knox-Hertzberg Act, and in assuring a rational and consistent process of review by the Solano LAFCO which can be applied to all proposals for reorganization or change of organization within Solano County.

Standards have been developed in light of varying conditions of land use policy among the agencies of the County in recognition that decisions by LAFCO will be judgmental—based on the facts in evidence as they relate to these standards and procedures. No standard can be universally absolute with respect to a given proposal, for the facts and circumstances will necessarily differ among communities and annexation requests. The standards reflect the many circumstances which can affect the process, leaving final decision to objective analysis based on the evidence submitted as a whole in support or in opposition in a given case.

FORMAT AND CONTENT

Chapter III presents an outline of the LAFCO decision making process. The standards are then presented in Chapter IV, with a description of the circumstances which may come into play in reaching a decision. Chapter V presents the requirements for adopting Municipal Service Reviews. Chapter VI sets forth the primary requirements of the Cortese-Knox Act and the factors to be considered under Section 56668.

USE AND APPLICATION OF THE STANDARDS

The Standards adopted by LAFCO are to be seen as guidelines against which to measure that appropriateness and correctness of a proposal. Some Standards are quantitative in that specific information and minimum submittal requirements are stipulated. Other standards are qualitative and require specific documentation by the applicant.

The concept of adopting standards implies an assessment of a proposal to determine conformity. Each standard must have sufficient clarity and specific so that compliance can be determined with a degree of certainty and reasonableness. And yet, it is not possible or desirable in issues as complex as land use planning and annexation to have standards that are literally absolute; flexibility must be retained if only because no two proposals are alike.

One of the objects of the LAFCO, according to the Cortese-Knox Hertzberg Act, is to make studies and to obtain and furnish information which will contribute to the “logical and reasonable” development of local government. This implies and analytical process that weighs the merits of each proposal on an individual basis. Indeed, the legislative purpose of Cortese-Knox Hertzberg was to vest the LAFCO with substantial “authority and discretion” to review proposals in keeping with specific public purposes. The standards, then, must encourage independent judgment by LAFCO based on a reasoned analysis of required documentation.

For each proposal the LAFCO staff should determine the completeness of the application and provide analysis and recommendation as to the compliance of the proposal with each Standard. For most proposals of a smaller nature, compliance with the Standards will be obvious. For larger projects, including those which are to be phased over a several-year period, full compliance with each Standard may not be as obvious. For example, a project may lead to the conversion of prime agricultural land to urban use; if, however, guiding development away from prime agricultural lands should not promote the planned, orderly, efficient development of the area, such conversion could be approved.

In another instance, a full range of services may not be available based on "will serve" letters from affected agencies. LAFCO, based on its discretion and on analysis of additional information, could determine that adequate alternative services can or will be made available.

In the final analysis, the reasoned judgment of LAFCO will be required to determine compliance with each standard. In deciding on annexation proposals, LAFCO shall make determinations on the degree of compliance or non-compliance for each Standard citing facts to support each determination. Six of the Standards (numbers 1- 6) are mandatory; LAFCO must make determinations of full compliance with the mandatory Standards to approve a proposal. The other five standards (numbers 7- 11) are discretionary; LAFCO may make determinations of less than full compliance with one or more of the discretionary standards and still have the discretion to approve or deny a proposal. In the final analysis, the determinations under each discretionary standard must be weighted against each other and that when taken as a whole, the proposal must meet the purpose and intent of LAFCO in providing for planned, orderly and efficient patterns of urban development. Therefore, in the event that determinations of less than full compliance have been made on one or more of the discretionary Standards, LAFCO must make specific findings of fact identifying overriding considerations that justify the decision to approve the proposal.

SECTION III. THE LAFCO DECISION MAKING PROCESS

This chapter provides a brief description of the LAFCO decision making process in considering proposals for changes of organization or reorganization.

PRE-APPLICATION CONSIDERATION

Prior to formal submittal of an application to LAFCO, the applicant should first consult with the appropriate city and/or districts that will be affected by the proposal. The purpose of this early consultation is to establish the affected agencies interest in the proposal. Secondly, in those applications proposing annexation, it provides the affected agency the opportunity to prepare environmental documentation associated with pre-approvals. (see Section IV, Standard No. 5). In most instances, the environmental document used for the agency's consideration of the proposal will also be used by LAFCO in its hearing on the application. Accordingly, an applicant and the affected agency should ensure that those issues pertinent to LAFCO's action are discussed in the environmental document. In addition, it is suggested that a proponent consult with LAFCO staff in the early stages of the consideration of a proposal. This is to ensure that the process and application requirements are clearly understood and to establish a line of communication to facilitate the processing of the application.

APPLICATION PROCESS

An application for a change of organization or reorganization may be initiated either by:

1) Resolution and application adopted by the legislative body of any affected local agency (Section 56654(a)).

2) A petition and application of either landowners or registered voters within the affected territory (Section 56700).

An application to LAFCO would include the following basic components

1) A petition or resolution and application for proceedings.
2) A map and legal description of the affected territory
3) Response to Solano LAFCO standards with supporting documentation
4) Application processing fee.

Extensive discussion on the Solano LAFCO Standards and the required documentation is provided in Chapter V.

Upon submittal of an application to LAFCO, the Executive Officer reviews the application to determine if the application is complete. If the application is determined not to be complete, the Executive Officer informs the applicant of the additional necessary material needed to complete the application. The Executive Officer must also determine what environmental documents may be necessary to process the application (See Chapter V, Standard No. 6). After the application is accepted as complete, a Certificate of Filing is issued and the application is scheduled for hearing before the Commission.

The Executive Officer notifies affected agencies of the pending application; reviews the application and prepares a staff report for the Commission based on the provision of the Cortese/Knox Hertzberg Act and the Standards set forth in Section IV.

LAFCO PUBLIC HEARING AND DECISION

The Commission conducts a public hearing on the application during which the applicant, affected agencies, and public may testify. The Commission may amend an application's proposed boundaries and/or recommended conditions, and may either deny, approve, or approve with conditions the application.

After the Commission's action, any person may file a Request for Reconsideration within thirty (30) days. The Commission may approve or deny with or without conditions the Request for Reconsideration after the required public notice and hearing. In the case of denial, an application substantially similar to the original proposed change of organization or reorganization can not be made to LAFCO for a period of one year.

CONDUCTING AUTHORITY PROCEEDINGS

The Commission, in most cases, becomes the conducting authority for the protest hearing after approval of an application. Within 35 days of the adoption of the commission's resolution making determinations, and following the 30 day reconsideration period, the executive officer shall set the proposal for hearing and give proper notice. The date of the protest hearing will be no less then 15 days, or more than 60 days, after the date the notice is given. (Section 57002) If the Commission receives no objection from land owners and registered voters and gains consent from the affected agencies the Commission may choose to waive the protest hearing. (Section 56663)

FINAL LAFCO ACTIONS

If a proposal has not been terminated or brought to an election through the protest hearing phase and unless otherwise conditioned by the Commission, the effective date of the change or organization or reorganization is the date the Certificate of Completion is recorded.

SECTION IV. STANDARD AND PROCEDURES FOR THE EVALUATION OF PROPOSALS FOR CHANGES OF ORGANIZATION OR REORGANIZATION

MANDATORY STANDARDS

STANDARD NO. 1: CONSISTENCY WITH SPHERE OF INFLUENCE (SOI) BOUNDARIES

An area proposed for change of organization or reorganization shall be within the affected agency's Sphere of Influence. An application for change of organization or reorganization for lands outside an adopted Sphere of Influence may be considered concurrently with a request for amendment to the Sphere of Influence, at LAFCO's discretion.

Explanation and Discussion

A finding of consistency with adopted Sphere of Influence (SOI) boundaries becomes the first test in evaluating an annexation proposal. Section 56375.5 of the Government Code requires a determination by LAFCO regarding the proposal's consistency with the Spheres of Influence of the affected local agency. In most cases, location within or outside the boundary will determine whether the application should be approved.

The SOI concept provides a rational basis for a determination whether a given agency has the most appropriate interest in providing governmental services to territory in proximity to its boundaries. The SOI boundary is not necessarily intended by law to be coterminous with the area which a given agency may eventually annex and serve. Rather, it should refer to the area which most directly involves the interest of the agency as to future urbanization, the management of resources of concern to the agency, or land use proposals of an essentially non-urban character considered by the County.

LAFCO has adopted separate Guidelines for establishing and amending SOI's. Generally, LAFCO reviews and updates agency SOI's upon completion of city or county general plan updates or amendments separate from specific proposals for change of organization or reorganization. LAFCO retains the discretion as to whether SOI boundary amendments may be heard concurrently with change of organization or reorganization proposals. Minor amendments which have not resulted from general plan amendments may be heard concurrently. LAFCO staff shall advise the Commission at least 60 days in advance of request for such a concurrent hearing; at that time, LAFCO shall make a decision as to the appropriateness of a concurrent hearing.

Required Documentation

This Standard requires that the applicant shall demonstrate that the affected territory is within the Sphere of Influence of the affected agency. This is to be shown on the required mapping submittal in response to Standard No. 7. Sphere of Influence boundary information is available from the affected agency or LAFCO Staff.

STANDARD NO. 2: CHANGE OF ORGANIZATION AND REORGANIZATION TO THE LIMITS OF THE SPHERE OF INFLUENCE (SOI) BOUNDARIES

Annexation to the limits of the SOI boundary shall not be allowed if the proposal includes land designated for open space use by the affected city's general plan for city change of organization or reorganization or County General Plan for district change or organizations or reorganization unless such open space logically relates to existing or future needs of the agency. Open space uses which may be located within agency limits include but are not limited to community and city-wide parks, recreational facilities, permanently protected open space lands, reservoirs, and storm water detention basins.

Explanation and Discussion

The annexation of land by agencies out to their SOI boundaries may be justified under certain circumstances. However, the Sphere of Influence is not necessarily an entitlement to expand jurisdictional limits all the way to the SOI boundary.

In Solano County, cities in conjunction with the County and land trusts have taken on a more active role in permanently protecting open space buffers or green belts around their communities. LAFCO has recognized these efforts in designating "urban open space" lands as part of their SOI. These lands are not intended to be annexed to a city unless the city demonstrates how the open space area is to be protected and maintain by the city and/or other conservation agency as permanent open space or public use.

For the purposes of this Standard, open space is defined as open space per section 56059 of the Cortese-Knox-Hertzberg Act and/or improved recreation lands on adopted plans; it does not include common open space within subdivisions or vacant lands planned for urbanization.

Required Documentation

This Standard applies to any application for annexation that extends to the limits of the SOI boundary and contains lands designated for open space use under the applicable general plan. In such cases, the application shall include an analysis, justification, and/or appropriate mapping demonstration that the open-space lands relate to specific needs of the annexation agency or is an integral part of the project's design. This standard will generally not be applicable to district change or organization or reorganization unless it will result in the conversion or open space lands to urban use.

Proposals which contain lands designated as urban open space to be permanently protected must be accompanied by documentation demonstration how the lands will be permanently protected by the affected agency and/or other conservation agencies.

STANDARD NO. 3: CONSISTENCY WITH APPROPRIATE CITY GENERAL PLAN, SPECIFIC PLAN, AREA-WIDE PLAN AND ZONING ORDINANCE

An application for a city change of organization or reorganization which involves the conversion of open space lands to urban use shall be denied by LAFCO if the proposed conversion is not consistent with appropriate city plans (general plans, specific plans, area-wide plans and associated zoning ordinance). The determination of consistency shall be the responsibility of the affected agency, and shall be met by a resolution approved by the agency council certifying that the proposed change of organization or reorganization meets all applicable consistency requirements of State Law, including internal consistency between the agency's adopted plans and the zoning ordinance. In the event that plan consistency is contested, LAFCO shall retain the discretion to determine the consistency question and may require additional environmental information.

Required Documentation

This standard requires that the applicant submit copies of the resolution approved by the city council of an affected city which certifies that the proposed change of organization or reorganization is consistent with the agency's general plan or specific plans, area-wide plans and zoning ordinance.

STANDARD NO. 4: CONSISTENCY WITH THE COUNTY GENERAL PLAN OF PROPOSED CHANGE OF ORGANIZATION OR REORGANIZATION OUTSIDE OF A CITY'S SPHERE OF INFLUENCE BOUNDARY

An application for a change of organization or reorganization for lands outside an adopted city Sphere of Influence boundary in unincorporated territory shall be denied by LAFCO if the land use proposed within the affected territory is not consistent with the Solano County General Plan and Zoning Ordinance. A determination of consistency shall be the responsibility of the County, and shall be met by a resolution of the Board of Supervisors certifying that the proposed change or organization or reorganization meets all applicable consistency requirements of State Law, including internal consistency between the County's General Plan and Zoning Ordinance. This Standard shall also be made to apply to proposals for the formation or the incorporation of new agencies within unincorporated territory which lies outside adopted city Sphere of Influence boundaries.

Explanation and Discussion

This Standard is necessary to eliminate potential conflict posed by an agency change of organization or reorganization which is inconsistent with the County General Plan and to provide assurance of General Plan and zoning consistency of proposals for expanding or creating new development areas outside adopted Sphere of Influences.

There no longer is a requirement in State Planning Law that agency and county general plan policies for areas within a city's Sphere of Influence be consistent. Where conflicts exist between an agency and the County, sound planning practices suggest that the agency and County resolve their differences so that the general public is not confused.

Required Documentation

This standard requires that for district changes of organization or reorganizations in unincorporated territory outside cities' Sphere of Influence, the applicant submit copies of the resolution approved by the Board of Supervisors which certifies that the proposed change of organization or reorganization is consistent with the Solano County General Plan and Zoning Regulations.

STANDARD NO. 5: REQUIREMENT FOR PRE-APPROVAL

Prior to approval by LAFCO of a city change or organization or reorganization, the affected agency shall have approved, a specific plan, pre-zoning or an equivalent providing similar detail of information on the proposed land use for the affected territory and where the change of organization or reorganization process is clearly described. Prior to approval by LAFCO of a district change of organization or reorganization, the affected agency shall pass a resolution supporting the proposal.

Explanation and Discussion

Government Code Section 56375(a)(6) prohibits LAFCO from imposing "any conditions that would directly regulate land use density or intensity, property development, or subdivision requirements." Section 56375(a) (7), however, does require prezoning as a method to determine future land use, and consequently, to gauge the change of organization or reorganization's impact on service delivery and conversion of open space lands and agency support for the proposal. LAFCO, however, may not specify how or in what manner territory shall be prezoned.

A District change of organization or reorganization does not require pre-zoning. Pre-approval of the proposal shall be demonstrated in a resolution supporting the change of organization or reorganization from the affected agency governing board or a letter of support from the chief administrative officer of the affected agency.

Required Documentation

This standard requires that an application for a city change of organization or reorganization shall be accompanied by copies of the agency's ordinance prezoning the affected territory or a copy of a specific plan or equivalent and resolution of adoption. Applications for district change of organization or reorganization shall be accompanied by a copy of agency's resolution supporting the proposal.

STANDARD NO. 6: EFFECT ON NATURAL RESOURCES

An application for annexation shall describe the amount of land involved, and the land, water, air, and biological resources affected, including topography, slope, geology, soils, natural drainages, vegetative cover, and plant and animal populations. Effects to be covered include those which will be both positive and negative and the means proposed to offset potential negative impact. LAFCO shall certify that provisions of the Solano LAFCO Environmental Guidelines for the Implementation of the California Environmental Quality Act have been complied with.

Explanation and Discussion

This Standard may already be reflected in studies provided as part of a city's adoption of a General Plan and is akin to the analysis of impacts and mitigation measures which ordinarily are revealed in an environmental assessment or environmental impact report.

The State of California Local Guidelines for Implementing the California Environmental Quality Act as currently amended has been adopted by Solano LAFCO Resolution and incorporated by reference as the Solano LAFCO Environmental Guidelines.

Required Documentation

This Standard requires that the applicant submit copies of the environmental documentation adopted or certified by the lead agency and copies of the resolution making the required environmental findings, adopting the Negative Declaration or Certifying the EIR, and making any Statement of Overriding Considerations.

DISCRETIONARY STANDARDS

STANDARD NO. 7: ESTABLISHING PROPOSAL BOUNDARIES, MAP AND GEOGRAPHIC DESCRIPTION REQUIREMENTS, OTHER REQUIRED MAP EXHIBITS

Explanation and Discussion

This Standard sets forth guidelines for establishing the boundaries of proposals. The Legislature has delegated the authority to determine the boundary of any proposal to local LAFCOs. The purpose of this Standard is to assure planned, orderly, and efficient patterns of urban growth by when possible, avoid: annexing or detaching portions of parcels, avoid conditions that would make the annexation of adjacent parcels difficult at a later date, and avoid excluding parcels that are necessary to promote efficient patterns of urban growth. Inconsistencies with any of these requirements need to be thoroughly explained and justified.

ESTABLISHING PROPOSAL BOUNDARIES

City Proposals:

Solano LAFCO shall consider the following as factors favorable to approval of a city change of organization or reorganization:

A. The proposal would not: create islands, irregular, or illogical configuration of city limits.

   1) Whether unincorporated territory is an "island," or "entire island," or "entire unincorporated island," or "part of a larger island," or "surrounded," or "substantially surrounded," or "irregular," or "illogical configuration" are determinations to be made by the Commission on a case by case basis, based on the evidence before it at the time those determinations are made.

   2) A small island of unincorporated territory that is connected to and an integral or essential part of a large unincorporated island is not an entire island and may not be annexed to a city without a protest proceeding under Government Code section 56375.3(a).

   3) A small island of unincorporated territory that is connected to, but not an integral or essential part of a large island, may be determined by the Commission to be an entire island or an entire unincorporated island under Government Code section 56375.3(b).

B. Cities shall annex entire street sections whenever possible. "Half-width" streets where the city boundary is located on the centerline of the thoroughfare area are not permitted.

   1) When streets are used as a boundary for an annexation, the annexation proposal shall be designed to include a continuous section of roadway as far as possible and sufficient in length to provide single-agency jurisdiction for maintenance and law enforcement of the street.

2) When a proposal is adjacent to existing short segments of county road(s), annexation of said short segments will be required to provide single-agency jurisdiction for maintenance and law enforcement of the street.

C. Other favorable factors for city annexations:

1) The proposal is consistent with development approvals required under Standard No. 5.

2) The area will be urban within ten years consistent with the provisions under Standard No. 8.

3) The proposal area is adjacent to the city's boundary, within the city's sphere of influence, and adjacent to existing municipal services resulting in a logical extension of city growth.

District Proposals:

Solano LAFCO shall consider the following as factors favorable to approval of a district change of organization or reorganization:

A. The proposal would not create irregular or illogical configuration of existing district(s) boundaries.

B. The proposal considers the effect on adjacent incorporated and/or unincorporated communities of interest.

C. The proposal considers and identifies the financial effects to the subject agency(ies).[1]

MAP AND GEOGRAPHIC DESCRIPTION REQUIREMENTS:

LAFCO requires a sound boundary description that is acceptable to the Solano County Surveyor and the California State Board of Equalization. The map and geographic description of the proposal area shall meet the requirements set forth in Attachment A to Standard 7.

OTHER REQUIRED MAP EXHIBITS:

1. A map exhibit showing the relationship of the proposal area to an adjacent city and its sphere of influence.

2. A map exhibit showing the relationship of the proposal area to an adjacent affected special district(s) and their sphere of influence(s).

3. A map exhibit of nearby properties showing lands under Williamson Act contracts.

[1] An example is a proposed detachment from the Solano Irrigation District where the property involved is a party to the indebtedness of Monticello Dam and its irrigation facilities. In such an event, LAFCO shall impose detachment fees in accordance with a formula agreed upon with SID (or other district in a similar situation) to assure equity in meeting financial obligations of the district.

4. A map exhibit of the proposal area identifying soil types using the US Department of Agriculture symbols.

STANDARD 7 ATTACHMENT A

SOLANO LAFCO MAP & GEOGRAPHIC DESCRIPTION REQUIREMENTS

GENERAL: LAFCO requires a map and geographic description that is acceptable to the Solano County Surveyor and the California State Board of Equalization (BOE).

WHO CAN PREPARE: Maps and geographic descriptions may be prepared by any person or firm which holds a current and valid State of California license as a Registered Surveyor or Registered Civil Engineer (with a number 33965 or lower).

REVIEW REQUIREMENT: Map and geographic descriptions must be reviewed for form, content, and accuracy. Prior to preparation, please contact LAFCO if the engineer or surveyor has not previously prepared a map and geographic description for LAFCO. All map and geographic descriptions will have to be reviewed and the final must be stamped and signed by the County of Solano Surveyor.

GUIDELINES: All proposed city annexation boundaries should tie into existing city boundary. For district proposals, proposed boundaries should tie into an existing district boundary whenever possible. LAFCO staff can provide information on existing boundaries. The map and geographic description should be in agreement with each other and should independently convey the intended action(s).

COVER SHEET REQUIREMENTS:

- ☐ Title
  - ☐ "Exhibit A"
  - ☐ Project No. (as designated by LAFCO)
  - ☐ Project Name (as named by LAFCO)
  - ☐ Number of pages by exhibit identified.
- ☐ Wet signature and seal: The cover sheet, map, and geographic description must be signed and stamped by either a licensed surveyor or a registered civil engineer holding a license number 33965 or lower.
- ☐ Area for County Surveyor's signature, seal, and date.
- ☐ Area for LAFCO Executive Officer signature and date approved.
- ☐ Include the following statement: "This description and exhibit of the (insert name of project) boundary, it is not a legal property description as defined in the Subdivision Map Act and may not be used as a basis for an offer for sale of the land described. It is for assessment purposes only."

<u>GEOGRAPHICAL DESCRIPTION REQUIREMENTS:</u>

- ☐ Heading with "Exhibit A," project number, project name, number of pages.

☐ Include township and range, section number(s), or rancho(s).
☐ The point of beginning must reference a known major geographic position (for city annexations to an existing city boundary, for district proposals to an existing district when possible or to section corners or street centerline intersections when necessary)
☐ Do not write descriptions in one endless paragraph.
☐ Do not write descriptions in all capitals.
☐ Courses called from, along, and to the annexation boundary.
☐ State all courses required to close the traverse of the project area.
☐ Express specific parcel description in sectionalized land (e.g., "The SW ¼ of Section 22, T1N, R1W") or by metes and bounds. If by metes and bounds, all courses shall be numbered and listed individually in a consistent clockwise direction.
☐ For curves, list delta, arc length, chord, and radius, include radial bearings for all points of non-tangency. All elements required.
☐ Wet signature and seal

MAP REQUIREMENTS:

☐ Heading with "Exhibit A," project number, project name, number of pages.
☐ Property description (A portion of the __¼ of Section___, T. ___N., R. __E., M.D.M., and/or rancho, and optional: Lot, Tract, Map Name and Recorded Book, and Page)
☐ City, County, and State
☐ Month and Year
☐ No un-necessary data shown on map.
☐ All data on 8½"x11" Exhibit readable (½" border all around)
☐ Include a vicinity map and show the location of the project area in relationship to a larger geographic area that includes major streets and highways and other physical features.
☐ Include a scale and north arrow.
☐ Show and identify any portion of an existing district boundary in close proximity to the project area.
☐ Clearly show the point of beginning and it must match the geographic description.
☐ Line Type (New-solid and most predominant line, road/easements-dashed, others-broken) (all lines in black ink and cannot exceed 1.5 millimeter in width)
☐ Clearly show all existing streets, roads, and highways with their current names that are within and adjacent to the project area.
☐ Indicate each township and range, section lines and numbers, or ranchos that are in proximity of the project area.
☐ All dimensions needed to plot the boundaries must be given on the map of the project area. Each map shall have numbered courses matching the written geographic description. Index tables may be utilized.
☐ All parcels within the project area that touch the new boundary shall be clearly labeled with the assessor's parcel number. Interior parcels that do not touch the

boundary need not be identified on the map.

☐ If more than one map sheet is needed, provide a key map giving the relationship of all sheets. Match lines between adjoining sheets must be used. The geography on adjoining sheets may overlap, the project boundaries must stop at the match lines.

☐ Wet signature and seal

STANDARD NO. 8: LIKELIHOOD OF SIGNIFICANT GROWTH AND AFFECT ON OTHER INCORPORATED OR UNINCORPORATED TERRITORY

Prior to approving an annexation, LAFCO shall make a determination that the proposed conversion of open space lands to urban use is justified by probable urban growth within a 10 year-period of time. A determination on the likelihood of significant growth justifying the conversion shall be based on analysis of local and regional demand for the proposed use.

Explanation and Discussion

To satisfy this standard an applicant is to provide data that supports a determination of the likelihood of significant growth within a 10-year period of time, justifying the conversion of the affected open space lands as defined under the Cortese-Knox-Hertzberg Act as an urban use, and that such conversion will not be detrimental to the development of existing open space lands already within the affected agency's jurisdiction. This Standard in conjunction with the other standards is designed to discourage urban sprawl, to preserve agricultural land resources and to encourage orderly growth boundaries based upon local conditions and circumstances. Under this Standard, the applicant is required.

a) To provide data supporting the proposed conversion of open space to urban use by analyzing appropriate factors of supply and demand, and the Municipal Service Review where applicable;

b) To discuss all lands currently within the city's jurisdiction which are intended for, or committed to similar land uses and how the proposal relates to them.

c) To submit data to explain how the annexation will not significantly inhibit the timely development of existing vacant land currently within the city limits or inhibit the city's ability to meet it's infill goals.

d) To submit data that supports a determination that the conversion of the land to urban use within a 10-year period of time.

In reviewing the demand analysis for a proposed use, the Commission recognizes that it is more difficult to make determinations on long term market absorption rates for multi-family residential, commercial, industrial and mix use (high density residential, commercial and industrial) land use projects than for residential land use projects.

Another basis for analyzing an annexation's compliance with this standard will be the proposal's relationship to the annexing agency's Municipal Service Review (MSR). LAFCO accepted MSRs are required prior to the consideration of annexations to agencies.

Compliance with the annexing agency's Municipal Service Review (MSR) will be based on an analysis of the proposal and its relation to the goals and policies of the agency's MSR including the growth strategy, projected growth and infill goals. LAFCO will consider its resolution of review and comment on the MSR in reviewing a proposal's consistency with the MSR.

Where large-scale and long-term projects are proposed through annexation, LAFCO may consider the likelihood of significant growth over a 10 – 20 year period of time if the project applicant and the city have entered into a development agreement. With respect to the purpose of Cortese-Knox Hertzberg, key provisions and a development agreement would include:

1. Phasing of development over a 10-20 year period in keeping with reasonable analysis of the market for new housing or other urban use consistent with policies of the General Plan.

2. Reasonable phasing to avoid premature conversion of prime agricultural lands to urban use, particularly those prime lands of greatest importance in Solano County as identified under Standard No. 9.

3. Reasonable phasing which will assure agency capability to provide urban services required without negative financial impact upon existing property owners and residents of the agency.

Finally, consideration will also be given to ABAG projections and to the preceding 10 years or more of building permit activity. Consideration will be given to the market conditions in analyzing past building permit activity.

It is on comparative analysis of the market study, the Municipal Service Review, ABAG projections and past building permit activity that a judgment as to the likelihood of significant growth with a ten-year period will be made.

Required Documentation

This standard requires for any applications for a change of organization or reorganization which will convert open space lands to urban use, each application shall include the following documentation.

1. For a change of organization or reorganization where 40 acres of more of commercial or industrial land use is proposed or where 100 acres or more of residential land use is proposed, a market study is required to document this analysis. Substantial inhabited annexations are excluded from the requirement for a market analysis. The market study should:

    a) Clearly define the market area for the project. The level of detail provided in the market analysis shall be commensurate with the scale and complexity of the proposed development project.
    b) Identify anticipated demand over the next ten years within the market area and document the assumptions in preparing the demand projections;
    c) Identify the supply of land which can be put to the same use within the market area that is anticipated to be available within the next ten years; including existing vacant land currently within the city limits; and
    d) Consistency of the proposal with the city's growth strategy and infill goals contained within the City's Municipal Service Review.

2. For a change or organization or reorganization where less than 40 acres of commercial or industrial land use is proposed or where less than 100 acres of

residential land use is proposed, the proponent shall provide an analysis of likelihood of significant growth based on available information in responding to this standard.

3. An analysis of consistency of the proposed project with the city's Municipal Service Review.

4. Documentation of the city's building permit activity over the past 10 years.

5. A copy of the development agreement (if applicable).

STANDARD NO. 9: PROTECTION OF PRIME AGRICULTURAL LAND

Urban growth shall be guided away from prime agricultural land unless such action would not promote planned, orderly, and efficient development for the agency. Development of existing vacant or non-prime agricultural lands within the agency limits should be encouraged before any proposal is approved for urbanization outside of the agency limits.

Explanation and Discussion

This Standard goes to the heart of the major objective of Cortese-Knox Hertzberg. To make the first sentence of the Standard operative, there has to be a finding as to what "planned, orderly, and effective development" means for each agency.

The second part of the Standard is permissive, in that it encourages rather than mandates the development of vacant or nonprime land already within the agency limits before pushing outward into unincorporated territory.

Maintaining the Integrity of Agricultural Lands

Maintaining the integrity of agricultural lands can only be construed as furthering the purpose of Cortese-Knox Hertzberg to avoid the premature conversion of commercial agricultural lands to urban purposes. LAFCO must evaluate the potential effect of a proposed annexation on neighboring lands in commercial agricultural use to avoid premature pressure for the conversion of such lands to urban use.

Lands included within agricultural preserves under the Williamson Act are to be protected except where land is proposed by the General Plan for eventual urbanization and where the owner had already filed a notice of non-renewal, or where an agency officially protested inclusion of the land under the Williamson Act. In the former situation, the filing of a notice of non-renewal by a landowner starts a ten-year period until the removal is completed, unless findings for cancellation of an agricultural preserve contract are made and penalty tax payments and other requirements for contract cancellation are met. In cases where cancellation of a contract will be required, evidence supporting the cancellation shall be provided to demonstrate that the findings can reasonably be made. In cases where lands were protested for inclusion in an agricultural preserve by an agency, the agency may choose not to succeed to the contract, in which case the agricultural preserve contract will terminate upon annexation.

Encouraging Infill Development

This Cortese-Knox Hertzberg policy calls for "infill" on vacant lands with in municipal boundaries before extending further out into agricultural areas. A reasoned assessment of this policy is needed when one or more of the following conditions exist.

1. Where owners of infill property are not willing to sell at a fair market rate.

2. Where too many recorded lots for single-family housing exists in relation to realistic market demands for all housing types.

3. Where available property is too small in an area to accommodate long-term building objectives of the developer.

4. Where surrounding land use may be incompatible.

5. Where surrounding older housing reflects a deteriorating environment.

6. Where established single-family areas object to higher densities often necessary to justify infill investment.

An absolute requirement for infill could have a negative impact through increases in land value and, in effect can retard growth. Conversely, where adequate lands exist to meet reasonable demands of the housing market for the range of housing types required, infill can be achieved.

Evaluation Criteria

In reviewing and evaluating proposals under this Standard, LAFCO will consider the following five criteria:

1. An annexation may be considered to guide development away from prime agricultural land or other productive lands if one of the following two conditions exists.

    a. It does not contain prime agricultural land as defined under the Cortese-Knox Hertzberg (Government code Section 56064). In determining whether or to what extent land is prime or productive a hierarchy of land classification shall be used based on the following criteria in descending order of importance.

        1) Land that qualifies for rating as class I or class II in the USDA Natural Resources Conservation Service land use capability classification, whether or not land is actually irrigated, provided that irrigation is feasible.

        2) Land that qualifies for rating 80 through 100 in the Storie Index Rating.

        3) Land planted with fruit or nut-bearing trees, vines, bushes, or crops that have a nonbearing period of less than five years and that will return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than four hundred dollars ($400) per acre.

        4) Land that has returned from the production of unprocessed agricultural plant products an annual gross value of not less than four hundred dollars ($400) per acre for three of the previous given calendar years.

        5) Land that supports livestock used for the production of food and fiber and that has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United States Department of Agriculture in the National Handbook on Range and Related Grazing

Lands, July 1967, developed pursuant to Public Law 46, December 1935.

Lands which are defined under 1 and 2 above are considered prime agricultural lands and have the greatest importance within Solano County. In reviewing lands identified as prime agriculture, consideration will be given to the economic viability of the property and whether the land can be economically and productively farmed.

b. The area is wholly or largely surrounded by urban development.

2. If an annexation includes prime agricultural land, the annexation is considered to promote the planned orderly and efficient development of an area if:

a. The proposed annexation meets the requirements of Standard No. 8; and

b. The proposed annexation either abuts a developed portion of the agency or abuts properties which already are committed to urban development by the extension of streets and other public facilities where service extensions were predicted on adjacent lands within the proposed annexation area being developed to assist in meting bond obligations or other financial instruments against the property; and

c. It can be demonstrated that there are insufficient vacant non-prime lands within the Sphere of Influence planned for the same general purpose because of one or more of the following.

(1) Where land is unavailable at a reasonable market rate as determined by competent market analysis.

(2) Where insufficient land is currently available for the type of land used proposed, as determined by competent market analysis.

(3) Where surrounding land use clearly is incompatible because of the age and condition of structures or mixture of land uses.

3. Notwithstanding the factors listed above, it is the responsibility of an agency to undertake substantial actions to facilitate and encourage the infill of land within a city's limit so to minimize the need for further annexation. Such actions include, but are not limited to, the following:

a. Redevelopment plans and action programs.

b. Capital improvement programs.

c. Changes in land use policies and regulations.

d. Housing programs, including rehabilitations.

4. Consistency with the city's Municipal Service Review and provisions for guiding future growth away from prime agricultural lands.

5. Annexation shall be prohibited on land under an agricultural preserve contract unless an agency protested the establishment of the contract and the protest was upheld by LAFCO, and/or unless a notice of non-renewal has been filed; evidence that findings supporting cancellation have been made; and the adverse effects of the annexation on the economic integrity of lands in adjoining preserves are can be reasonably mitigated.

Required Documentation

This Standard requires that any application for a change of organization or reorganization containing open-space lands to be converted to an urban use shall provide the following documentation on its impact to prime agricultural land.

1. Documentation as to whether the affected territory contains prime agricultural land as defined under Government Code Section 56064 (evaluation criteria No. 1 above) and/or whether the affected territory is under an agricultural preserve contract.

2. If the affected territory contains prime agricultural land, provide demonstrate compliance with evaluation criteria 2, 3, and 4 above.

3. If the affected territory contains lands under agricultural preserve contract, provide documentation in compliance with evaluation criteria 5 above including a copy of the notice of non-renewal.

STANDARD NO. 10: PROVISION AND COST OF COMMUNITY SERVICES

Adequate urban services shall be available to areas proposed for a change of organization or reorganization

Explanation and Discussion

This standard requires that the applicant obtain verifications from the affected agency(ies) that the full range of services required to serve the affected territory can be provided. For city annexations that propose to convert open space lands to urban uses, the proposal shall be consistent with the city's Municipal Service Review.

A "will serve" letter from the manager/director of the affected agency is required for all changes of organization and reorganizations initiated by petition by registered voters or landowners. Where more than one agency is to provide services, a "will serve" letter, the manager/director of the agency shall provide LAFCO with a statement explaining why the agency is unable to do so.

Where open space lands are proposed to be converted to uses other than open space, LAFCO may "initiate and make studies of existing government agencies. Those studies shall include, but shall not be limited to, inventorying those agencies and determining their maximum service area and service capacities. In conducting those studies, the commission may ask for land use information, studies, and plans of cities, counties, districts, including school districts, community college districts, and regional agencies and state agencies and departments" (56378)

The Municipal Service Review and if applicable, "will serve" letters(s) are intended to resolve any potential service problems related to an application prior to its submittal to LAFCO. LAFCO will consider both the Municipal Service Review , environmental documentation, other studies (as previously noted) , and "will serve" letters(s) (if applicable)in reviewing this standard.

Required Documentation

For proposals initiated by petition, this standard requires that an application of a change of organization or reorganization shall be accompanied by a "will serve" letter or a statement from the affected agency(ies) as follows:

1. If a district change of organization or reorganization, a "will serve" letter from the affected district's director.

2. If a city change of organization or reorganization, a "will serve" letter from the city manager of the affected city and a "will serve" letter from the director of each special district providing services to the affected territory. (i.e. water agencies, sewer districts, recreation district).

3. If a city change of organization or reorganization that includes conversion of open space land to uses other than open space, LAFCO may "initiate and make studies of existing government agencies. Those studies shall include, but shall not be limited to, inventorying those agencies and determining their maximum service area and service capacities. In conducting those studies, the commission may ask for land

use information, studies, and plans of cities, counties, districts, including school districts, community college districts, and regional agencies and state agencies and departments" (56378)

4. When an agency will not issue a "will serve" letter, the agency manager/director shall provide a statement explaining why it is unable to do so.

STANDARD NO. 11: THE AFFECT OF THE PROPOSED ACTION ON ADJACENT AREAS, MUTUAL SOCIAL AND ECONOMIC INTERESTS, AND ON LOCAL GOVERNMENTAL STRUCTURE

The application shall describe the effect which the annexation could have on adjacent areas and outside the agency. It shall also describe any social and economic benefits, or detriments, which will accrue to the agency and other affected agencies. The proposal should not be motivated by inter city rivalry, land speculation, or other motivates not in the public interest, and should create no significant negative social or economic effects on the County or neighboring agencies.

Explanation and Discussion

This Standard responds to the Cortese-Knox-Hertzberg factor listed under Section 56668(c). As worded in the law, the factor is somewhat vague and tends to overlap with the purpose of several other Standards, including those pertaining to the protection of agricultural land, meeting needs of the housing market, orderly growth, and the provision of urban services. Consequently, meeting this Standard requires placing in perspective the overall beneficial consequences of a proposal as compared to potential negative impacts, through qualitative analysis.

Examples of mutual social and economic benefits include achieving a balanced housing supply within the community, the provision of commercial areas where existing commercial development does not meet the needs residents, the creation of new employment opportunities to meet the needs of the unemployed or under-employed, protecting sensitive resources, advancing the time when public improvements needed by the larger community may be provided, improvement of levels of service within the community without incurring additional costs or harming other public service providers and protection of communities of regional/national economic and social importance, such as Travis Air Force Base, through the utilization of permanent open space and reserve areas.

These types of benefits may, in a given case, argue for a project as off-setting negative consequences or negative determinations identified in responding to other Discretionary Standards. The written response to this standard provides the opportunity to make a case for a proposal which, based on other standards, might appear to be questionable.

Potential negative impacts upon the County and neighboring agencies will also be considered. Examples include proposals that negatively impact Special District budgets or service provision or proposals that demand Special District services without the provision of adequate funding, threaten major employers, alter current/future military missions or otherwise cause hardship to communities of regional/national economic and social importance.

Required Documentation

In cases where Special Districts might be harmed, either though detachment or annexation, the applicant should work with the Executive Director to identify the affected agencies and work with those agencies to identify and mitigate the impacts. *LAFCO will not normally approve detachments from special districts or annexations that fail to provide for adequate mitigation of the adverse impacts on the district. Where the adverse impact is fiscal,*

adequate mitigation will normally include a permanent, funding source for lost revenues or increased costs to the affected Special District. Where potential impacts on other agencies have been identified, the application may be deemed incomplete or the LAFCo hearing continued, until the applicant has met with the affected agencies and made a good faith effort to reach agreement with those agencies on appropriate mitigation.

This standard requires that an application for a change of organization or reorganization show the inter-relationship and effect of the proposed project on adjacent areas, both within and outside the boundaries of the affected agency, and to weigh the overall beneficial aspects of a proposal as compared to the potential negative impacts. The application shall provide a written response to this standard and all supporting documentation regarding mitigation.

LAFCO Action

If the applicant and the affected agencies have reached agreement on *permanent, annual* mitigation for the impacts to affected agencies, LAFCo will normally include the mitigation measures in its terms and conditions approving the change of organization. If the parties have failed to reach agreement, LAFCo shall hear from both sides and determine an appropriate mitigation, if any, and impose that mitigation to the extent it is within its powers. If the needed mitigation is not within LAFCo's authority and approval would, in the determination of the Commission, seriously impair the District's operation, the Commission may choose to deny the application.

SECTION V. MUNICIPAL SERVICE REVIEW

I. PURPOSE

To provide guidance to Solano LAFCO and agencies within its purview in preparing and conducting municipal service reviews (MSR).

II. BACKGROUND

The Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (CKH) requires LAFCO to review municipal services. The service review provides LAFCO and agencies within its purview with a tool to comprehensively study existing and future public service conditions and to evaluate organizational options for accommodating growth, preventing urban sprawl while supporting California's anticipated growth, and ensuring that critical services are efficiently and cost-effectively provided. CKH requires all LAFCOs to conduct the MSR prior to updating the spheres of influence (SOI) of the various cities and special districts in the County (Government Code Section 56430). CKH requires an MSR and SOI update every 5 years.

III. FUNCTION OF MUNICIPAL SERVICE REVIEW

Government Code Section 56430 requires LAFCo to conduct MSRs and prepare a written statement of determination with respect to each of the following:

1. **Growth and Population Projections for the Affected Area.** This section reviews projected growth within the existing service boundaries of the city or district and analyzes the city's or district's plans to accommodate future growth.

2. **The location and characteristics of any disadvantaged unincorporated communities within or contiguous to the sphere of influence.** A disadvantaged community is defined as one with a median household income of 80 percent or less of the statewide median income.

3. **Present and Planned Capacity of Public Facilities and Adequacy of Public Services Including Infrastructure Needs or Deficiencies.** This section discusses the services provided including the quality and the ability of the city or district to provide those services, and it will include a discussion of capital improvement projects currently underway and projects planned for the future where applicable.

4. **Financial Ability of Agencies to Provide Services.** This section reviews the city's ir district's fiscal data and rate structure to determine viability and ability to meet service demands. It also addresses funding for capital improvement projects.

5. **Status of and Opportunities for Shared Facilities.** This section examines efficiencies in service delivery that could include sharing facilities with other agencies to reduce costs by avoiding duplication.

6. **Accountability for Community Service Needs, including Government Structure and Operational Efficiencies.** This section examines the city's or district's current

government structure, and considers the overall managerial practices. It also examines how well the city or district makes its processes transparent to the public and invites and encourages public participation.

7. **Matters Related to Effective or Efficient Service Delivery Required by Commission Policy.** This section includes a discussion of any Solano LAFCO policies that may affect the ability of a city or district to provide efficient services.

The MSR process does not require LAFCO to initiate changes of organization based on service reviews; it only requires that LAFCO make determinations regarding the provision of public services per the provisions of Government Code Section 56430. However, LAFCO, local agencies, and the public may subsequently use the determinations to pursue changes to services, local jurisdictions, or spheres of influence. Service Reviews are intended to provide a broad analysis of service provision.

IV. WHEN PREPARED

LAFCO will determine when municipal service reviews are necessary. Generally, reviews will be prepared prior to SOI studies or updates. Service reviews may also be conducted independent of the SOI update based on a number of factors, including but not limited to, concerns of affected agencies, the public or LAFCO; public demand for a service review; public health, safety, or welfare issues; service provision issues associated with areas of growth and/or development.

Minor amendments to SOI, as determined by LAFCO, will not require a municipal service review. An amendment to the SOI of any agency may be processed and acted upon by the Commission if all of the following are met:

- The requested amendment, considered along with all other amendments approved in the last 12 months for the agency in aggregate, are less than 40 acres.

- There are no objections from other agencies that are authorized to provide the services the subject agency provides and whose SOI underlies or is adjacent to the subject territory.

- The Commission finds that the proposed amendment would not significantly interfere with the development of the updated SOI of the agency.

VI. LAFCO REVIEW OF MSR PROCESS

It is LAFCO's policy that cities prepare their MSR absent determinations. Upon review of the data LAFCO may request additional information and will add the determinations.

The MSR should be produced in the following format. A sample Table of Contents is shown below along with the sections that LAFCO will complete.

Table of Contents

Acronyms and Abbreviations .....

1: Introduction- (*Provided by LAFCO*) .....

1.1 – Role and Responsibility of LAFCO .....
1.2 – Purpose of the Municipal Service Review .....
1.3 – Uses of the Municipal Service Review .....
1.4 – Sphere of Influence .....
1.5 – California Environmental Quality Act (CEQA) .....

2: Executive Summary .....

2.1 – The Municipal Service Review (*Provided by LAFCO*) .....
2.2 – City Profile .....
2.3 – Growth and Population Projections .....
2.4 – Disadvantaged Unincorporated Communities .....
2.5 – Present and Planned Capacity of Public Facilities .....
2.6 – Financial Ability to Provide Services .....
2.7 – Status and Opportunities for Shared Facilities .....
2.8 – Government Structure and Accountability .....
2.9 – LAFCO Policies Affecting Service Delivery .....

3: City Profile .....

4: Growth and Population Projections .....

5: Disadvantaged Unincorporated Communities .....

6: Present and Planned Capacity of Public Facilities .....

6.1 – Airport (If appropriate) .....
6.2 – Animal Control .....
6.3 – Fire .....
6.4 – Law Enforcement .....
6.5 – Parks and Recreation .....
6.6 – Public Works .....
6.7 – Solid Waste .....
6.8 – Stormwater .....
6.9 – Wastewater .....
6.10 – Water .....

7: Financial Ability to Provide Services .....

7.1 – General Fund .....
7.2 – Enterprise Funds .....
7.3 – Capital Improvements .....

8: Status and Opportunities for Shared Facilities .....

8.1 – Shared Facilities and Regional Cooperation .....
8.2 – Management Efficiencies .....

9: Government Structure and Accountability .....

10: LAFCO Policies Affecting Service Delivery .....

11: Summary of Determinations - (*Provided by LAFCO*).....

Growth and Population Projections.....
Disadvantaged Unincorporated Communities .....
Present and Planned Capacity of Public Facilities .....
Financial Ability to Provide Services.....
Status and Opportunities for Shared Facilities .....
Government Structure and Accountability.....
LAFCO Policies Affecting Service Delivery.....

12: References

SECTION VI. ESSENTIAL REQUIREMENTS OF THE CORTESE-KNOX-HERTZBERG ACT THE LEGISLATURE'S POLICY AND INTENT FOR LAFCO

The State Legislature has set forth specific policy direction to LAFCO in carrying out its duties and responsibilities under the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000. Specifically LAFCO is directed to:

1) *"Encourage orderly growth and development ….logical formation and determination of local agency boundaries"* (Gov. Code Section 56001)

2) *Encourage and provide for "Planned, well-ordered, efficient urban development patterns with appropriate consideration of preserving open-space lands" (Section 56300).*

3) *"Discouragement of urban sprawl, preserving open space and prime agricultural lands, efficiently providing government services and encouraging the orderly formation and development of local agencies based upon local conditions and circumstances" (Section 56301.)*

In reviewing and approving or disapproving proposals, the legislature has established two priorities for LAFCO (Section 56377):

1) *"Development or use of land for other than open-space uses shall be guided away from existing prime agricultural lands in open-space use toward areas containing nonprime agricultural lands, unless that action would not promote the planned, orderly, efficient development of an area."*

2. *"Development of existing vacant or nonprime agricultural lands for urban uses within the existing jurisdiction of a local agency or within the sphere of influence of a local agency shall be encouraged before any proposal is approved which would allow for or lead to the development of existing open-space lands for non-open-space uses which are outside of the existing jurisdiction of the local agency or outside of the existing sphere of influence of the local agency."*

These policies and priorities are fundamental in their impact on LAFCO's decision process. They give critical dimension to the manner in which individual standards are applied to the factors prescribed by the Cortese-Knox Hertzberg Act.

In addition to the basic policies and priorities discussed above, the Cortese-Knox Hertzberg Act has identified the following factors to be considered in the review of a proposal under Section 56668:

(a) Population and population density; land area and land use; 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) The 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; probable effect of the proposed incorporation, formation, annexation, or exclusion and of 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.

(c) 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.

(d) 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 in Section 56377.

(e) The effect of the proposal on maintaining the physical and economic integrity of agricultural lands, as defined by Section 56016.

(f) 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.

(g) A regional transportation plan adopted pursuant to Section 65080.

(h) The proposal's 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 65352.5.

(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 landowners, voters, or residents of the affected territory.

(*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 of people of all races, cultures, and incomes with respect to the location of public facilities and the provision of public services.

(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.

CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD

24 June 2024

Albert Enault
City of Vacaville
Community Development Department
650 Merchant Street
Vacaville, CA 95688
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COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, MCMURTRY CREEK ESTATES PROJECT, SCH#2024051142, SOLANO COUNTY

Pursuant to the State Clearinghouse's 24 May 2024 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the McMurtry Creek Estates Project, located in Solano County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has

adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:
https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Construction General Permit Order No. 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]
The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Clean Water Act Section 404 Permit
If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification
If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for

[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

Waste Discharge Requirements – Discharges to Waters of the State

If USACE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at:https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at: https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Threat General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Threat Waiver) R5-2018-0085. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Threat Waiver and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2018-0085.pdf

Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-4684 or Peter.Minkel2@waterboards.ca.gov.

Peter G. Minkel
Engineering Geologist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

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APPENDIX B

INITIAL STUDY

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DRAFT

MCMURTRY CREEK ESTATES PROJECT
INITIAL STUDY

VACAVILLE, CALIFORNIA

LSA

March 2025

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DRAFT

MCMURTRY CREEK ESTATES PROJECT INITIAL STUDY

VACAVILLE, CALIFORNIA

Submitted to:

Albert Enault, Senior Planner
City of Vacaville
Community Development Department
650 Merchant Street
Vacaville, California 95688

Prepared by:

LSA
1504 Eureka Road, Suite 310
Roseville, California 95661
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Project No. 20230997

LSA

March 2025

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E: TRAFFIC TECHNICAL MEMORANDUM
F: WILDFIRE EVACUATION ASSESSMENT

LIST OF ABBREVIATIONS AND ACRONYMS

µin/sec	microinches per second
2004 Project	Rice McMurtry Annexation and Residential Development Project
2020 UWMP	2020 Amended Urban Water Management Plan
AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
ABAG	Association of Bay Area Governments
AcC	Altamont clay
AcF2	Altamont clay
ALUC	(Solano County Airport) Land Use Commission
ANSI	American National Standards Institute
APN	Assessor's Parcel Number
ASCE	American Society of Civil Engineers
Basin Plan	Water Quality Control Plan
bgs	below ground surface
BMP	Best Management Practice
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CALGreen Code	California Green Building Standards Code
CalRecycle	California Department of Resources Recycling and Recovery
CARB	California Air Resources Board
CASQA	California Stormwater Quality Association
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFD	Community Facilities District
CGP	Construction General Permit

CH_4	methane
Cheyenne Estates	Cheyenne Estates at Browns Valley
CHRIS	California Historical Resources Information System
City	City of Vacaville
CIWMB	California Integrated Waste Management Board
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CRHR	California Register of Historical Resources
CWA	Federal Clean Water Act
D	distance
dB	decibel
dBA	A-weighted decibel
DbF2	Dibble-Los Osos loam
DOC	California Department of Conservation
DPM	diesel particulate matter
DU	dwelling unit
DWR	Department of Water Resources
E.L.	noise emission level
Easterly WWTP	Easterly Wastewater Treatment Plant
ECAS	Energy and Conservation Action Strategy
EIR	Environmental Impact Report
EMFAC2021	California Emission Factor Model, version 2021
EMS	emergency medical services
EO	Executive Order
EV	electric vehicle
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act

FHSZ	Fire Hazard Severity Zone
FIRM	Flood Insurance Rate Map
FTA	Federal Transit Administration
FTA Manual	Federal Transit Administration's *Transit Noise and Vibration Impact Assessment Manual*
GHG	greenhouse gas
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GWP	Global Warming Potential
HA	Hillside Agriculture
HCP	Habitat Conservation Plan
HFC	hydrofluorocarbon
HFHSZ	High Fire Hazard Severity Zone
HQT	Habitat Quantification Tool
in/sec	inches per second
ITE	Institute of Transportation Engineers
Knoll Creek	Reserve at Browns Valley Phase 2
kWh	kilowatt hour
kV	kilovolt
LAFCO	Solano Local Agency Formation Commission
L_{dn}/DNL	day-night average level
L_{eq}	equivalent continuous sound level
L_{eq} (equip)	L_{eq} from a single piece of equipment over a specified time period
LID	Low Impact Development
LOS	level of service
LRA	Local Responsibility Area
LV	velocity in decibels
MCE	Marine Clean Energy
MLD	Most Likely Descendant
mpg	miles per gallon
MRZ	Mineral Resource Zone

MS4	Municipal Separate Storm Sewer System
MT	metric ton
N_2O	nitrous oxide
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
NPDES	National Pollution Discharge Elimination System
NRCA	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NWIC	Northwest Information Center
O&M Plan	Operation and Maintenance Plan
O_3	ozone
OHP	State of California Office of Historic Preservation
OPR	Governor's Office of Planning and Research
PFC	perfluorocarbon
PG&E	Pacific Gas and Electric Company
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in size
$PM_{2.5}$	particulate matter less than 2.5 microns in size
PMA	Projects and Management Actions
PPV	peak particle velocity
PRC	Public Resources Code
PRD	Permit Registration Document
proposed project	McMurtry Creek Estates Project
Rancho Rogelio	Reserve at Browns Valley Phase 1
RE	Residential Estates
RL	Residential Low Density
RoC	Rincon clay loam

ROG	reactive organic gases
Rogers Ranch	Reserve at Browns Valley Phase 3
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SCH	State Clearinghouse
SCOA	Standard Conditions of Approval
SCWA	Solano County Water Agency
SDMP	Storm Drainage Master Plan
SF_6	sulfur hexafluoride
SGMA	Sustainable Groundwater Management Act
SLF	Sacred Lands File
SMARTS	Stormwater Multiple Application and Report Tracking System
SO_2	sulfur dioxide
SOI	Sphere of Influence
SRA	State Responsibility Area
STC	Sound Transmission Class
SUV	sport utility vehicle
SVAB	Sacramento Valley Air Basin
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TMDL	Total Maximum Daily Load
Tribe	Yocha Dehe Wintun Nation
TUSD	Travis Unified School District
U.F.	usage factor
UGB	Urban Growth Boundary
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

UTM	Universal Transverse Mercator
UWMP	Urban Water Management Plan
VFD	City of Vacaville Fire Department
VHFHSZ	Very High Fire Hazard Severity Zone
VMC	Vacaville Municipal Code
VMT	Vehicle Miles Traveled
VPD	City of Vacaville Police Department
VUSD	Vacaville Unified School District
WDID	Waste Discharge Identification Number
WDR	Waste Discharge Requirement
WUI	wildland-urban interface
YDWN	Yocha DeHe Wintun Nation
YSAQMD	Yolo-Solano Air Quality Management District

1.0 PROJECT INFORMATION

1. **Project Title:**

   McMurtry Creek Estates Project

2. **Lead Agency Name and Address:**

   City of Vacaville
   Community Development Department
   650 Merchant Street
   Vacaville, California 95688

3. **Contact Person and Phone Number:**

   Albert Enault, (707) 449-5364
   Albert.Enault@cityofvacaville.com

4. **Project Location:**

   4420 McMurtry Lane, Vacaville, CA 95688, Unincorporated Solano County

5. **Project Sponsor's Name and Address:**

   Tom Phillippi, Phillippi Engineering
   425 Merchant Street, Suite 200
   Vacaville, CA 95688

6. **General Plan Designation:**

   Agriculture (HA)

7. **Zoning:**

   Unspecified

8. **Description of Project:**

   The proposed project would annex 15.73 acres of land from Solano County into the City of Vacaville to develop a subdivision consisting of 20 single-family residential estate lots, along with associated roadway and utility improvements. The residential estate lots would accommodate executive-style custom homes ranging in lot area from 12,412 to 63,749 square feet in size. The proposed project would require a General Plan Amendment to change the General Plan designation from Hillside Agriculture (HA) to Residential Estates (RE) and apply the Residential Estate (RE-12) pre-zoning district to the project site. See Chapter 2.0, Project Description, of this Initial Study, for a full project description.

9. **Surrounding Land Uses and Setting:**

   The project site is located in a semi-rural area within central western Solano County and is generally surrounded by residential uses to the south and east and vacant land to the north and west. The project site is bordered immediately north and west by undeveloped land and to the

east by the Cheyenne Estates at Browns Valley (Cheyenne Estates) development, which includes 221 single-family residential lots. To the south of the project site is the Reserve at Browns Valley Phase 3 (Rogers Ranch), which includes 29 single residential lots. **Other Public Agencies Whose Approval is Required (e.g., permits, financial approval, or participation agreements):**

The Solano Local Agency Formation Commission (LAFCO), the Solano County Fire Protection District, the California Department of Fish and Wildlife (CDFW), the United States Army Corps of Engineers (USACE), and the United States Fish and Wildlife Service (USFWS).

10. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resource Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

    Native American consultation was conducted in compliance with Assembly Bill (AB) 52. On January 18, 2022, AB 52 consultation letters were sent to all Native American contacts identified by the Native American Heritage Commission (NAHC). On April 1, 2024, City Planning Staff received a request for AB 52 Consultation (ID: YD-02202024-03) from the Yocha DeHe Wintun Nation (YDWN) regarding this project. Consultation concluded on May 20, 2024, with written response provided by YDWN, which incorporated mitigation measures for tribal cultural resources, which the City accepted with no modifications or revisions.

2.0 PROJECT DESCRIPTION

The following describes the proposed McMurtry Creek Estates Project (proposed project) that is the subject of this Initial Study prepared pursuant to the California Environmental Quality Act (CEQA). The proposed project would result in the annexation of 15.73 acres of land from Solano County into the City of Vacaville (City) to develop a subdivision consisting of 20 single-family residential estate lots and associated roadway and utility improvements. The residential estates would be executive-style custom homes on lots ranging from 12,412 to 63,749 square feet in size. The City is the Lead Agency for review of the proposed project under CEQA.

2.1 PROJECT SITE

The following section describes the project location, existing conditions, surrounding land uses, and the regulatory setting.

2.1.1 Project Location

The approximately 15.73-acre project site consists of two parcels of primarily undeveloped land located at 4420 McMurtry Lane within central western Solano County (Assessor's Parcel Numbers [APNs] 0105-200-150 and 0105-200-140), as shown on Figure 2-1, Project Location (figures are provided at the end of this chapter). The project site is located at the end of McMurtry Lane and just north of Preserve Lane.

Regional vehicular access to the project site is provided by Interstate 505, which is located east of the project site. The closest on- and off-ramps to the project site are located along Vaca Valley Parkway, approximately two miles to the east. Bus stops along Browns Valley Road provide transit service to the project site.[1] The closest bus stop is located at Tipperary Drive at Browns Valley Road, approximately one mile southeast of the project site.

2.1.2 Existing Conditions

The project site contains some existing structures located along the western edge of the site adjacent to McMurtry Lane, including a single-family home, trailer, livestock enclosures, and a number of other associated storage structures, including a barn and shed. The residential and storage structures are currently occupied/in use, and the livestock enclosures are vacant. There is one 0.31-acre constructed stock pond/seasonal wetland in the south-central part of the site and two ephemeral drainage channels in the southern portion of the site. A Pacific Gas and Electric (PG&E) easement with a transmission line is situated at the western and northern project boundaries.

The project site is relatively level with low, gently rolling hills that slope from south to east, and site elevations ranging from 252 to 326 feet above mean sea level. Existing vegetation of the undeveloped portions of the project site generally consist of non-native annual grassland and other non-native species.

[1] City of Vacaville. 2022a. City Coach, About Us. *Route 2*, *City Coach*. Website: https://citycoach.com/find-your-route/route-2/ (accessed February 29, 2024).

2.1.3 Surrounding Land Uses

The project site is bounded by undeveloped lands to the north and west, and single-family residential uses to the south and east, as shown on Figure 2-2, Aerial Photograph and Surrounding Land Uses. The Reserve at Browns Valley Phase 3 (Rogers Ranch), which includes 29 single-family residential lots, is located to the south of the project site, and Cheyenne Estates at Browns Valley development (Cheyenne Estates), which includes 221 single-family residential lots, is located to the east.

The Rogers Ranch and Cheyenne Estates development projects are subdivisions within the Rice-McMurtry Development, which was approved by the City Council in 2004. The development comprises 309 units in four subdivisions on 175 acres: Cheyenne Estates to the east of the project site, Rogers Ranch to the south of the project site, the Reserve at Browns Valley Phase 2 (Knoll Creek) to the southeast of the project site, and the Reserve at Browns Valley Phase 1 (Rancho Rogelio) further east of the project site. [2]

2.1.4 Project Background and Regulatory Setting

On March 1, 2004, the Final Environmental Impact Report (EIR) for the Rice McMurtry Annexation and Residential Development Project (2004 Project) was certified by the Vacaville City Council. The EIR evaluated the potential impacts associated with the development of 300 residential units on an approximately 130-acre area and the development of a multi-purpose recreational trail. The 2004 Project included the annexation of approximately 253 acres of land to the City of Vacaville and a General Plan Amendment, which included replacing the Solano County General Plan land use designations with the City of Vacaville General Plan designations. The 2004 Project EIR did not include the project site but did expand the Sphere of Influence (SOI) and the Urban Growth Boundary (UGB) of the City of Vacaville in the vicinity of the proposed project.

The proposed project is located within the City's SOI and the UGB (see Figure 2-3, Urban Growth Boundary and Sphere of Influence Overlay Map). According to the Vacaville General Plan, the SOI is a boundary that identifies land that the City may annex in the future for which urban services, if available, would be provided. In 2008, the City of Vacaville adopted the 20-year UGB, which totaled 36 square miles. The UGB indicates the maximum allowable extent of urbanization. Beyond this boundary, only agricultural or open space uses are typically permitted. Land outside the UGB cannot be annexed into the City or designated for anything other than agriculture, park, open space, public facility, or utility uses until March 1, 2028.[3]

According to the General Plan Land Use Element,[4] the proposed project is currently designated as Hillside Agriculture (HA), which is intended for low-intensity agricultural uses and allows for the

[2] City of Vacaville. n.d.-b. Residential Activity. Rice-McMurtry. Website: https://www.cityofvacaville.gov/government/community-development/planning-and-development/development-activity/residential-activity/rice-mcmurtry (accessed September 11, 2023).

[3] City of Vacaville. 2023b. Planning Commission, Staff Report 2023. October. Website: https://vacaville.granicus.com/MetaViewer.php?view_id=&clip_id=1915&meta_id=107805 (accessed February 12, 2024)

[4] City of Vacaville. 2015c. Vacaville General Plan Land Use Element. Website: https://www.ci.vacaville.ca.us/home/showpublisheddocument/5416/638157981726430000 (accessed June 21, 2024).

development of one residential unit per 20 acres. The proposed project is located in an unincorporated area of Solano County and has not been zoned by the City of Vacaville.

2.2 PROPOSED PROJECT

The proposed project involves the construction of 20 new residential estate lots and associated roadway and utility improvements on the project site. The 15.73-acre project site includes a developable area of approximately 7.8 acres for the 20 single-family residential lots, 3.7 acres of landscaping for fire protection around the perimeter of the proposed lots, and 2.44 acres of designated open space. Additionally, as part of the subdivision, two new parcels would be created: Parcel A, the 15.73-acre project site, which would be annexed into the City of Vacaville and includes the 20 residential lots, fire access roads, and a 150-foot irrigated landscape buffer; and Parcel B, a separate 18.60-acre remnant parcel that would remain unimproved and within Solano County. Individual components of the proposed project are discussed below.

Access to the project site would be provided by the existing McMurtry Lane and Preserve Lane. The proposed project would extend both McMurtry Lane and Preserve Lane north to connect to the proposed private access driveway and fire access road around the perimeter of the proposed project. Additionally, the proposed project would create a new 22-foot-wide multi-use path connecting the east side of the project to White Stone Court (along McMurtry Lane, the multi-use path would be only 20 feet wide), which would also provide fire truck access. Figure 2-4, Conceptual Site Plan, shows the conceptual site plan for the proposed project, and Figure 2-5, Proposed Fire Truck Access and Multi-Use Path, shows the proposed fire access road and multi-use path within the project site.

2.2.1 General Plan Amendment and Rezoning

The proposed project would require a General Plan Amendment to change the General Plan designation for the site from Hillside Agriculture (HA) to Residential Estates (RE) and apply the Residential Estate (RE-12) pre-zoning district to the project site. The Residential Estate designation is generally characterized by very low-density residential uses, while the RE-12 district is intended to provide for residential development in a semi-rural setting on lots with a minimum lot size of 12,000 square feet.[5] Additionally, the project includes a Tentative Subdivision Map to create 20 lots within Parcel A while designating Parcel B as an unimproved remnant parcel. Annexation would require approval from the Solano Local Agency Formation Commission (LAFCO).

2.2.2 Building Program

As previously discussed, the proposed project would result in the subdivision of the project site to construct 20 lots for future single-family detached residential developments. The proposed residential developments would consist of one- and two-story residences, which would not exceed 35 feet tall. The proposed lots would range from 12,412 to 63,740 square feet. Additionally, the existing ranch property located on Lot 1 would be retained.

[5] City of Vacaville. 2015c. Vacaville General Plan Land Use Element. Website: https://www.ci.vacaville.ca.us/home/showpublisheddocument/5416/638157981726430000 (accessed June 21, 2024).

2.2.3 Open Space and Landscaping

The proposed project would include approximately 3.7 acres of landscaping for fire protection, of which 2.44 acres would be designated as open space. As shown in the Preliminary Landscape Plan, Figure 2-7, Preliminary Landscape Plan, 27 live oaks (*Quercus agrifolia*) and 27 smaller Western redbuds (*Cercis occidentalis*) would be planted within the 150-foot irrigated landscape buffer between the custom-home lots and the hillside areas along the project boundary. Additionally, the proposed project would reconstruct a seasonal wetland within the project boundary, and construct a new detention pond, as further described below, that would be approximately 15,000 square feet in size along the northern boundary of the project. Future custom homes would provide landscaping for each individual lot as development progresses.

2.2.4 Access, Circulation, and Parking

Primary access to the project site would be provided by an extension of Preserve Lane with a secondary emergency access route along McMurtry Lane. The proposed project would extend McMurtry Lane to the north and remove the existing cul-de-sac at Preserve Lane within the Reserves at Browns Valley Development to connect McMurtry Lane to Preserve Lane. A 22-foot-wide fire access road would be constructed around the perimeter of the development and connect to a new multi-use path on the eastern side of the proposed development, allowing access to White Stone Court, Rolling Sage Circuit, and Peacock Way within the Cheyenne Estates development.

2.2.5 Utilities and Infrastructure

The project site is located in a developed area that is currently served by existing utilities, including water, sanitary sewer, storm drainage, electricity, gas, and telecommunications infrastructure. Existing and proposed utility connections are discussed below.

2.2.5.1 Water

Water service is provided by the City of Vacaville. The proposed project would include the installation of three new 8-inch water lines that would tie into the existing 12-inch water mains located within White Oak Court, Preserve Lane, and McMurtry Lane. The proposed project would be directly supplied by the Reynolds Ranch Reservoir, part of the Zone 2 system.

2.2.5.2 Wastewater

The City maintains existing sanitary sewer lines within the vicinity of the project site, including an 8-inch line within the existing Preserve Lane in the Reserves at Browns Valley subdivision, immediately south of the project site. A new 8-inch sanitary sewer line would be installed within the subdivision and would tie into the existing 8-inch line in Preserve Lane.

2.2.5.3 Stormwater

As previously noted, the majority of the project site is currently undeveloped, and existing vegetation consists of non-native grassland. A 0.31-acre artificial stock pond/seasonal wetland is located in the south-central part of the site, and two ephemeral drainage channels are in the southern portion of the site. Under existing conditions, the project site contains 5,303 square feet of impervious surfaces. Existing stormwater infrastructure consists of two 24-inch stormwater mains

that run north to south just outside of the southern boundaries of the project site. Additionally, two storm drain manholes are located within McMurtry Lane south of the project site.

Upon construction of the developable area within the proposed project site (7.8 acres), approximately 213,856 square feet (63 percent) of the developable area would become impervious surfaces. The remaining area is assumed to be pervious surfaces, consisting of the landscaped areas. Additionally, the proposed project would include approximately 15,000 square feet for a detention pond on the northern end of the project site, which would be used for stormwater control.

The proposed project would include catch basins and storm drains throughout the project site, which would drain to the detention pond located to the north, with another connection point that would drain into the existing seasonal creek. The existing seasonal creek would be maintained by the development. The seasonal wetland (stock pond) would be reconstructed and relocated immediately southeast within the project site to allow for the development of the proposed project.

2.2.5.4 Electricity and Gas

Electricity and gas service is provided to the project site by PG&E. The proposed project would include connections to the existing electricity and natural gas lines that run along the southern and northern borders of the project site adjacent to the site, along the existing PG&E easement.

2.2.5.5 Telecommunication

Telecommunication services to the project site would be provided by AT&T or Comcast.

2.2.6 Construction

Grading of the proposed lots would be on slopes less than 15 percent. The fire access road around the property's perimeter would involve steeper grading, with slopes ranging from 20 to 25 percent. Steeper grading within the proposed project would be confined to the western section at the rear of Lots 9, 10, 11, and 14.

Generally, only minor grading would be required for site preparation. Ground disturbance associated with utility installations would not exceed a depth of excavation of five feet below ground surface. A total of 7.8 acres of soil would be disturbed during construction activities. It is anticipated that a total of 12,000 cubic yards of soil would be cut-and-fill; however, no fill would be imported to the site, and no additional truck trips would be required. Construction of the proposed project is anticipated to begin in 2026 and would occur over an approximately nine-month period.

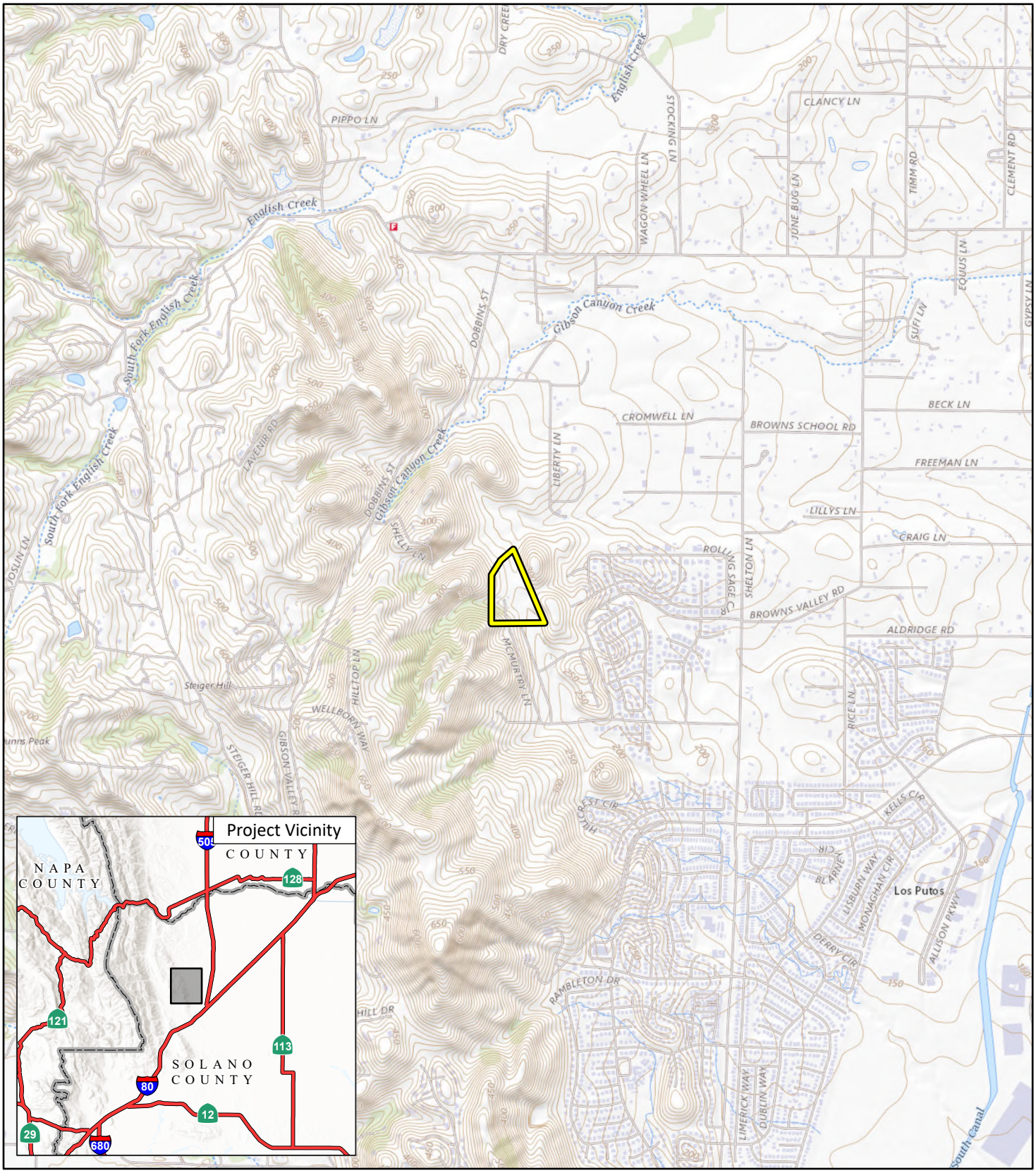
2.3 PROJECT APPROVALS

While the City is the CEQA Lead Agency for the proposed project, other agencies have discretionary authority related to the proposed project and approvals or serve as a responsible and/or trustee agency in connection to the proposed project. A list of these agencies and potential permits and approvals that may be required is provided in Table 2.A.

Table 2.A: Potential Permits and Approvals

Lead Agency	Permits/Approvals
City of Vacaville	• EIR Certification • Approval of Annexation submittal to Solano LAFCO • General Plan Amendment • Zoning Map Amendment to Pre-Zone as Residential Estates (RE-12) • Tentative Subdivision Map Approval • Planned Development Approval
Other Agencies	
Solano Local Agency Formation Commission (LAFCO)	• Approve annexation of project site into Vacaville City Limits
Solano County Airport Land Use Commission (ALUC)	• Consistency determination of the project with the Travis Air Force Base Compatibility Plan
Solano County Fire Protection District	• Review / Approve fire truck access and site fire flow design
California Department of Fish and Wildlife (CDFW)	• Notify and obtain authorization for activities affecting watercourses under Section 1602 of the California Fish and Game Code
United States Army Corps of Engineers (USACE)	• Review / Approve compliance with federal water quality standards for project impacts on federally regulated wetlands and waters under Section 401 of the Clean Water Act
United States Army Corps of Engineers (USACE)	• Review / Approve potential impacts on federally regulated wetlands and waters under Section 404 of the Clean Water Act
United States Fish and Wildlife Service (USFWS)	• Federal Endangered Species Act (FESA) clearance with USFWS

Source: LSA (2024).



LSA

FIGURE 2-1

N

0 1000 2000
FEET

SOURCE: USGS The National Map (2017)

McMurtry Creek Estates Project

Project Location

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LSA

Project Location

FIGURE 2-2

N

0 500 1000
FEET

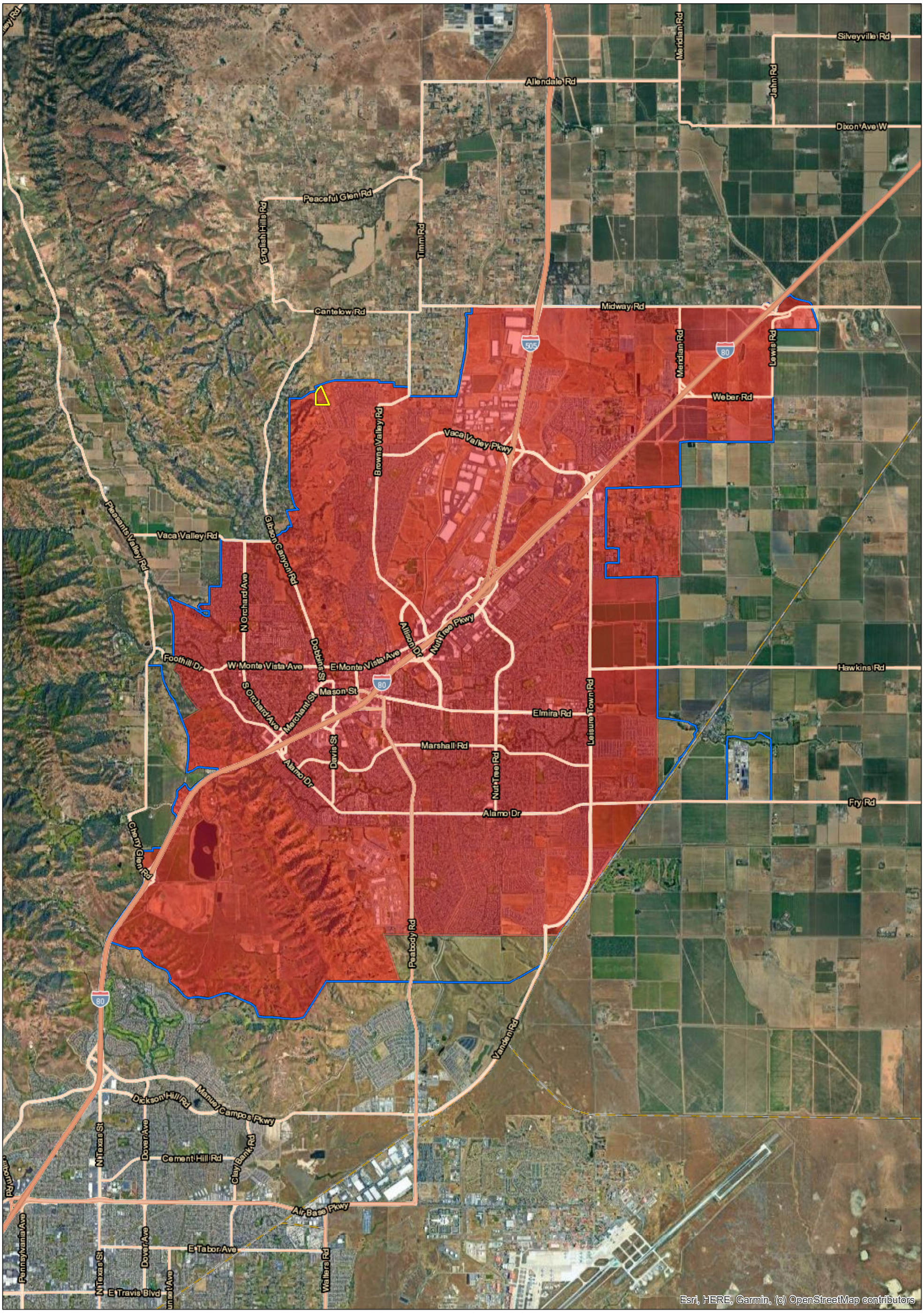
SOURCE: Google Imagery (2017)

McMurtry Creek Estates Project

Aerial Photograph and Surrounding Land Uses

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LSA

LEGEND

- ProjectLocation
- Sphere of Influence
- Urban Growth Boundary

0 0.5 1
MILES

SOURCE: Basemap - Google Aerial Imagery (4/2022); Mapping - City of Vacaville (3/2024)

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FIGURE 2-3

McMurty Creek Estates Project
Urban Growth Boundary and
Sphere of Influence Overlay Map

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LSA

FIGURE 2-4

0 75 150

FEET

SOURCE: PEI Engineering

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McMurtry Creek Estates Project

Conceptual Site Plan

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LSA

FIGURE 2-5

McMurtry Creek Estates Project

Proposed Fire Truck Access and Multi-Use Path

SOURCE: Phillippi Engineering, 6/7/2023

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LSA

LEGEND

Total Area of Irrigated Planted Area
325,178 Square Feet

FIGURE 2-6

0 25 50
FEET

SOURCE: James Ferguson Clabaugh

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McMurtry Creek Estates Project
Preliminary Landscape Plan

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3.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist in Chapter 4.0.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Energy
☒ Geology/Soils	☐ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials
☒ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☒ Transportation	☒ Tribal Cultural Resources
☐ Utilities/Service Systems	☒ Wildfire	☒ Mandatory Findings of Significance

3.1 DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☒ I find that the proposed project MAY have a "Potentially Significant Impact" or "Potentially Significant Unless Mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Signature

March 6, 2025

Date

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4.0 CEQA ENVIRONMENTAL CHECKLIST

4.1 AESTHETICS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c. In non-urbanized areas, 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 a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

a. Would the project have a substantial effect on a scenic vista? ***(Less Than Significant Impact)***

The City of Vacaville (City) General Plan does not designate any official scenic vistas; however, westward views to the Vaca Mountains and views of the Inner Coast Range hillsides are considered scenic views in the City.[6]

The project site is located on two parcels that are largely undeveloped within a rural residential area. Views to the north and west consist primarily of the grassy rolling hillsides of the English Hills and Vaca Mountains, the latter of which are considered scenic views within the City. The project consists of single-family residential uses, with proposed one- and two-story residences, which would not exceed 35 feet tall. These residences would be constructed adjacent to the English Hills and due to the elevation of their construction as well as their maximum height, they would not obstruct views of the Vaca Mountains or Inner Coast Range hillsides.

While construction of the proposed project would represent a change in the visual character of the project site, the General Plan has not identified the proposed project site as a scenic or visual resource, nor would the proposed project obstruct views of a scenic vista. Future homes associated with the proposed project would match the existing design theme and general character of the surrounding residential uses to the south and east and would be visually cohesive with the surrounding landscape. Therefore, development of the proposed project would have a less than significant impact on scenic vistas. **This topic will not be analyzed further in the Environmental Impact Report (EIR).**

6 City of Vacaville. 2021a. *Vacaville General Plan and Energy and Conservation Action Strategy (ECAS) EIR*.

b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? ***(No Impact)***

No officially designated State Scenic Highways are in Vacaville. The nearest eligible State Scenic Highway to the project site is State Route 160, which is near Rio Vista, approximately 30 miles southeast.[7] Given this distance, the project site is not visible from this scenic roadway. As described above in Response 4.1 (a), the project site is not adjacent to any locally designated Scenic Roadways.

Although the project site contains two historic era resources—a ranch property in the southern portion of the project site and a Pacific Gas and Electric (PG&E) transmission line segment in the western portion of the project site—these resources are not eligible under the California Register of Historical Resources (CRHR) and National Register of Historic Places (NRHP) eligibility criteria and are not considered historical resources as defined by CEQA. As such, the proposed project would not contain any historic resources or historic buildings on the project site. Additionally, both of these resources would be retained. Therefore, the proposed project would not affect scenic resources visible from a State or local scenic highway, and no impact is anticipated. **This topic will not be analyzed further in the EIR.**

c. In non-urbanized areas, would the project 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 a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? ***(Less Than Significant Impact)***

The project site is located within a semi-rural area characterized by undeveloped lands to the north and west, and residential uses to the south and east. As noted in Chapter 2.0, Project Description, the proposed project is located within Vacaville's Sphere of Influence (SOI) and the Urban Growth Boundary (UGB). The SOI delineates potential future annexation areas, while the UGB limits urban expansion within the City. The non-urbanized area of the project site is surrounded by existing residential development to the east and southeast. However, views from these existing properties will be obscured by existing rolling hills that separate the project site from the existing neighborhoods on White Stone Court, Peacock Court, and Bent Tree Lane. Properties to the south on Preserve Lane would see the physical changes to the land, but these are not expected to substantially degrade the existing visual character of the site because the site does not provide any scenic value as noted above.

The project would not conflict with existing policies that are designed to protect scenic vistas, because the future custom homes will be limited in building height and will not be allowed to shine light onto adjoining properties. **This topic will not be analyzed further in the EIR.**

[7] California Department of Transportation (Caltrans). 2021. *California State Scenic Highway System Map* Website: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways (accessed May 20, 2023).

d. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? ***(Less Than Significant Impact)***

The proposed project would create new sources of light through the installation of streetlights and lighting fixtures on future custom homes. However, the surrounding area contains existing light sources, including streetlights, interior and exterior building lighting, and light from traffic on nearby roadways. The proposed lighting would be consistent with and extend the sources already provided in the adjacent development on Preserve Lane. Although, the project would incrementally increase the amount of nighttime lighting in the surrounding area, lighting would be regulated by the Vacaville Municipal Code (VMC) Section 14.09.127, which prohibits excessive lighting and any lighting that would create glare onto adjoining properties. VMC Section 14.09.127.110 and VMC Section 14.09.230.080.G outline the following standard for the proposed project:

- Lighting shall be designed to direct light and glare away from any adjoining lots, residential areas, and public streets.

Because of these existing standards in the VMC, the proposed project would not create substantial light or glare that would adversely affect day or nighttime views.

Additionally, the proposed project would be required to comply with the following **Standard Conditions of Approval (SCOAs)** required for all design permits, use permits, and planned developments that address potential light and glare impacts:

> ***SCOA 208:*** Plans submitted for Building, Grading, or Underground Permits shall indicate the exact location and design of all exterior lighting fixtures and shall include a photometric plan. All lighting shall be shielded or placed such that it does not shine directly on any adjoining properties or impact traffic on adjacent streets. Lighting shall be subject to the approval of the Director of Community Development.
>
> ***SCOA 209:*** A photometric plan shall be required for the proposed lighting. Minimum lighting of one (1) foot candle and a maximum six (6) foot candles shall be provided on the site.

With implementation of the required SCOAs applicable to all development projects in the City, the proposed project would not generate substantial light or glare or adversely affect day or nighttime views in the area; therefore, impacts would be less than significant. **This topic will not be analyzed further in the EIR.**

4.2 AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation (DOC) as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection (CAL FIRE) regarding the State's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board (CARB).

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. 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?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c. 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))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e. 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?	☐	☐	☐	☒

a. Would the project 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? ***(No Impact)***

The project site consists primarily of vacant grassland, with the exception of existing residential structures and vacant livestock enclosures along the western edge of the site adjacent to McMurtry Lane. The project site is classified as "Grazing Land" by the DOC and is largely surrounded by lands classified as "Grazing Land" with "Urban and Built-Up Land" to the east.[8] Therefore, the proposed project would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of

[8] California Department of Conservation (DOC). 2018. Division of Land Use Resource Protection. California Important Farmland Finder. Website: https://maps.conservation.ca.gov/dlrp/ciff/ (accessed September 8, 2023).

Statewide Importance to another use, and no impact would occur. **This topic will not be analyzed further in the EIR.**

b. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract? ***(No Impact)***

As noted in Response 4.1 (c), Aesthetics, the proposed project would the change the General Plan designation for the project site from Hillside Agriculture (HA) to Residential Estates (RE) and would apply the RE-12 pre-zoning district to the project site. The project site is largely undeveloped, is not actively farmed, and lacks connectivity to surrounding farming infrastructure. Surrounding uses are vacant lands to the north and west and residential land uses to the south and east. The application of the RE-12 pre-zoning district would provide zoning conformity and continuity within the area, as well as complement the RE land use designation. The project site is not under a Williamson Act contract.[9] Therefore, development of the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract, and no impact would occur. **This topic will not be analyzed further in the EIR.**

c. Would the project 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))? ***(No Impact)***

As noted in Response 4.1 (c), Aesthetics, the proposed project is located in an unincorporated area of Solano County and has not been zoned by the City of Vacaville. In its existing condition, the project site primarily consists of vacant grassland, with the exception of existing residential structures and vacant livestock enclosures. As previously discussed above in Response 4.2 (b), the proposed project would the change the General Plan designation for the project site from HA to RE and would apply the RE-12 pre-zoning district to the project site. The project site is currently not zoned for forest or timberland uses or timberland production. The proposed project would not conflict with existing zoning for, or cause rezoning of, forest land or timberland, nor would it result in the loss of forest land or conversion of forest land to non-forest uses. As such, no impact to forest land or timberland would occur. **This topic will not be analyzed further in the EIR.**

d. Would the project result in the loss of forest land or conversion of forestland to non-forest use? ***(No Impact)***

Please refer to Response 4.2 (c). The proposed project would not result in the loss of forest land or conversion of forest land to non-forest uses. Therefore, no impact would occur. **This topic will not be analyzed further in the EIR.**

[9] City of Vacaville. 2021. *Vacaville General Plan and ECAS EIR,* Figure 4.2-2 Williamson Act Lands.

e. Would the project 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? ***(No Impact)***

Please refer to Responses 4.2 (a). and 4.2 (c). The project would annex approximately 15.73 acres into the City of Vacaville to construct 20 single-family residential lots. The project site is located in a semi-rural environment and would not involve other changes in the existing environment that, due to their location or nature, could result in the conversion of farmland to non-agricultural use or conversion of forest land to non-forest use. Therefore, no impact would occur. **This topic will not be analyzed further in the EIR.**

4.3 AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

The project site is located in the City of Vacaville (City), which is within the Sacramento Valley Air Basin (SVAB). Mountains surrounding the SVAB create a barrier to air flow that can trap air pollutants under certain meteorological conditions. These stagnant conditions generally occur with the highest frequency during autumn and early winter. Air quality in a majority of the City, including the area in the vicinity of the project site, is monitored and managed by the Yolo-Solano Air Quality Management District (YSAQMD). The YSAQMD is responsible for establishing programs, plans, and regulations enforcing air pollution controls in order to attain all State and federal ambient air quality standards.

Air pollutants of concern in the City include ozone (O_3), carbon monoxide (CO), nitrogen oxides (NO_x), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (PM). Vehicle use is the primary source of pollutants in the City, which contributes both directly and indirectly to air pollution. Additional sources of air pollutants include wood smoke from residential fireplaces, construction activities, consumer productions, architectural coatings, fertilizers, asphalt paving, and agriculture operation.

*a. Would the project conflict with or obstruct implementation of the applicable air quality plan? **(Less Than Significant Impact)***

The applicable air quality plan is the 2017 Sacramento Regional 2008 8-Hour Ozone and Further Reasonable Progress Plan (2017 Ozone Plan).[10] Consistency with the 2017 Ozone Plan can be determined if the proposed project supports the goals of the plan, includes applicable control measures from the plan, and would not disrupt or hinder implementation of any control measures

[10] California Air Resources Board (CARB). 2017a. *2017 Sacramento Regional 2008 8-Hour Ozone and Further Reasonable Progress Plan.* July 23. Website: https://www.airquality.org/ Documents/Sac%20Regional% 202008%20NAAQS%20Attainment%20and%20RFP%20 (accessed May 2024).

from the plan. Consistency with the 2017 Ozone Plan is the basis for determining whether the proposed project would conflict with or obstruct implementation of an applicable air quality plan.

In compliance with the *State CEQA Guidelines*, the analysis below evaluates whether implementation of the proposed project would conflict with or otherwise obstruct implementation of regional air quality plans. For air quality planning purposes, the 2017 Ozone Plan contains emissions inventories based on existing and foreseeable future land uses within its jurisdiction. If a proposed project is consistent with the planned land use designation that was considered in the development of an air quality management plan, then the proposed project would not conflict with or obstruct implementation of the applicable air quality management plan. Generally, a project's conformance with a local general plan that was considered in the preparation of an air quality management plan would demonstrate that the project would not conflict with or obstruct implementation of the air quality management plan.

As discussed in Chapter 2.0, Project Description, the proposed project would require a General Plan Amendment to change the General Plan designation for the site from Hillside Agriculture (HA) to Residential Estates (RE) and apply the RE-12 pre-zoning district to the project site. The proposed project involves the construction of 20 new RE lots and associated roadway and utility improvements on the project site. The United States Census reports 2.83 residents per household in Vacaville;[11] therefore, the development of 20 residential estates could house approximately 57 residents. This level of growth is well within the County of Solano's projections in the 2021 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), also known as Plan Bay Area 2050, which identifies that 35,000 households (30,000 households in North Solano County, including the City of Vacaville) will be added countywide between 2015 and 2050. Therefore, the proposed project would be consistent with the 2021 RTP/SCS and the population growth assumptions for the region, and the land use assumptions in the 2017 Ozone Plan. In addition, as discussed below in Table 4.3.A, under Response 4.3(b), the proposed project would not generate emissions that would exceed YSAQMD thresholds. As such, the project would not conflict with or obstruct implementation of the applicable air quality plan, and this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? ***(Less Than Significant with Mitigation Incorporated)***

The YSAQMD is currently designated as a non-attainment area for State and national particulate matter less than 2.5 microns in size ($PM_{2.5}$) and O_3 standards. The YSAQMD non-attainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in non-attainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the

[11] United States Census Bureau. n.d. *Quick Facts Vacaville City*. Website: https://www.census.gov/quick facts/fact/table/vacavillecitycalifornia/BPS030222 (accessed May 2024).

cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, the YSAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. The following analysis assesses the potential construction- and operation-related air quality impacts and CO impacts of the proposed project.

Construction Emissions. During construction, short-term degradation of air quality may occur due to the release of particulate matter emissions (i.e., fugitive dust) generated by, grading, hauling, and other activities. Emissions from construction equipment are also anticipated and would include CO, NO_x, reactive organic gases (ROG), directly emitted particulate matter ($PM_{2.5}$ and particulate matter less than 10 microns in size [PM_{10}]), and toxic air contaminants (TACs) such as diesel exhaust particulate matter.

Site preparation and project construction would involve grading, paving, and other activities. Construction-related effects on air quality from the proposed project would be greatest during the site preparation and grading phases due to the disturbance of soils. If not properly controlled, these activities would temporarily generate particulate emissions. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Water or other soil stabilizers can be used to control dust, resulting in emission reductions of 50 percent or more. In addition to dust-related PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_x, ROG, and some soot particulate ($PM_{2.5}$ and PM_{10}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

Construction emissions were estimated for the project using the California Emissions Estimator Model version 2022.1 (CalEEMod), consistent with YSAQMD recommendations. Construction of the proposed project is anticipated to commence in the beginning of 2026 and occur for nine months, which was included in CalEEMod. The proposed project would require 12,000 cubic yards of fill and cut, which was also included in CalEEMod. However, the proposed project would not result in the export or import of soil to or from the site and would be balanced on site. Therefore, grading activities would not require off-site haul trips associated with the on-site movement of soil, which was also included in CalEEMod. In addition, this analysis assumes use of Tier 2 construction equipment. Other construction details are not yet known (construction equipment, worker trips,

construction trip lengths); therefore, default assumptions were used. Construction-related emissions are presented in Table 4.3.A, below.

Table 4.3.A: Project Construction Emissions

Year	Maximum Daily Emissions (lbs/day)				
	ROG	NO_x	CO	$PM_{2.5}$	PM_{10}
2026	6.9	48.9	36.0	6.8	27.0
Significance Threshold	**N/A**	**N/A**	**N/A**	**N/A**	**80**
Above Threshold?	**N/A**	**N/A**	**N/A**	**N/A**	**No**
Year	**Annual Emissions (tons/yr)**				
	ROG	**NO_x**	**CO**	**$PM_{2.5}$**	**PM_{10}**
2026	0.3	2.1	1.6	0.2	1.2
Significance Threshold	**10**	**10**	**N/A**	**N/A**	**N/A**
Above Threshold?	**No**	**No**	**N/A**	**N/A**	**N/A**

Source: LSA (February 2025).
CO = carbon monoxide
lbs/day = pounds per day
N/A = not applicable
NO_x = nitrogen oxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic gases
tons/yr = tons per year

As shown in Table 4.3.A, the annual emissions from project construction would be 0.3 tons per year for ROG and 2.1 tons per year for NO_x, which is below the threshold of 10 tons per year for ROG and NO_x. Additionally, as shown in Table 4.3.A, maximum daily emissions from project construction would be 27.0 pounds per day for PM_{10}, which is also below the threshold of 80 pounds per day for PM_{10}. The proposed project is required to comply with regional rules that assist in reducing short-term air pollutant emissions during the construction period. The YSAQMD requires the implementation of best management practices to reduce construction fugitive dust impacts to a less than significant level as follows:

Mitigation Measure AIR-1 **Air Quality Dust Control Measures.** The following construction dust control measures shall be implemented by the Applicant during construction activities:

- Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
- Haul trucks shall maintain at least two feet of freeboard.
- Cover all trucks hauling dirt, sand, or loose materials.
- Appy non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area.

- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land.
- Plant vegetative ground dover in disturbed areas as soon as possible.
- Cover inactive storage piles.
- Sweep streets if visible soil material is carried out from the construction site.
- Treat site accesses to a distance of 100 feet from the paved road with six to 12-inch layer of wood chips or mulch.
- Treat site accesses to a distance of 100 feet from the paved road with 6-inch layer of gravel.

As shown in Table 4.3.A, construction emissions associated with the proposed project would be below established thresholds. In addition, consistent with YSAQMD requirements, **Mitigation Measure AIR.1** requires implementation of best management practices during construction to control fugitive dust emissions. With implementation of this measure, construction of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard, and impacts would be less than significant with mitigation incorporated.

Operational Emissions. Long-term air pollutant emission impacts are those associated with mobile sources (e.g., vehicle trips), energy sources (e.g., electricity and natural gas), and area sources (e.g., architectural coatings and the use of landscape maintenance equipment) related to the proposed project.

Mobile source emissions include ROG and NO_X emissions that contribute to the formation of ozone. Additionally, PM_{10} emissions result from running exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways.

Energy source emissions result from activities in buildings for which electricity and natural gas are used. The quantity of emissions is the product of usage intensity (i.e., the amount of electricity or natural gas) and the emission factor of the fuel source. Typically, area source emissions consist of direct sources of air emissions located at the project site, including architectural coatings and the use of landscape maintenance equipment. Area source emissions associated with the project would include emissions from the use of landscaping equipment.

Emissions estimates for operation of the project were calculated using CalEEMod. The proposed project would construct 20 new residential estates lots and associated open space, roadway, and utility improvements on the project site. Therefore, this analysis was conducted using land use codes *Single Family Housing, City Park, Other Asphalt Surfaces,* and *Other Non-asphalt Surfaces.* The land use *Other Asphalt Surfaces* was used as a representative land use for all internal roads and paved areas within the project site and the land use *Other Non-asphalt Surfaces* was used as a representative land use for the proposed retention basin. A detailed transportation analysis was not required for this project; therefore, this analysis utilizes CalEEMod default trip generation rates. In addition, this analysis assumed that no woodstoves or wood-burning fireplaces would be installed in the residences, per the proposed project site plans. Where project-specific data were not available, default assumptions (e.g., energy usage, water usage, and solid waste generation) from CalEEMod were used to estimate project emissions. CalEEMod output sheets are included in Appendix A. Model results are shown in Table 4.3.B.

Table 4.3.B: Project Operational Emissions

Emission Sources	Maximum Daily Emissions (lbs/day)				
	ROG	**NO_x**	**CO**	**$PM_{2.5}$**	**PM_{10}**
Mobile Sources	0.8	0.6	4.4	5.1	49.6
Area Sources	1.1	<0.1	1.1	<0.1	<0.1
Energy Sources	<0.1	0.1	0.1	<0.1	<0.1
Total Daily Emissions (lbs/day)	**1.9**	**0.7**	**5.6**	**5.1**	**49.6**
Daily Significance Threshold (lbs/day)	**N/A**	**N/A**	**N/A**	**N/A**	**80**
Above Threshold?	**N/A**	**N/A**	**N/A**	**N/A**	**No**
Emission Sources	**Annual Emissions (tons/yr)**				
	ROG	**NO_x**	**CO**	**$PM_{2.5}$**	**PM_{10}**
Mobile Sources	0.1	0.1	0.7	0.9	8.4
Area Sources	0.2	<0.1	0.1	<0.1	<0.1
Energy Sources	<0.1	<0.1	<0.1	<0.1	<0.1
Total Annual Emissions (tons/yr)	**0.3**	**0.1**	**0.8**	**0.9**	**8.4**
Annual Significance Threshold (tons/yr)	**10**	**10**	**N/A**	**N/A**	**N/A**
Above Threshold?	**No**	**No**	**N/A**	**N/A**	**N/A**

Source: LSA (February 2025).
CO = carbon monoxide
lbs/day = pounds per day
N/A = not applicable
NO_x = nitrogen oxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic gases
tons/yr = tons per year

As shown in Table 4.3.B, emissions are well below the respective YSAQMD's significance thresholds of 80 pounds per day for PM_{10} and 10 tons per year for ROG and NO_x. Therefore, operation of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standards. Impacts would be less than significant.

Localized CO Impacts. CO concentration is a direct function of motor vehicle activity (particularly during peak commuting hours) and meteorological conditions. Under specific meteorological conditions combined with high motor vehicle activity, CO concentrations may reach unhealthy levels

for local sensitive land uses, such as residential areas and daycare centers. As a result, the YSAQMD recommends analysis of CO emissions at a local rather than a regional level.

As part of its CEQA Air Quality Guidelines, the YSAQMD provides a screening methodology based on peak hourly traffic volumes to evaluate potential impacts of CO emissions from mobile sources. The proposed project would result in a less than significant impact for local CO if the following criteria are met:

- A traffic study for the project indicates that the peak-hour level of service (LOS) on one or more streets in the project vicinity would be reduced to an unacceptable LOS (typically LOS E or F).

- A traffic study indicates that the project would substantially worsen an already existing peak-hour LOS F on one or more streets (delay would increase by 10 seconds or more when project-generated traffic is included).

As noted previously, a detailed transportation analysis (including LOS analysis) was not required for this project to substantiate CEQA traffic/transportation findings. However, based on CalEEMod default assumptions, the proposed project is anticipated to generate approximately 190 average daily trips, which would not be expected to substantially change the LOS at any given intersection. Therefore, the project is not anticipated to result in any LOS or operational deficiencies to the surrounding circulation system. Furthermore, the City of Vacaville's 2021 General Plan and Energy and Conservation Action Strategy (ECAS) Draft EIR demonstrated that peak CO concentrations in 2035 would be substantially less than the State and federal ambient air quality standards at all analyzed intersections and regional growth would not impede continued attainment of the CO standards.[12] Therefore, the proposed project would have a less than significant impact on CO hotspots. **This topic will not be analyzed further in the EIR.**

*c. Would the project expose sensitive receptors to substantial pollutant concentrations? **(Less Than Significant Impact)***

Sensitive receptors are defined as residential uses, schools, daycare centers, nursing homes, and medical centers. Individuals particularly vulnerable to diesel particulate matter (DPM) are children, whose lung tissue is still developing, and the elderly, who may have serious health problems that can be aggravated by exposure to DPM. Exposure to diesel exhaust associated with construction activity contributes to both cancer and chronic non-cancer health risks. The closest sensitive receptors to the project site include the single-family homes located south of the project site at within 50 feet.

Construction activities, such as site preparation, grading, building construction, paving, and architectural coating, would affect localized air quality during the construction phases of the proposed project. Short-term emissions from construction equipment during these site preparation activities would include directly emitted PM ($PM_{2.5}$ and PM_{10}) and TACs such as DPM. Generation of

[12] City of Vacaville. 2021c. Vacaville General Plan and Energy and Conservation Action Strategy (ECAS) Draft EIR, Chapter 4.3, Air Quality. Website: https://www.ci.vacaville.ca.us/home/showpublisheddocument/5508/636234161698230000 (accessed May 2024).

these short-term emissions could potentially expose sensitive receptors to substantial pollutant concentrations of TACs, resulting in a localized health risk. However, Construction Contractors would be required to implement construction fugitive dust impacts, as required by **Mitigation Measure AIR-1** above. With implementation of **Mitigation Measure AIR-1**, project construction emissions would be below YSAQMD significance thresholds. Additionally, because of the size of the construction project, DPM emissions would be spread over a large area. Therefore, impacts to sensitive receptors from project construction would be less than significant.

Additionally, long-term emissions associated with operation of the proposed project such as mobile sources, would include $PM_{2.5}$ and TACs, such as DPM. The proposed project does not include stationary sources that would emit air pollutants or TACs, such as large boilers, emergency generators, or manufacturing facilities or result in a substantial increase in diesel vehicles (i.e., delivery trucks). As such, project operations would not result in TAC generation from on-site sources during long-term operations and would not result in the creation of a significant health risk at nearby sensitive receptors. Therefore, this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? ***(Less Than Significant Impact)***

The occurrence and severity of potential odor impacts depends on numerous factors. The nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of the receiving location each contribute to the intensity of the impact. While offensive odors rarely cause any physical harm, they can be unpleasant and cause distress among the public and generate citizen complaints.

During construction, diesel exhaust from construction equipment would generate some odors. However, construction-related odors would be temporary and would not persist upon construction completion. Operational odor sources of concern include wastewater treatment facilities, chemical manufacturing, sanitary landfills, fiberglass manufacturing, transfer stations, painting/coating operations, composing facilities, food processing facilities, petroleum refineries, feed lots/dairies, asphalt batch plants, and rendering plants. None of these source types are proposed as part of the proposed project; therefore, operation of the proposed project would not generate any odor impacts. The proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Therefore, odor impacts from construction and operation would be less than significant. **This topic will not be analyzed further in the EIR.**

4.4 BIOLOGICAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. 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?	☐	☒	☐	☐
b. 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?	☐	☐	☐	☒
c. 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?	☐	☒	☐	☐
d. 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?	☐	☒	☐	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☒	☐	☐

The following section is based on the *Biological Resources Assessment for the McMurtry Creek Estates Project* (Biological Resources Assessment [BRA]).[13] This report is included as Appendix B.

*a. Would the project 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? **(Less Than Significant with Mitigation Incorporated)***

The project site is primarily undeveloped and vacant but is occupied by existing residential structures and vacant livestock enclosures on the southwestern edge of the project adjacent to McMurtry Lane. The project site is composed primarily of annual grassland with scattered trees consisting of black walnut (*Juglans hindsii*), blue oak (*Quercus douglassii*), and interior live oak (*Quercus wislizeni*) and shrubs consisting mainly of coyote brush (*Baccharis pilularis).* In the southern portion of the project site a few planted fruit trees are present. A Blue Oak Woodland,

[13] Zentner Planning and Ecology. 2022. *Biological Resources Assessment for the McMurtry Creek Estates Project*. Revised March 2024.

comprised predominantly of blue oaks, is also present in the southwestern portion of the project site just west of McMurtry Lane.

Methods. A list of sensitive wildlife and plant species potentially occurring within the project site was compiled to evaluate the potential impacts associated with development of the proposed project. Sources used to compile the list include the California Natural Diversity Database (CNDDB),[14] California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California,[15] and the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation list.[16] The determination of whether a species could potentially occur within the project site was based on the availability of suitable habitat within the species' known range, as well as known occurrences of the species in or adjacent to the project site according to the CNDDB.

The project site lies within the Draft Solano Multispecies Habitat Conservation Plan (HCP) Area.[17] The Draft Solano HCP has been developed to support the issuance of a Section 10(a)1(B) incidental take permit under the Federal Endangered Species Act (FESA) of 1973 (as amended). The Draft Solano HCP has expanded the scope of the Biological Opinion and includes additional voluntary applicants and additional species for incidental take coverage. These additional species include federally listed fish species under the jurisdiction of the National Marine Fisheries Service (NMFS) and species listed as threatened or endangered under the California Endangered Species Act (CESA). The proposed project must also comply with Policy COS-P1.12 of the City of Vacaville's General Plan, which states that until the Draft Solano HCP is adopted, projects must comply with applicable Draft Solano HCP avoidance, minimization, and mitigation measures in the Draft Solano HCP. Therefore, measures from the Draft Solano HCP would be used to mitigate impacts to covered species.

Field Survey. A general biological field survey was conducted by Zentner Planning and Ecology on July 11, 2022, to identify plant and wildlife species, assess habitat for special-status species, and identify other sensitive biological resources such as jurisdictional waters or wetlands, sensitive natural communities, and/or nest sites for raptors and other native birds. Plant species names are consistent with *The Jepson Manual: Vascular Plants of California*, Second Edition.[18]

Results. As noted above, the project site is composed primarily of annual grassland habitat with scatter trees and shrubs and planted fruit trees and Blue Oak Woodland in the southwestern portion of the project site. Additionally, the project site contains potentially jurisdictional aquatic features including a seasonal wetland (stock pond) in the south-central portion of the project site and two ephemeral drainages (creek channels) in the south and southeast portion of the project site.

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14 California Department of Fish and Wildlife (CDFW). 2024. California Natural Diversity Database, commercial version dated January 23, 2024. Biogeographic Data Branch, California Department of Fish and Wildlife, Sacramento.

15 California Native Plant Society (CNPS). 2024. Inventory of Rare and Endangered Plants (online edition). California Native Plant Society, Sacramento. Website: www.cnps.org/inventory (accessed January 23, 2024).

16 United States Fish and Wildlife Service (USFWS). 2024. Information for Planning and Consultation. January 23, 2024.

17 LSA. 2012. *Solano Multispecies Habitat Conservation Plan*. October.

18 Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. *The Jepson Manual: Vascular Plants of California*, Second Edition. University of California Press, Berkeley.

Developed areas are also present on the site consisting of several annual grassland species and common ornamental species. No special-status plants were observed in the project site during the reconnaissance survey; however, moderate suitable habitat for five special-status plants as described in more detail below under Special-Status Plants Species.

Habitats and Vegetation Communities. The following habitats and vegetation communities are located within the project site.

Annual Grassland. The annual grassland community on the site is dominated by a variety of non-natives grasses including wild oats (*Avena fatua*), Italian ryegrass (*Festuca perennis*), soft chess (*Bromus hordeaceus*), and medusa head (*Elymus caput-medusae*). This community also contains a small number of native species including blue wild rye (*Elymus glaucus)*, six-week fescue (*Festuca microstachys*), spikeweed (*Centromadia pungens*), and sky lupine (*Lupinus nanus*).

Seasonal Wetland. The seasonal wetland consists of thinly vegetated swamp grass (*Crypsis schoenoides*), annual rabbitfoot grass (*Polypogon monspeliensis*), and cocklebur (*Xanthium strumarium*) within the low-lying areas of the wetland. The upper limits of the wetland are thickly vegetated with communities of rabbitfoot grass (*Polypogon monspeliensis*), Italian rye grass, and bracted popcornflower (*Plagiobothrys bracteatus*). Additionally, a densely vegetated community of lamb's quarters (*Chenopodium album*) is present around the southern edge of the wetland.

Ephemeral Drainages. The ephemeral drainages in the southern portion of the site are generally either absent of vegetation or similar to the adjacent annual grasslands. The drainages consist of wild oats, Italian ryegrass, and soft chess, which are common within the drainages. Wetland vegetation, including toad rush (*Juncus bufonius*) and common rush (*Juncus effusus*), are occasionally present in these drainages. Additionally, several black walnut trees were observed growing adjacent to and over the drainages. Five relatively small elderberry shrubs (*Sambucus cerulea*) were also observed growing adjacent to the drainage on the southern edge of the project site.

Oak Woodland. The oak woodland in the southwestern portion of the study area consists of a dense oak canopy comprised predominantly of blue oaks with occasional interior live oaks. The understory is moderately vegetated with poison oak (*Toxicodendron diversilobum*) and Himalayan blackberry (*Rubus armeniacus*), as well as other common non-native species present elsewhere within the study area, including wild oats, Italian ryegrass, soft chess, and star thistle (*Centaurea solstitialis*).

Developed. The developed portions of the project site are located along McMurtry Lane on the western edge. These areas include a single-family home, trailer, and a number of other storage structures, including a barn and shed, that area currently in use and livestock enclosures that are currently vacant. Vegetation is generally absent from the developed parts of the project site; however, annual grassland species from the adjacent landscape occur at low frequency within this area. Additionally, several landscaped areas were observed which that contain common decorative species.

Special-Status Plant Species. As noted above, no special-status plants were observed in the project site during the reconnaissance survey; however, moderate suitable habitat for five special-status

plants was observed for dwarf downingia (*Downingia pusilla*), hogwallow starfish (*Hesperevax caulescens*), Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*), bearded popcornflower (*Plagiobothrys hystriculus*), Keck's checkerbloom (*Sidalcea keckii*). While none of these species have been observed within the project site a late spring/early summer survey is necessary to determine the presence/absence of these species. Implementation of the proposed project could result in the loss of plants of these species if this a bloom period survey is not completed. Consistent with the Draft Solano HCP, **Mitigation Measure BIO-1** below would be implemented to ensure that potential effects to special status plant species be reduced to less than significant.

Mitigation Measure BIO-1

Special-Status Plant Species Survey. A qualified Approved Biologist shall complete two additional blooming/identification season surveys one between April and May and the second between June and September for special-status plant species prior to initiation of project activities. The survey shall be completed during the appropriate blooming period for the species likely to occur on site. These surveys shall be in compliance with all California Department of Fish and Wildlife (CDFW) (2009), the United States Fish and Wildlife Service (USFWS) (1996), and the California Native Plant Society (CNPS) (2001) published survey guidelines.

If the survey finds that there are no special-status plants on the project site that would be impacted or within the proposed project site, then there would be no further mitigation and the project may proceed, provided all other applicable permits and authorizations are obtained for the project.

If special-status plant species are found, populations will be mapped and enumerated. If any populations are found within the proposed work area, they shall be flagged, and project development plans shall consider avoidance to the extent practicable. If avoidance is not practicable while otherwise obtaining the project's objectives, then other suitable measures shall be implemented as detailed below.

A qualified Approved Biologist shall complete an inventory and analysis of the on-site population(s) of the species within and outside of the work area to determine the extent and significance of the potential impacts that will occur as a result of the project. This analysis shall be presented to Solano County Water Agency (SCWA) as part of their review of the project. If a significant impact would occur as a result of the project work, then a mitigation plan shall be developed and approved by the SCWA for implementation of the following measures prior to site disturbance. The mitigation plan shall include the following elements:

- Prior to construction within the project site, a qualified botanist shall collect the seeds, propagules, and topsoils, or other part of the plant that would ensure successful replanting of the population elsewhere. The seeds, propagules, or other plantable portion of all plants shall be collected at the appropriate time of the year.

- At least 2/3 of the seeds, propagules, or other plantable portion of all plants shall be planted at the appropriate time of year (late-fall months). Half of the seeds and topsoils collected shall be appropriately stored and propagated at a native plant nursery to ensure germination. This material will be planted at an approved and protected area during the appropriate season. Planting location, timing, collection methods etc., will be detailed in a mitigation plan.

- The Applicant shall hire a qualified Approved Biologist to conduct annual monitoring surveys of the transplanted plant population for a five-year period and shall prepare annual monitoring reports reporting the success or failure of the transplanting efforts. These reports shall be submitted to the County no later than December 31 each monitoring year.

- A California Natural Diversity Database (CNDDB) form shall be filled out and submitted to CDFW for any special-status plant species identified within the project site.

In lieu of the above prescribed mitigation, as allowed in writing by the City, mitigation requirements may be satisfied via the purchase of qualified mitigation credits or the preservation of off-site habitat.

Special-Status Wildlife Species and Nesting Birds. No special-status wildlife species were observed during the site visit. However, based on a review of the resource databases, the following special-status wildlife species have the potential to occur on the project site or vicinity: Northwestern pond turtle (*Actinemys marmorata*) which is listed proposed threatened under FESA, burrowing owl (*Athene cunicularia*), which is listed as a CESA candidate, Swainson's hawk (*Buteo swainsoni*), which is listed as threatened under CESA, white-tailed kite (*Elanus leucurus*) which is listed as California Species of Special Concern, and the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) which is listed threatened under FESA. All of the abovementioned species are covered under the Draft Solano HCP. All other species that were identified based on database searches are unlikely or have no potential to occur on the project site because of one or more of the following reasons: the project site is outside of the known or historical range of the species; the project site lacks suitable habitat (e.g., marsh, estuarine, perennial stream, vernal pools with sufficient hydrology, chaparral, open forest, or sufficient nesting/roosting substrates); or the project site lacks connectivity with suitable habitat in the region.

Northwestern Pond Turtle. There were no observations of the northwestern pond turtle or indications of northwestern pond turtle being present. The closest known occurrence per CNDDB records is located approximately three miles southeast of the project site. Although the seasonal wetland in the southern portion of the project site provides moderately suitable habitat for the northwestern pond turtle during the rainy season, the seasonal wetland typically dries up in late spring and summer during the northwestern pond turtles mating season (in April and May); however, there is still potential for the northwestern pond turtle to occur within the seasonal wetland when it is inundated. A baseline survey report for northwestern pond turtle habitat was conducted on February 22, 2024. The survey found that, though potential habitat is present, the habitat is low-quality for the northwestern pond turtle because the habitat is dry for much of the year and lacks basking habitat. As well, the surrounding uplands are vegetated making it low quality nesting habitat. The project would result in permanent impacts to 0.361 acre of seasonal wetlands that have the potential provide aquatic habitat for the northwestern pond turtle. Consistent with the Draft Solano HCP, implementation of **Mitigation Measures BIO-2 through BIO-4** would be required to reduce potential impacts to northwestern pond turtles to less than significant.

Mitigation Measure BIO-2

Pre-Activity Surveys for the Northwestern Pond Turtle. The qualified Approved Biologist shall conduct at least two surveys of the work site no more than two weeks prior to the onset of Covered Activities in modeled habitat.

All surveyors shall implement decontamination protocols as outlined in the Draft Solano HCP.

Presence/absence surveys of aquatic habitats for pond turtles shall be conducted under all the following conditions:

- On sunny days between 9:00 a.m. and 4:00 p.m.
- When air temperatures are a minimum of 55 degrees Fahrenheit (°F).
- When winds are less than 12 miles per hour (3 on the Beaufort scale).

Survey forms for submittal to the SCWA shall document, at a minimum, the name(s) of the waterbody, the type(s) of waterbody, the project site(s) name, surveyor name(s), date, start and end times, and weather conditions (temperature, wind, and cloud cover) of each survey; the numbers, age class, behaviors, and locations (Universal Transverse Mercators [UTMs]) of pond turtles observed; and any invasive species observations.

Upland habitat survey forms shall include the above information, plus locations of nests or individuals observed (UTMs) and distance to water.

Mitigation Measure BIO-3

Best Management Practices During all Operation, Maintenance, and Construction Activities. The following measures shall be implemented by a qualified Approved Biologist during construction activities:

- The qualified Approved Biologist shall submit a report detailing results of the activities to SCWA within seven days of the completion of initial ground habitat disturbance.
- The qualified Approved Biologist shall be present during all in-water work activities to monitor compliance with all avoidance and minimization measures.
- The qualified Approved Biologist shall have the authority to halt any action that might result in effects at greater than anticipated levels under Draft Solano HCP take coverage.
- The qualified Approved Biologist shall capture and relocate northwestern pond turtles or their nests out of Covered Activity work areas, or salvage injured or killed pond turtles, in accordance with Draft Solano HCP requirements.

Mitigation Measure BIO-4

Mitigation for Effects to Northwestern Pond Turtle Modeled Habitat from Covered Activities. The Applicant planning to conduct development and construction Covered Activities that will affect Core Habitat for northwestern pond turtle shall pay into the Northwestern Pond Turtle Habitat Enhancement Fee prior to the start of Covered Activities. This Fee will be managed by SCWA and will help protect and enhance modeled habitat of northwestern pond turtle in the Plan Area to achieve a no net loss of occupied habitat, and preserve and manage 50 acres of riparian habitat, and 121 acres of shallow aquatic habitat within Priority Watersheds and Drainages within the Core Habitat, and additional modeled northwestern pond turtle habitat to support foraging, basking, nesting, overwintering, and aestivation for habitat preservation, including enhancing modeled species habitat (e.g., improve basking sites and nesting habitat).

This Fee shall be $1,000 per acre of northwestern pond turtle designated Core Habitat impacted.

In lieu of payment of the fee, the Applicant shall submit a restoration plan to the SWCA for review and approval. The plan shall identify the location(s) of habitat restoration, northwestern pond turtle essential habitat elements, the number of acres to be restored and or preserved, the methods and materials to be used,

success criteria, monitoring timing and methods, and maintenance plans. Restoration shall be in-kind based on habitat impacted (e.g., aquatic habitat restored for aquatic habitat impacted, upland habitat restored for upland habitat impacted). Restoration shall be implemented and completed prior to or concurrent with approved covered activities. All areas shall be protected perpetuity.

Western Burrowing Owl. There were no observations of western burrowing owl or indication of burrowing owls being present, such as tracks, whitewash, pellets, feathers, or carrion. However, small mammal burrows were observed within the project site which could provide potential habitat for western burrowing owl. The closest known occurrence per CNDDB records is located approximately two miles east of the project site. While no western burrowing owls or sign of burrowing owls have been observed within or within one mile of the project site, the species is known to the region, and the project site contains potentially suitable habitat. Consistent with the Draft Solano HCP, implementation of **Mitigation Measure BIO-5 through Mitigation Measure BIO-11** below would ensure that potential effects to western burrowing owls would be reduced to less than significant.

Mitigation Measure BIO-5 **Burrowing Owl Pre-Construction Surveys**. Between February 1 and August 31, a qualified Approved Biologist shall conduct preconstruction surveys in known and suitable habitat areas to identify and subsequently avoid nesting areas for burrowing owls, within 15 days of the start of ground-disturbing activities and shall follow standard Solano HCP protocols. An additional survey is required 24 hours before construction work will start. If a lapse in project-related construction work of 15 days or longer occurs during the nesting season, additional preconstruction surveys shall be required before project work may be reinitiated.

Mitigation Measure BIO-6 **Burrowing Owl Construction Buffers and Exclusion.** The following measures shall be implemented for new construction activities if preconstruction surveys find burrowing owls to be present in the project site:

- During the non-breeding season (September 1 through January 31), a circular exclusion zone with a radius of 250 feet shall be established around occupied burrows by the Contractor.

- If an adequate exclusion zone cannot be established during the non-breeding season (except as provided below for buffer modifications), burrowing owls may be evicted from the entire construction area using passive relocation techniques and vegetation management provided suitable alternative burrows are located within 330 feet of the occupied burrows and can be protected during project construction or until such time that burrowing owls can be actively relocated (see **Mitigation**

Measure BIO-7). When possible, a qualified biologist should try to identify resident and migrant owls during the preconstruction surveys. The Contractor shall prepare an Exclusion Plan for review and approval by the SCWA, the CDFW, and the USFWS. The Exclusion Plan shall address the following minimum requirements:

- An assessment of available suitable burrows within 330 feet of the edge of the construction area and the extent of suitable contiguous foraging habitat remaining.
- Provisions to install artificial burrows if suitable donor burrows are not present.
- A maintenance and monitoring program that includes a minimum of two years following completion of the project that resulted in impacts. The maintenance program shall include provisions to maintain artificial burrows, if required, in usable condition and maintain vegetation height at six inches or less within 50 feet of the burrows.
- Protocols to confirm that the burrow(s) is unoccupied by burrowing owls and other species prior to destruction. Protocols shall include:
  - Properly functioning one-way doors shall be installed in all suitable burrows and in place for a minimum of 48 hours prior to burrow excavation;
  - Twice daily monitoring to confirm evidence that owls have been excluded from the burrow; and
  - Scoping of the burrows to confirm absence.
- Procedures for how the burrow(s) will be excavated. Excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow).
- Removal of other potential owl burrow surrogates or refugia on site.

- Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take.

- Measures to make the site inhospitable to burrowing owls and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until activity is complete.

- Reports describing the exclusion activities shall be submitted to SCWA.

- During the breeding season (February 1st through August 31st), a qualified Approved Biologist shall establish a circular exclusion zone with a radius of 450 feet around each occupied burrow. No construction-related activity (e.g., site grading, staking, surveying, or use of any construction equipment) shall occur in the exclusion zone during the breeding season. Once the breeding season is over (e.g., the young have fledged and are no longer dependent on the adults), passive relocation may proceed as described under **Mitigation Measure BIO- 6 and Mitigation Measure BIO-7.**

- Construction buffer widths may be reduced from the 450-foot-wide breeding season buffers and 250-foot-wide non-breeding season buffers in accordance with the following requirements:

  - A site-specific analysis prepared by a qualified Approved Biologist indicates that the nesting pair(s) or wintering owl(s) would not be adversely affected by construction activities. SCWA, in consultation with the HCP Technical Review Committee, must approve this analysis in writing before construction can proceed.

  - Monitoring by a qualified Approved Biologist is conducted for sufficient time (during all construction activities for a minimum of 10 consecutive days following the initiation of construction), the burrowing owls do not exhibit adverse reactions to construction activities (e.g., changes in behavioral patterns, reactions to noise), and the burrows are not in danger of collapse due to equipment traffic.

  - Monitoring by a qualified Approved Biologist is continued at least once per week through the nesting/wintering cycle at that site, and no change in behavior by the owls is observed. This longer-term monitoring may be reduced to a minimum

of two hours in the morning and two hours in the afternoon during construction activities; however, additional and more frequent monitoring may be required if any adverse reactions are noted.

- Monitoring reports from a qualified Approved Biologist are submitted to SCWA.

If adverse effects are identified, construction activities shall cease immediately, and construction shall not resume until the qualified Approved Biologist, in consultation with SCWA, CDFW, and USFWS, has determined that construction may continue under modified restrictions or that nesting activity is complete.

Mitigation Measure BIO-7

Burrowing Owl Nest Relocation or Translocation. Covered projects compliant with Solano HCP measures may not cause the disturbance, destruction, or conversion of active burrowing owl nests. In order to prevent disturbance to active nests, applicants shall either: passively relocate resident burrowing owls prior to the nesting season onto suitable conserved lands; or cooperate with and provide funding to SCWA to implement an Active Burrowing Owl Translocation Study to relocate the owls (amount to be determined based on cost of owl relocation). Determinations of the appropriate approach will be based on the best likely outcome for owls considering: any conserved habitat availability near the affected nest site, and the best available science.

Passive Relocation. The Applicant may propose to passively relocate resident burrowing owls per **Mitigation Measure BIO-6** above. Passive relocation may be permitted at the discretion of SCWA, CDFW, and USFWS based on potential protected and managed habitat near the affected nest site and the best available science under the following conditions:

- Sufficient and suitable burrows on conserved lands consistent with the criteria identified in **Mitigation Measure BIO-9** below are present within 330 feet of the nest site.

- A passive relocation assessment shall be prepared by a qualified Approved Biologist to determine if passive relocation is preferable to active relocation. In this case, a passive relocation plan following CDFW's 2012 Staff Report on Burrowing Owl Mitigation (CDFW 2012 or as updated) shall be submitted to SCWA, CDFW, and USFWS. If approved, the plan shall be implemented, and the passive relocation shall include but not

be limited to monitoring of the passively relocated owls for a minimum of two years.

Active Translocation. If resident burrowing owls are not passively relocated onto conserved land, the Applicant in collaboration with SCWA shall develop and implement a scientific study to actively relocate the affected owls to suitable habitat, upon CDFW and USFWS approval. The Active Burrowing Owl Translocation Study shall evaluate the translocation of burrowing owls from active nests affected by the project to a release site on reserves within the Solano HCP Plan Area. A protocol for capture, acclimatization aviaries, holding period, feeding and other methods shall be developed by the Applicant in collaboration with SCWA based on best available science. Active translocation shall be managed by the City of Vacaville and SCWA as applicable upon CDFW and USFWS approval. If owls are actively translocated, habitat enhancement shall include the relocation site. CDFW and USFWS review and approval of the Active Burrowing Owl Relocation Study is required unless the CDFW or USFWS provides documentation that it lacks the resources to complete the review. If that is the case, the Applicant in collaboration with SCWA shall instead obtain the review and written acceptance from a qualified burrowing owl expert with demonstrated successful burrowing owl relocation experience and authorship of scientific literature on burrowing owl, or another combination of burrowing owl experience approved by the CDFW and USFWS.

Mitigation Measure BIO-8

Mitigation for Direct, Indirect, and Temporary Effects to Foraging Burrowing Owl Habitat. Mitigation measures for effects to burrowing owl are applicable to all covered activities in the Solano HCP Plan Area (e.g., construction) that would affect known and suitable burrowing owl habitat. All or portions of the mitigation for loss of breeding, foraging, and overwintering owl habitat may be addressed concurrently with habitat preservation and management requirements specified for other Natural Communities under the Solano HCP.

Direct Effects: Mitigation for the direct disturbance, destruction, or conversion of burrowing owl foraging habitat resulting from covered activities shall be provided by the Applicant, as specified, for applicable Natural Communities and/or Covered Species (i.e., Swainson's hawk with similar foraging habitat). Mitigation lands used to satisfy mitigation measures for other Natural Communities and/or covered species can be used to satisfy burrowing owl conservation if the reserve area meets the basic burrowing owl

reserve standards from Chapter 7.0 and criteria specified in Chapter 5.0 of the Solano HCP. All burrowing owl foraging habitat affected directly by the project will be subject to the compensation requirement.

Indirect Effects: Indirect effects to burrowing owl foraging habitat from development in irrigated agriculture lands shall be mitigated by the Applicant through the preservation and management of irrigated agriculture foraging habitat at a ratio of 0.5:1 mitigation-to-effect in accordance with Chapter 6.0 mitigation requirements in the Solano HCP.

Temporary Effects: All temporarily disturbed burrowing owl habitats shall be restored to original conditions within 1 year at a minimum 1:1 ratio according to Solano HCP mitigation details.

Mitigation Measure BIO-9

Mitigation for Loss of Known Nest Sites. The Applicant proposing to implement covered activities (e.g., construction) resulting in the disturbance, destruction, or conversion of a burrowing owl known nest site (i.e., nest site that has been active for breeding within five years) shall preserve two known nest sites in the Solano HCP Plan Area.

Mitigation for effects to known nest sites must include sufficient foraging habitat to support the nesting burrowing owls. The required amount of suitable foraging habitat the Applicant must protect or enhance under Priorities 2, 3, and 4 of this mitigation measure shall be equal to the amount of owl foraging habitat directly affected by the project. As described below, at a minimum, the area of protected or enhanced suitable owl foraging habitat shall be based on available foraging habitat at the affected nest site within 1,968 feet (600 meters) (CDFW 2012) of the nest or center of the nesting territory, whichever is greater. Since each project footprint and location is different, this owl foraging habitat mitigation requirement will be determined on a case-by-case basis in collaboration with the SCWA, CDFW, and USFWS as applicable.

Priorities for permanent nest site preservation (in descending order) are as follows:

- Purchase of occupied nest credits from an HCP-certified mitigation bank, which the CDFW and USFWS have verified to be in good standing at the time of purchase, before project construction begins.

- Establishment of a new Solano HCP reserve that (a) permanently protects a known burrowing owl nest site and associated foraging habitat (requirement described above) within the Solano HCP Plan Area by placing a conservation easement; and (b) implementing and funding in perpetuity a Long-Term Management Plan before project construction begins. Permanent preservation of known nest sites and associated foraging habitat must occur within the Solano HCP Plan Area and is subject to the requirements and approvals specified in Chapter 10.0 of the HCP. Each nest site shall include a minimum of three suitable burrows with sufficient foraging habitat. Nest sites, the Long-term Management Plan, and implementation funding must be reviewed and approved by the SCWA, USFWS, and CDFW prior to project construction.

- Purchase of known burrowing owl nest sites on lands preserved in the Solano HCP Reserve System which are not already committed as burrowing owl mitigation for other projects under the following conditions:

    - A Burrowing Owl Habitat Enhancement Plan shall be prepared for the conserved lands following guidelines developed by the SCWA, CDFW, and USFWS. The Habitat Enhancement Plan shall include, but is not limited to:

        - Installation of artificial burrows following a design approved by the SCWA, CDFW, and USFWS unless sufficient natural burrows are available.

        - Incorporation of conspecific cues to attract burrowing owls such as acoustic playback of owl calls and imitation of whitewash.

        - A California ground squirrel assessment and plan to increase populations if necessary.

        - Predator control provisions including an assessment of feral cats and other potential burrowing owl predators, and reducing these threats by, for example, humanely removing feral cats or avian predators' hunting perches.

        - Vegetation height and thatch reduction through mowing or grazing.

        - An assessment of burrowing owl prey availability and plan to increase prey if necessary.

- An adaptive management plan to address burrowing owl occupancy of protected lands.
- Sufficient owl foraging habitat protection/enhancement requirement described above based on the project's size and direct effects to owl foraging habitat.

  - Funding is provided for implementation of the Burrowing Owl Habitat Enhancement Plan and for the in-perpetuity implementation of a long-term management plan (Chapter 10.0 of the Solano HCP); and
  - The preserved lands are part of the Solano HCP Reserve System.

- If implementing Priorities 1, 2, or 3 for known nest site protection is not feasible, applicants shall fund a Burrowing Owl Habitat Enhancement Plan following the requirements described under Priority 3. The enhancement plan must be submitted to and approved by the SCWA, CDFW, and USFWS. The enhancement plan will be implemented either on the new Solano HCP reserve established as mitigation for the project that resulted in effects to the known nest site (consistent with all habitat and funding requirements in priority two including the foraging habitat protection/enhancement requirement) or expand burrowing owl habitat on an existing suitable Solano HCP reserve. Implementation of the Burrowing Owl Habitat Enhancement Plan will improve conditions for burrowing owl in order to encourage the establishment and/or expansion of burrowing owl nesting populations consistent with applicable burrowing owl goals and objectives in Chapter 5.0 of the Solano HCP, including providing sufficient habitat acreage and burrows to effectively support the number of nesting burrowing owls required by the Solano HCP.

Mitigation Measure BIO-10 **Habitat Enhancement.** The Applicant planning to conduct covered activities that affect burrowing owl known and suitable habitat in the Solano HCP Plan Area shall pay a Burrowing Owl Protection Fee prior to project construction to fund habitat expansion and enhancement for burrowing owl nesting and overwintering sites (see Chapter 11.0 of the Solano HCP). Implementation and fully mitigated effects under **Mitigation Measure BIO-9** Priority 2 above or are otherwise exempt are not required to pay into the Burrowing Owl Protection Fee.

Mitigation Measure BIO-11

Mitigation for Temporary Effects. If construction activities result in the loss of occupied nesting or wintering burrows (e.g., closure, collapse due to ground disturbance, or disturbance in the construction buffer zones) within the temporarily disturbed area, mitigation shall be provided by the Applicant according to the following criteria at all times of the year:

- *Alternative Burrow Plan:* The Applicant shall provide an Alternative Burrow Plan for review and approval by the SCWA, USFWS, and CDFW. The Alternative Burrow Plan shall include, but is not limited to, the following:
    - An assessment of available suitable burrows within 330 feet of the edge of the construction area if suitable contiguous habitat remains.
    - Provisions to install artificial burrows if suitable donor burrows are not present.
    - A maintenance and monitoring program that includes a minimum of two years following completion of the project that resulted in the temporary effect. The maintenance program shall include provisions to maintain artificial burrows, if required, in usable condition and maintain vegetation height at six inches or less within 50 feet of the burrows.
    - Compliance with this Mitigation Measure does not allow for the destruction or disturbance of an active burrow containing burrowing owls, including eggs and/or dependent young. Methods described in **Mitigation Measure BIO-6** and Chapter 6.0 of the Solano HCP will be used to confirm the burrow is vacant prior to temporary disturbance.
- Temporary Effects: All temporarily disturbed burrowing owl habitats shall be restored to original conditions within one year at a minimum 1:1 ratio.
- *Alternative:* If the Alternative Burrow Plan measure cannot be implemented because sufficient habitat is not present in surrounding, contiguous lands to support burrowing owls or if temporary effects cannot be restored at a 1:1 ratio within one year, temporary effects shall be mitigated per the requirements of **Mitigation Measure BIO-8 and Mitigation Measure BIO-9.**

Valley Elderberry Longhorn Beetle. There were no observations of valley elderberry longhorn beetles, however the project site contains five elderberry shrubs that have the potential to support the valley elderberry longhorn beetle. The closest known occurrence per CNDDB records is located approximately three miles southwest of the project site. While no valley elderberry longhorn beetles have been observed within or within one mile of the project site, the species is known to the region and the project site contains potentially suitable habitat. Ground-disturbing activities and operational maintenance within 20 feet if the elderberry shrubs have the potential to directly impact this species if they begin to utilize the shrubs. The Draft Solano HCP requires the implementation of mitigation to reducing impacts during operational maintenance and ground disturbing activities within 20 feet of the elderberry shrubs. Therefore, consistent with the Draft Solano HCP, **Mitigation Measure BIO-12 through Mitigation Measure BIO-13** would be implemented to ensure that potential effects to valley elderberry longhorn beetles be reduced to less than significant.

Mitigation Measure BIO-12 **Elderberry Avoidance and Minimization**. The Applicant shall enlist the services of a qualified Approved Biologist to monitor implementation and compliance of all the measures below for ground-disturbing activities within 100 feet of elderberry plants:[19]

- A minimum setback of 20 feet from the dripline of each elderberry plant shall be established between the development and all elderberry plants containing stems measuring one inch in diameter or greater at ground level, except where elderberry plants are established immediately along existing roads or other paved or graveled surfaces (e.g., sidewalks, bike/pedestrian paths, facility access roads). The setback shall be fenced and flagged consistent with the general construction avoidance and minimization measures for exclusion fencing to prevent encroachment of equipment and materials.

- Where elderberry plants are established adjacent to existing roads and facilities, construction avoidance fencing shall be provided to protect the trunk and main stems of the plant.

- All contractors shall be briefed by a qualified Approved Biologist on the need to avoid damaging the elderberry plants and the possible penalties for not complying with these requirements. Work crews shall be instructed on the status of the valley elderberry longhorn beetle and the need to protect its elderberry host plant.

[19] Visual evidence of valley elderberry longhorn beetle is not always evident; for the purposes of compliance with the Solano HCP, all elderberry plants with stems meeting this minimum size should be considered occupied habitat.

- Signs shall be placed by a qualified Approved Biologist every 50 feet along the edge of the buffer zone with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Federal Endangered Species Act (FESA). Violators are subject to prosecution, fines, and imprisonment." The signs shall be clearly readable from a distance of 20 feet and must be maintained for the duration of construction.

- A qualified Approved Biologist shall oversee the routine trimming of overgrown and overhanging elderberry shrubs that may pose a human safety threat along pathways, trails, bike paths, and ensure that roadways shall adhere to the following restrictions:

    - Only branches and stems less than one inch in diameter may be trimmed or cut.

    - Trimming may only occur between September 1 and March 14. Trimming is recommended from November through the first two weeks in February, when plants are dormant and have lost their leaves.

    - Trimming shall not occur after the shrubs have leafed out (when adult valley elderberry longhorn beetles are likely to be active).

    - Vegetation clearing within five feet of elderberry shrub stems shall be done by hand (pulling, clipping, etc.).

- Following completion of construction work affecting the buffer zone, any damage done to the buffer zone shall be restored using native erosion control seed mixes and native riparian plant species, as appropriate.

- Any elderberry plants that cannot be avoided during construction shall be transplanted to other appropriate locations in the buffer zone, and other mitigation as specified in **Mitigation Measure BIO-13** shall be implemented.

- After construction, buffer zones must continue to be protected from adverse effects of the development project. Protection measures such as fencing and signage shall be included in the project plans and are subject to the approval of SCWA in consultation with the Draft Solano HCP Technical Review

Committee. No insecticides, herbicides, fertilizers, or other chemicals that might harm the valley elderberry longhorn beetle or its host plant shall be used in the buffer areas or within 100 feet of any elderberry plant with one or more stems measuring one inch in diameter or greater at ground level.

- Fire fuel breaks (disked land) may not be included within the 100 feet setback; however, vegetation in the setback may be cleared by mowing (e.g., mower, mechanical trimmers, hand tools) to less than two inches in height. The mowing of grasses/ground cover in the buffer zone may occur from July through April to reduce fire hazards. No mowing shall occur within five feet of elderberry plant stems. Mowing must be done in a manner that avoids damaging plants (e.g., stripping away bark through careless use of mowing/trimming equipment).

Mitigation Measure BIO-13

Elderberry Shrub Mitigation for Valley Elderberry Longhorn Beetles. Where removal of elderberry shrubs or their stems measuring one inch in diameter or greater is unavoidable, these impacts shall be mitigated by the Applicant. Removal of elderberry shrubs or stems one inch in diameter or greater shall not create gaps in a riparian corridor greater than 100 feet. Mitigation will include salvaging and replanting affected elderberry shrubs and planting additional elderberry shrubs and associated native riparian plants according to the following criteria:

- *Transplanting Removed Elderberry Shrubs.* Transplant removed elderberry shrubs to an approved, secure site, such as an approved mitigation bank location in Solano County or non-bank relocation sites shall meet the minimum reserve standards identified in Section 10.5 (e.g., site shall be protected by a conservation easement or other applicable protection measure, and funding shall be provided for long-term monitoring and maintenance). Transplanting shall occur between June 15 and March 15 (November through February is the optimal period for transplanting). Elderberry may not be transplanted between March 16 and June 14 except where isolated bushes are located more than 0.5 mile from other suitable valley elderberry longhorn beetle habitat and no signs of use (exit holes) have been identified.

- *Mitigation for Whole Shrub Removal*. For each removed elderberry bush, plant a minimum of five elderberry seedlings or rooted cuttings and five associated native, woody riparian plants in the mitigation area, or purchase applicable credits

from a mitigation bank approved under the Solano HCP to sell valley elderberry longhorn beetle credits.

- *Mitigation for Trimming/Removal of Stems One Inch in Diameter or Greater*. For every 10 elderberry stems one inch in diameter or greater that are trimmed/removed, plant two elderberry seedlings and two associated native, woody riparian plant seedlings.

Mitigation plantings shall occur, to the maximum extent practicable, in areas adjacent to the impact area and/or in existing gaps in riparian corridors. Priority areas for riparian revegetation and planting of elderberry include Alamo, Ulatis, and Putah Creeks in order to expand suitable habitat for the valley elderberry longhorn beetle in the Plan Area.

Swainson's Hawk. Although there are no known Swainson's hawk nest sites within 2.5 miles of the project site, the site contains potential nesting habitat and suitable foraging habitat for Swainson's hawk. The closest known occurrence per CNDDB records is approximately 2.5 miles east the project site. Development of the project site would remove approximately 7.8 acres of Swainson's hawk foraging habitat. Consistent with the Draft Solano HCP, removal of riparian vegetation to conduct operation and maintenance activities shall be limited to the minimum amount necessary to conduct such activities. The project would be required to mitigate for the loss of potential Swainson's hawk foraging habitat.

Implementation of the proposed project may have potential adverse effects on Swainson's hawk. Impacts could occur as a result of project construction activities associated with vegetation and tree removal to potential nesting and foraging habitat for Swainson's hawk. Consistent with the Draft Solano HCP, **Mitigation Measure BIO-14 through Mitigation Measure BIO-20** below would be implemented to ensure that potential effects to Swainson's hawk would be reduced to less than significant.

Mitigation Measure BIO-14 **Swainson's Hawk Nest Tree Preservation.** Known, active, or potential nest trees shall be avoided to the maximum extent practicable. Applicants proposing to remove an otherwise healthy known, active, or potential nest tree shall provide written justification for the tree removal to SCWA. Sufficient rationale for known, active, or potential tree removal shall be primarily based on declining or poor suitability of the tree as a nesting site for Swainson's hawk and/or to meet public safety needs. The justification letter shall provide a clear analysis of the biological value of the tree to Swainson's hawk under pre-project conditions and post-project conditions (if the tree were to be avoided) and will consider the presence of alternate nest sites in the vicinity of the project site. Known, active, or potential nest trees shall only be removed if there is a biological basis that the use of the tree is unlikely under post-project conditions. SCWA, in consultation with the HCP Technical Review Committee, will be responsible for

approval of the requests to remove healthy nest trees and for ensuring adequate mitigation (**Mitigation Measure BIO-20** provides mitigation requirements of nest tree removal).

Mitigation Measure BIO-15 **Swainson's Hawk Pre-construction Nest Surveys.** Between March 1 and August 31, a Solano HCP qualified Approved Biologist shall conduct preconstruction surveys to identify and subsequently avoid effects to nesting areas for Swainson's hawk. Surveys shall follow approved Solano HCP protocols and be of sufficient intensity (typically two to three surveys) to document nesting within a quarter mile (1,320 feet) buffer around planned work activities. A final survey shall be conducted no more than 15 days prior to the anticipated start of construction. If a lapse in project-related construction work of 15 days or longer occurs, additional preconstruction surveys shall be required before project work may be reinitiated. Note that Swainson's hawk in the region is typically incubating during late April to early June, and active nests can be difficult to find.[20] As such, surveys during the late April to early June period may not be acceptable for determining the absence of Swainson's hawk nests.

Mitigation Measure BIO-16 **Swainson's Hawk Active Nest Buffers.** Construction work (including grading, earthmoving, surveying, and any operation of construction equipment) shall not occur within a quarter mile buffer zone around an active, occupied Swainson's hawk nest with eggs or young except as provided below. Construction work may commence in the buffer zone when a Solano HCP qualified Approved Biologist has confirmed that nesting activity is complete (e.g., Swainson's hawk young have fully fledged and are capable of flight and have left the nest, or the adults have abandoned the nest for a minimum of seven days and there is no evidence of re-nesting activity). Nest trees may be removed between September 16 and February 1 when nests are unoccupied.

The size of nest site buffer zones may be reduced only under the following conditions:

- A site-specific analysis prepared by a Solano HCP qualified Approved Biologist indicates that the nesting pair under consideration are not likely to be adversely affected by construction activities (e.g., the nest is located in an area where the hawks are habituated to human activity and noise levels

[20] Swainson's Hawk Technical Advisory Committee. 2000. *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley.* May 31. Website: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83990 (accessed September 21, 2022).

comparable to anticipated construction work). The SWCA, CDFW, and USFWS must approve this analysis before construction may begin within a quarter mile of a nest.

- Monitoring by a Solano HCP qualified Approved Biologist is conducted for a sufficient time (during all construction activities for a minimum of 10 consecutive days following the initiation of construction), and the nesting pair does not exhibit adverse reactions to construction activities (e.g., changes in behavioral patterns, reactions to construction noise).

- Monitoring by a Solano HCP qualified Approved Biologist is continued at least once per week through the nesting cycle at that nest. This longer-term monitoring may be reduced to a minimum of two hours in the morning and two hours in the afternoon during construction activities; however, additional and more frequent monitoring may be required if any adverse reactions are noted.

- Weekly monitoring reports from a Solano HCP qualified Approved Biologist shall be submitted to SCWA, CDFW, and USFWS during construction and monitoring activities.

If adverse effects are identified, construction activities shall cease immediately and construction shall not resume until the Solano HCP qualified Approved Biologist, in consultation with SCWA, has determined that construction may continue under modified restrictions or that nesting activity is complete.

Mitigation Measure BIO-17 **Post-Construction Occupied Nest Avoidance**. If a nest tree becomes occupied by Swainson's hawk during ongoing construction activities, construction activities shall not occur within 500 feet of the nest, except where monitoring consistent with the criteria in **Mitigation Measure BIO-16** documents that adverse effects will not occur.

Mitigation Measure BIO-18 **Irrigated Agriculture Foraging Habitat Conservation.**

- All mitigation shall be provided in the Irrigated Agriculture Potential Reserve Area, which is a designated portion of the Swainson's Hawk Irrigated Agriculture Conservation Area within the Solano HCP Plan Area.

- *Direct Effects:* Direct effects to Swainson's hawk foraging habitat in the Irrigated Agriculture Conservation Area shall be mitigated by the Applicant through the preservation and management of high quality foraging habitat, with a site

foraging score of at least 50, according to the Habitat Quantification Tool (HQT) Habitat Quality Score (see Chapter 5.0 and Appendix F of the Solano HCP). Unsuitable parcels (i.e., site score is less than 50) are ineligible for becoming a Swainson's hawk reserve. The Plan requires the following ratios of affected (in acres) to reserve acreage depending on the HQT habitat quality category of the reserve site:

  - Suitable habitat (site scores between 50 and 64) requires a mitigation ratio of 1.2:1 (mitigated-to-affected).

  - Premium habitat (site score of 65 or higher) requires a mitigation ratio of 1:1 (mitigated-to-affected).

- *Indirect Effects:* Indirect effects to Swainson's hawk foraging habitat within 250 feet of development shall be mitigated by the Applicant through the preservation and management of foraging habitats at the following ratios:

  - Suitable habitat (site scores between 50 and 64) requires a mitigation ratio of 0.6:1 (mitigated-to-affected).

  - Premium habitat (site score of 65 or higher) requires a mitigation ratio of 0.5:1 (mitigated-to-affected).

- **Temporary Effects:** Temporary effects to Swainson's hawk foraging habitat shall not require direct compensation provided activities comply with **Mitigation Measure BIO-16**, and all temporarily disturbed habitats shall be restored to original conditions within one year at a minimum 1:1 ratio.

- **Irrigated Agriculture Habitat Enhancement Program:** All applicants with development projects that convert irrigated or intensively cultivated farmland to non-farm uses shall pay a Farmland Conversion Fee to provide funding for the Habitat Enhancement Fund program as described in Chapters 5.0 and 11.0 of the Solano HCP. Compliance with this measure by applicants will be used to implement a perpetual funding program for crop incentives and other habitat enhancement in the Irrigated Agriculture Potential Reserve Area to benefit Swainson's hawk. Costs shall be based on a per-acre basis of converted farmland.

Mitigation Measure BIO-19 **Swainson's Hawk Objectives.** The following measure is designed to meet Solano HCP Swainson's Hawk Objectives in Chapter 5.0 by providing sufficient nesting habitat in proximity to suitable foraging

habitat to support the current Swainson's hawk population in the Solano HCP Plan Area. All applicants must (a) avoid destruction of active Swainson's hawk nests occupied by eggs or dependent young, (b) avoid take of Swainson's hawks in compliance with the California Fish and Game Code Sections 3503 and 3503.5, and (c) meet the requirements specified in **Mitigation Measures BIO-15, BIO-16, and BIO-17,** and **Mitigation Measure BIO-20**.

Mitigation Measure BIO-20

Swainson's Hawk Known Nest Trees. Covered Activities resulting in the loss of a Swainson's hawk known nest tree (tree that contained an active nest within five years) shall preserve either (a) a known nest tree, or (b) an active nest (i.e., currently occupied by hawks, eggs, and/or dependent young). If known or occupied nests are unavailable on a Solano HCP reserve and preserving a known or occupied nest is not practicable, the Applicant will pay a Nest Protection Fee to provide funding to the HCP's Swainson's Hawk Nest Protection Program (see Chapters 5.0 and 11.0 of the Solano HCP).

Under the Solano HCP, removal of an active Swainson's hawk nest is not authorized; see Chapter 6.0 for details. Nest trees may only be removed when the nest site is no longer active. For the purposes of this **Mitigation Measure BIO-19**, loss of a known nest tree will occur if either of the following conditions is met:

- The covered activity directly removes the nest tree or involves soil compaction or grading (excavation or fill) within more than 25 percent of the root zone of the nest tree. The root zone shall be determined by a qualified arborist but shall, at a minimum, be the greater of the horizontal distance from the tree at least equal to the tree's height or the outer edge of the tree canopy.

- The covered activity results in direct effects within 250 feet of an active nest or known nest tree. If this occurs, that would be considered loss of a nest site because it would reduce the suitability of the nest site even if the tree itself is not removed.

- Covered Activities affecting Swainson's hawk nests under Conditions 1 or 2 shall:

    - Directly comply with **Mitigation Measure BIO-14**'s nest preservation requirements (e.g., purchase of occupied nest credits from an HCP-certified mitigation bank or preserve a known nest tree (Chapter 10.0 of the Solano HCP); or

- Upon approval from SCWA and the applicable Resource Agencies, the Applicant will pay the current Nest Protection Fee described in Chapter 11.0 of the Solano HCP; or

- Demonstrate to and receive concurrence from the SCWA, CDFW, and USFWS that the Covered Activity will not substantially increase disturbance to the active nest or known nest tree.

Note: Indirect effects to Swainson's hawk known nest trees may occur from covered activities. If such activities cannot be conducted in compliance with **Mitigation Measure BIO-17**, then the above requirements will apply.

Implementation of **Mitigation Measure BIO-15** would be required to determine whether Swainson's hawk may be present during construction activities while they are nesting (March 1 through August 31) and set an appropriate buffer zone. Should construction work need to occur within the buffer zone, implementation of **Mitigation Measure BIO-16** would require the following: a site-specific analysis; monitoring by a qualified Approved Biologist at least once per week through the nesting/ wintering cycle at that nest; and monitoring reports submitted to the SCWA, CDFW, and USFWS. Implementation of **Mitigation Measure BIO-14 through Mitigation Measure BIO-20** would reduce potential construction-related impacts, both temporary and permanent in nature, on Swainson's hawk to a less than significant level with mitigation incorporated.

White-tailed Kite. There were no observations of white-tailed kite or indications of white-tailed kite being present; however, the project site and adjacent area contains a number of trees that could support nesting white-tailed kites, raptors, and other migratory birds as well as suitable foraging habitat. The closest known occurrence per CNDDB records is approximately four miles east the project site in the vicinity of Interstate 5. Implementation of **Mitigation Measure BIO-21** would require preconstruction surveys for white-tailed kite, other nesting raptors, and other migratory nesting birds and would ensure that temporary impacts to white-tailed kite would be less than significant.

Mitigation Measure BIO-21

Preconstruction Surveys for White-Tailed Kite and Nesting and Migratory Birds. To avoid and minimize impacts to white-tailed kites, nesting and migratory birds, and raptors and to comply with the federal Migratory Bird Treaty Act, preconstruction surveys shall be conducted by a qualified Approved Biologist and construction avoidance measures shall be implemented if necessary.

Preconstruction Survey: The project site shall be surveyed by a qualified Approved Biologist (experienced with the nesting behavior of white-tailed kite and other bird species of the region) prior to construction to evaluate nesting bird habitat within 7 days prior to the commencement of construction activities that would occur during the nesting/breeding season. The intent of the survey should

be to determine if active nests are present within or adjacent to the construction zone, that is within approximately 250 feet of the work areas. If ground disturbance activities are delayed following a survey, then an additional preconstruction survey should be conducted such that no more than one week will have elapsed between the last survey and the commencement of ground-disturbing activities. The preconstruction survey can be conducted concurrently with the Swainson's hawk survey identified in **Mitigation Measure BIO-16.**

Avoidance and Minimization: If an active bird nest is found within areas that could be directly or indirectly affected by the project, a no-disturbance buffer zone shall be installed around active nests by a qualified Approved Biologist during the breeding season or until a qualified Approved Biologist determines that all young have fledged and construction personnel and activities restricted from the area. The buffer size should be a minimum of 50 feet wide for passerines and 250 feet wide for raptor species. The size of the buffer zone may be modified through consultation with the CDFW and the Draft Solano HCP taking into account factors such as the following:

- Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity;
- The types of construction activities to occur near the nest,
- Distance and amount of vegetation or other screening between the construction site and the nest; and
- Sensitivity of individual nesting species and behaviors of the nesting birds.

The buffer zone around an active nest should be established in the field with orange construction fencing or another appropriate barrier and construction personnel should be instructed on the sensitivity of nest areas. The qualified Approved Biologist should serve as a construction monitor during those periods when construction activities would occur near active nest areas of special status bird species to ensure that no impacts on these nests occur.

Implementation of **Mitigation Measure BIO-21** which requires a preconstruction survey and avoidance and minimization measures to reduce potential construction-related impacts, both permanent and temporary in nature, to white-tailed kite and other nesting migratory birds would reduce potential impacts to a less than significant level with mitigation incorporated. **This topic will not be analyzed further in the EIR.**

b. Would the project 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? ***(No Impact)***

The CDFW tracks the occurrences of natural plant communities that are of limited distribution Statewide or within a county or region and are often vulnerable to environmental effects of projects. In the CDFW's Natural Communities List,[21] vegetation alliances with State rarity rankings of S1–S3 are considered "highly imperiled" and project impacts to "high-quality occurrences" of these alliances could be considered significant under CEQA. Most types of wetlands and riparian communities are also considered special-status natural communities due to their limited distribution in California. As stated above in Response 4.4 (a), the project site is composed primarily of annual grassland habitat with scatter trees and shrubs and planted fruit trees. The project site also contains blue oak woodland habitat consisting primarily of blue oaks, seasonal wetlands consisting of several vegetated communities, and developed areas consisting of several-built structures, annual grassland species, and common decorative species. The field survey did not identify any riparian or other sensitive natural communities within the project site. As such, implementation of the proposed project would not 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, and no impact would occur. **This topic will not be analyzed further in the EIR.**

c. Would the project 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? ***(Less Than Significant with Mitigation Incorporated)***

The National Wetlands Inventory (NWI) shows two features within the project site: a 2.24-acre Freshwater Forested/Shrub Wetland, partially located in the southern portion of the project site, and a 0.12-acre Freshwater Pond in the southwestern portion of the project site.[22] Additionally, the NWI shows Gibson Canyon Creek, a Freshwater Forested/Shrub Wetland, located to the north of the project site.

Wetlands within the project site are limited to a 0.311-acre seasonal wetland. The proposed project would result in permanent impacts to wetlands, totaling 0.311 acre. As a result of the proposed project, the seasonal wetland would be filled to accommodate the construction of 20 residential lots. Implementation of **Mitigation Measure BIO-22 through Mitigation Measure BIO-23** would reduce impacts to federally protected wetland resources, to less than significant levels.

Mitigation Measure BIO-22 **Regulatory Permits.** The Applicant shall apply for and obtain permits from the USACE (USACE, Clean Water Act [CWA] Section 404 permit) and Regional Water Quality Control Board (RWQCB,

21 California Department of Fish and Wildlife (CDFW). 2023. California Natural Communities List. Website: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline (accessed July 3, 2024).

22 U.S. Fish and Wildlife Service (USFWS). n.d. National Wetlands Inventory. Website: https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/ (accessed July 3, 2024).

CWA Section 401 water quality certification) prior to the commencement of ground-disturbing activities.

If the project would result in the loss of wetland and/or non-wetland waters, mitigation shall be accomplished in accordance with permits issued by resource agencies of jurisdiction (USACE, CDFW, RWQCB, etc.) for which permits may include on-site or off-site measures, credit purchase, and in-lieu fees, etc.

Mitigation Measure BIO-23 **Mitigation for Loss of Wetlands.** The Applicant shall consult with the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and the Regional Water Quality Control Board (RWQCB) to mitigate for the loss of 0.311 acre of wetlands and the loss of 88.7 linear feet (0.006 acre) of ephemeral tributary. At a minimum, the mitigation will include:

- On-site ephemeral tributary creation at a minimum 1:1 ratio of created to lost ephemeral tributary and/or a mix of creation and enhancement measure acceptable to agency staff.
- Wetland mitigation either on-site at a 1:1 ratio of created to lost habitat or off-site at a 2:1 ratio of created to lost habitat.
- A mitigation plan describing the created/enhanced ephemeral tributary and wetland locations, construction methods, and monitoring and success criteria will be submitted to the permitting agencies for review and approval, prior to the start of the project or any earth-moving work.

Implementation of **Mitigation Measure BIO-22 through Mitigation Measure BIO-23** would reduce potential construction-related impacts, both temporary and permanent in nature, to a less than significant level with mitigation incorporated. Once constructed, the project would have no operational impacts. **This topic will not be analyzed further in the EIR.**

d. Would the project 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? ***(Less Than Significant Impact with Mitigation Incorporated)***

Wildlife movement corridors are linear habitats that function to connect two or more areas of significant wildlife habitat. These corridors may function on a local level as links between small habitat patches (e.g., streams in urban settings) or may provide critical connections between regionally significant habitats (e.g., deer movement corridors). Wildlife corridors typically include vegetation and topography that facilitate the movements of wild animals from one area of suitable habitat to another in order to fulfill foraging, breeding, and territorial needs.

The project site is composed of annual grasslands with scattered trees and shrubs; the site is surrounded by open grasslands to the north and west and residential development to the east and south. Although the proposed project site would provide shade, structure, and potential hiding spots for predators and prey there are no major wildlife movement corridors that pass through the project site.

As the project site and adjacent area contains a number of trees that could support nesting white-tailed kites, raptors, and other migratory birds as well as suitable foraging habitat, implementation of **Mitigation Measure BIO-21** would reduce potential construction-related impacts, both permanent and temporary in nature, to white-tailed kite and other nesting migratory birds to a less than significant level with mitigation incorporated.

Mitigation Measures BIO-5 through BIO-11 and Mitigation Measures BIO-14 through BIO-21 would ensure that temporary impacts to migrating special-status wildlife species, including burrowing owls and Swainson's hawk, would be less than significant. Implementation of **Mitigation Measure BIO-21** would ensure that temporary impacts to migratory birds would be less than significant. With implementation of **Mitigation Measures BIO-1 through BIO-21**, the project would not temporarily impact special-status wildlife species. Once operational, the project would not create additional interference to migration. Therefore, impacts would be less than significant with incorporation of the mitigation measures above. **This topic will not be analyzed further in the EIR.**

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? ***(Less than Significant with Mitigation Incorporated)***

The VMC Supplemental Standards for Tree Preservation (14.09.250) (Tree Preservation Ordinance) establishes regulations controlling the preservation and removal of trees on private and public property within city limits. The purpose of the Tree Preservation Ordinance is, in part, to provide for the preservation and maintenance of established trees and to establish a process to protect established trees from arbitrary removal, while allowing for the removal of certain trees when deemed necessary.

The project may result in the removal of several trees. Construction activities associated with the proposed project have the potential to indirectly impact trees through limb removal or damage. The Tree Preservation Ordinance requires acquisition of a tree removal permit for any tree (with the exception of commercial fruit, almond, or walnut trees) with a diameter at breast height of six inches or more. Implementation of **Mitigation Measure BIO-24** requires adherence to the City of Vacaville's Tree Preservation Ordinance. Implementation of **Mitigation Measure BIO-24** would reduce potential construction-related impacts on trees to a less than significant level with mitigation incorporated.

Mitigation Measure BIO-24 **Tree Removal.** Prior to the issuance of a demolition or grading permit, the Applicant shall obtain a tree removal permit for any tree to be removed from the project site in compliance with the City of Vacaville Tree Preservation Ordinance.

Mature trees that will not be removed during project construction shall be protected with a construction fence installed at the dripline. No equipment shall enter the fence line. When encroachment into the fenced area is necessary, protective measures such as application of mulch shall be implemented.

The removal of trees should be minimized to the greatest extent practicable. Trees, as noted above, that are removed shall be replaced on-site at suitable locations and mitigated with replacement tree plantings at a mitigation ratio greater than or equal to as required by the City of Vacaville's Tree Preservation Ordinance.

Implementation of the mitigation measure described above would ensure impacts from the proposed project would be less than significant. **This topic will not be analyzed further in the EIR.**

f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? ***(Less than Significant with Mitigation Incorporated)***

The project site lies within the Draft Solano Multispecies Habitat Conservation (HCP) Plan Area.[23] The Solano HCP has been developed to support the issuance of a Section 10(a)1(B) incidental take permit under the federal Endangered Species Act of 1973 (as amended). The Solano HCP has expanded the scope of the Biological Opinion and includes additional voluntary applicants and additional species for incidental take coverage. These additional species include federally listed fish species under the jurisdiction of the National Marine Fisheries Service (NMFS) and species listed as threatened or endangered under the State's Endangered Species Act. The proposed project would be covered by the Solano HCP; therefore, measures from the Solano HCP would be used to mitigate impacts to covered species.

As required under the HCP, species-specific planning surveys would be conducted for all covered species and other special-status species potentially affected by the project. Compensatory mitigation for impacts to listed species and their habitats (as well as other HCP covered species), would be provided through payment of the appropriate fees required under the HCP. The mitigation measures identified above are consistent with the provisions of the HCP and would be implemented as part of the proposed project. Further, the Applicant would comply with compensatory mitigation requirements of the HCP (**Mitigation Measures BIO-1 through BIO-23**), including the payment of development fees. Therefore, the proposed project would not conflict with the provisions of the HCP, and with incorporation of mitigation, this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

[23] LSA. 2012. *Solano Multispecies Habitat Conservation Plan*. October.

4.5 CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☒	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

The analysis in this section is based on the *Cultural Resources Inventory and Evaluation Report for the McMurtry Creek Estates*[24] prepared by ECORP Consulting Inc. (Cultural Resources Evaluation Report).[25]

*a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5? **(Less Than Significant with Mitigation Incorporated)***

For a cultural resource to be considered a historical resource (i.e., eligible for listing in the California Register of Historical Resources [CRHR]), it generally must be 50 years or older. Under the California Environmental Quality Act (CEQA), historical resources can include precontact (i.e., Native American) archaeological deposits, historic-period archaeological deposits, historic buildings, and historic districts.

To identify historical resources on the project site, the following tasks were completed: (1) a records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System;[26] (2) relevant literature and historical maps were reviewed to assess the potential for buried historic-period and precontact Native American archaeological deposits; and (3) an archaeologist surveyed the project site to identify evidence of archaeological deposits. The results of these tasks are described in greater detail below.

A record search of the project site and a one-half-mile radius was conducted on February 15, 2022, at the NWIC of the California Historical Resources Information System, Sonoma State University. The NWIC, an affiliate of the State of California Office of Historic Preservation (OHP), is the official State repository of cultural resource records and reports for Solano County. The records did not identify cultural resources within the project site; however, 11 resources were identified within the one-half-

24 ECORP Consulting Inc. 2022. *Cultural Resources Inventory and Evaluation Report for the McMurtry Creek Estates Project.* March 2022.

25 The Cultural Resources Evaluation Report contains sensitive information and is not included as an appendix to this Initial Study.

26 The NWIC is an affiliate of the State of California Office of Historic Preservation and is the official State repository of cultural resources records and reports for Solano County.

mile radius of the study area. A summary of the 11 resources identified in the half-mile radius is presented below and in Table 4.5.A.

Table 4.5.A: Previously Recorded Cultural Resources in or Within 0.5 Mile of the Project Area

Site number	Year Recorded	Age/ Period	Site Description
P-48- 167	1987	Pre-contact	Lithic scatter located at Gibson Canyon Road
P-48- 573	2003	Pre-contact	Lithic scatter
P-48- 837	2008	Historic	Trash scatter
P-48- 839	2008	Historic	Well
P-48- 842	2008	Historic	Foundation pad
P-48- 843	2008	Historic	Discarded farming equipment
P-48- 844	2008	Historic	Cabin foundation
P-48- 847	2008	Historic	Discarded farming equipment
P-48- 850	2008	Historic	Discarded farming equipment
P-48- 851	2008	Historic	Discarded farming equipment
P-48- 1604	2001	Historic	Vaca Dixon-Moraga 230kV Transmission Line Segment

Source: LSA (2024).
kV = kilovolt

On January 18, 2022, ECORP submitted a request to the NAHC to search the Sacred Lands File (SLF) for Native American cultural resources that may be impacted by the proposed project. The NAHC responded to the SLF search request on February 2, 2022, stating that the results were negative and that there were no known Native American cultural resources in the project site.

A pedestrian survey of the project site was conducted on March 11, 2022. No archaeological evidence was observed during the field survey; however, two historic- era cultural resources were identified on Assessor's Parcel Numbers (APNs) 0105-200-140 and 0105-200-150; a ranch property in the southern portion of the Project Area, and a Historic Pacific Gas and Electric (PG&E) Transmission Line Segment located in the western portion of the Project Area. These resources were determined not eligible for listing in the National Register of Historic Places (NRHP) or the CRHR under any criteria.

No archaeological resources were identified within the project site during the course of the Cultural Resources Study. Although the Cultural Resources Study did not yield historically significant resources, there is a possibility that the proposed project could impact as-yet-unrecorded, subsurface deposits on the project site. Should archaeological deposits be encountered during project ground disturbance, a substantial adverse change in the significance of a historical resource would occur from its demolition, destruction, relocation, or alteration such that the significance of the resource would be materially impaired (*State CEQA Guidelines* Section 5064.5(b)(1)). Implementation of **Mitigation Measure CUL-1** would reduce potential impacts to historical resources to less than significant.

Mitigation Measure CUL-1 **Archaeological Discovery Protocol.** Consistent with Standard Condition of Approval (SCOA) 12, should an archaeological deposit be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet shall be redirected and a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology contacted to assess the situation, determine if the deposit qualifies as a historical resource, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If the deposit is found to be significant (i.e., eligible for listing in the California Register of Historical Resources), the Applicant shall be responsible for funding and implementing appropriate mitigation measures. Mitigation measures may include recordation of the archaeological deposit, data recovery and analysis, and public outreach regarding the scientific and cultural importance of the discovery. Upon completion of the selected mitigations, a report documenting methods and findings shall be prepared and submitted to the City of Vacaville's Community Development Director for review and approval, and the final report shall be submitted to the Northwest Information Center at Sonoma State University. Significant archaeological materials shall be submitted to an appropriate curation facility and used for public interpretive displays, as appropriate and in coordination with a local Native American tribal representative.

With implementation of **Mitigation Measure CUL-1,** which supplements and expands the City's **SCOA 12**, the treatment of archaeological remains and artifacts encountered during construction activities is addressed. **This topic will not be analyzed further in the EIR.**

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? ***(Less Than Significant with Mitigation Incorporated)***

Pursuant to *State CEQA Guidelines* Section 15064.5(c)(1), "When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource." Those archaeological sites that do not qualify as historical resources shall be assessed to determine if they qualify as "unique archaeological resources" pursuant to California Public Resources Code (PRC) Section 21083.2. Archaeological deposits identified during project construction would be treated by the City and Applicant—in consultation with a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology—in accordance with **Mitigation Measure CUL-1.** With implementation of this mitigation measure, the project's potential impacts on archaeological resources would be less than significant. **This topic will not be analyzed further in the EIR.**

c. Would the project disturb any humans remains, including those interred outside of formal cemeteries? ***(No Impact)***

There are no known human remains at the project site. In the event that human remains are identified during project construction, these remains would be treated in accordance with Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the PRC, as appropriate.

Section 7050.5 of the California Health and Safety Code states that, in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the remains are discovered has determined whether or not the remains are subject to the coroner's authority. If the human remains are of Native American origin, the coroner must notify the California Native American Heritage Commission (NAHC) within 24 hours of this identification. The NAHC will identify a Native American Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.

Section 5097.98 of the PRC states that the NAHC, upon notification of the discovery of Native American human remains pursuant to Health and Safety Code Section 7050.5, shall immediately notify those persons (i.e., the MLD) it believes to be descended from the deceased. With permission of the landowner or a designated representative, the MLD may inspect the remains and any associated cultural materials and make recommendations for treatment or disposition of the remains and associated grave goods. The MLD shall provide recommendations or preferences for treatment of the remains and associated cultural materials within 48 hours of being granted access to the site. With these regulations in place, no impact on human remains is anticipated, and no mitigation is necessary. **This topic will not be analyzed further in the EIR.**

4.6 ENERGY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	☐	☒	☐	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

*a. Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation? **(Less Than Significant Impact)***

The proposed project would increase the demand for energy through day-to-day operations and fuel consumption associated with project construction. This section discusses energy use resulting from implementation of the proposed project and evaluates whether the proposed project would result in the wasteful, inefficient, or unnecessary consumption of energy resources or conflict with any applicable plans for renewable energy and energy efficiency.

Construction Energy Use. The proposed project would require site preparation, grading, building construction, paving, and architectural coating activities during construction. Construction of the proposed project would require energy for the manufacture and transportation of construction materials, preparation of the site for grading activities, and construction of the proposed project. Petroleum fuels (e.g., diesel and gasoline) would be the primary sources of energy for these activities. In order to increase energy efficiency on the site during project construction, equipment idling times would be restricted to five minutes or less and construction workers would be required to shut off idle equipment, consistent with State requirements, and as required by **Mitigation Measure AIR-1,** in Section 4.3, Air Quality. In addition, construction activities are not anticipated to result in an inefficient use of energy as gasoline and diesel fuel would be supplied by Construction Contractors who would conserve the use of their supplies to minimize their costs on the project. Energy usage on the project site during construction would be temporary in nature and would be relatively small in comparison to the State's available energy sources. t

With implementation of **Mitigation Measure AIR-1 and Mitigation Measure ENG-1**, construction energy impacts would be less than significant.

Operational Energy Use. Operational energy usage is typically associated with natural gas use, electricity consumption, and fuel used for vehicle trips. Electricity consumption was estimated for the project using default energy intensities by land use type in the California Emissions Estimator Model (CalEEMod) and are shown in Table 4.6.A.

Table 4.6.A: Proposed Project Operational Energy Usage

Gasoline (gallons)	Diesel (gallons)	Natural Gas (Therms)	Electricity (KWh)
13,400	9,571	5,818	170,514

Source: Compiled by LSA (May 2024)
KWh = kilowatt hour

In addition, the proposed project would result in energy usage associated with gasoline to fuel project-related trips. Based on the California Emissions Estimator Model (CalEEMod) analysis, the proposed project would result in approximately 383,440.6 vehicle miles traveled (VMT) per year (this calculation represents a default output from CalEEMod). The estimated annual VMT assumes a more conservative approach compared to the VMT analysis in Appendix E, therefore the proposed project would not result in any new or more severe energy impacts.

The average fuel economy for light-duty vehicles (autos, pickups, vans, and sport utility vehicles [SUVs]) in the United States has steadily increased from about 14.9 miles per gallon (mpg) in 1980 to 22.9 mpg in 2021.[27] The average fuel economy for heavy-duty trucks in the United States has also steadily increased, from 5.7 mpg in 2013 to a projected 8.0 mpg in 2021.[28] Therefore, using the United States Environmental Protection Agency (USEPA) fuel economy estimates for 2021, the proposed project would result in the consumption of approximately 13,400 gallons of gasoline per year and 9,571 gallons of diesel fuel per year.

Table 4.6.A shows the estimated potential increased energy usage associated with the proposed project. As shown in Table 4.6.A, the estimated potential increased electricity demand associated with the proposed project is 170,514 kilowatt-hours (kWh) per year. In 2022, Solano County consumed 3,255 GWh or 3,255,398,734 kWh.[29] Therefore, electricity demand associated with the proposed project would be less than 0.1 percent of Solano County's total electricity demand.

As shown in Table 4.6.A, the estimated potential increased natural gas demand associated with the proposed project is 5,818 therms per year. In 2022, Solano County consumed 248 million therms or 248,386,169 therms.[30] Therefore, electricity demand associated with the proposed project would be less than 0.1 percent of Solano County's total natural gas demand.

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27 United States Department of Transportation (USDOT). 2017. "Table 4-23: Average Fuel Efficiency of U.S. Light Duty Vehicles." Website: https://www.bts.gov/content/average-fuel-efficiency-us-light-duty-vehicles (accessed February 2024).

28 California Energy Commission (CEC). 2015. Medium and Heavy-Duty Truck Prices and Fuel Economy 2013–2026. Website: efiling.energy.ca.gov/getdocument.aspx?tn=206180 (accessed February 2024).

29 Ibid.

30 Ibid.

In addition, the proposed project would result in energy usage associated with gasoline and diesel to fuel project-related trips. As shown above in Table 4.6.A, vehicle trips associated with the proposed project would consume approximately 13,400 gallons of gasoline per year and 9,571 gallons of diesel fuel per year. Based on fuel consumption obtained from California Emission Factor Model, version 2021 (EMFAC2021), approximately 169.2 million gallons of gasoline and approximately 54.5 million gallons of diesel fuel will be consumed from vehicle trips in Solano County in 2026. Therefore, fuel demand generated by vehicle trips associated with the proposed project would increase the annual fuel use in Solano County by less than 0.1 percent for gasoline fuel usage and by less than 0.1 percent for diesel fuel usage. Therefore, the proposed project would result in fuel usage that is a minimal fraction of current annual fuel consumption in Solano County. Fuel consumption associated with vehicle trips generated by project operations would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region.

In addition, the proposed project would be constructed using energy efficient modern building materials and construction practices, and would also use new modern appliances and equipment, in accordance with the Appliance Efficiency Regulations (Title 20, California Code of Regulations [CCR] Sections 1601 through 1608). The expected energy consumption during construction and operation of the proposed project would be consistent with typical usage rates for residential uses.

Pacific Gas & Electric (PG&E) is the private utility that would supply the proposed project's electricity and natural gas services. In 2022, approximately 40 percent of PG&E's delivered electricity came from renewable sources, including solar, wind, geothermal, small hydroelectric and various forms of bioenergy.[31] PG&E reached California's 2020 renewable energy goal in 2017 and is positioned to meet the State's 60 percent by 2030 renewable energy mandate set forth in Senate Bill (SB) 100. In addition, PG&E plans to continue to provide reliable service to their customers and upgrade their distribution systems as necessary to meet future demand.

Therefore, the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of fuel or energy and would incorporate renewable energy or energy efficiency measures into building design, equipment use, and transportation. Construction and operation period impacts related to consumption of energy resources would be less than significant. **This topic will not be analyzed further in the EIR.**

*b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? **(Less Than Significant Impact)***

In 2002, the State Legislature passed Senate Bill (SB) 1389, which required the California Energy Commission (CEC) to develop an integrated energy plan every two years for electricity, natural gas, and transportation fuels for the California Energy Policy Report. The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies including assistance to public agencies and

[31] PG&E. 2023. *Exploring Clean Energy Solutions*. Website: https://www.pge.com/en/about/corporate-responsibility-and-sustainability/taking-responsibility/clean-energy-solutions.html (accessed February 2024).

fleet operators in implementing incentive programs for zero emission vehicles and their infrastructure needs and encouragement of urban designs that reduce VMT and accommodate pedestrian and bicycle access.

The most recently adopted CEC energy report is the 2023 Integrated Energy Policy Report. The 2023 Integrated Energy Policy Report provides the results of the CEC's assessments of a variety of energy issues facing California. Many of these issues will require action if the State is to meet its climate, energy, air quality, and other environmental goals while maintaining energy reliability and controlling costs. The 2023 Integrated Energy Policy Report covers a broad range of topics, including implementation of Senate Bill 350, integrated resource planning, distributed energy resources, transportation electrification, solutions to increase resiliency in the electricity sector, energy efficiency barriers faced by disadvantaged communities, demand response, transmission and landscape-scale planning, the California Energy Demand Preliminary Forecast, the preliminary transportation energy demand forecast, renewable gas (in response to SB 1383), updates on Southern California electricity reliability, natural gas outlook, and climate adaptation and resiliency.

As indicated above, energy usage on the project site during construction would be temporary in nature. In addition, energy usage associated with operation of the proposed project would be relatively small in comparison to the State's available energy sources and energy impacts would be negligible at the regional level. Because California's energy conservation planning actions are conducted at a regional level, and because the project's total impact to regional energy supplies would be minor, the proposed project would not conflict with California's energy conservation plans as described in the CEC 2023 Integrated Energy Policy Report. Therefore, the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

4.7 GEOLOGY AND SOILS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☐	☒	☐	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e. 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?	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

The following discussion is based on the findings from the Geotechnical Investigation prepared for the proposed project by KC Engineering Company dated April 6, 2022.[32] A copy of the Geotechnical Investigation is included in Appendix C of this report.

a. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. ***(Less Than Significant Impact)***

The San Francisco Bay Area is one of the most seismically active regions in the United States. The significant earthquakes that occur in the Bay Area are generally associated with crustal movement along well-defined active fault zones of the San Andreas Fault system, which regionally trend in a

[32] KC Engineering Company. 2022. *Geotechnical Investigation, Proposed Residential Subdivision McMurtry Creek Estates.* April 6.

northwesterly direction. Fault rupture is generally expected to occur along active fault traces that have exhibited signs of recent geological movement (i.e., within the last 11,000 years).

Alquist-Priolo Earthquake Fault Zones delineate areas around active faults with potential surface fault rupture hazards that would require specific geological investigations prior to approval of certain kinds of development within the delineated area. The site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone. The nearest known active faults are the Great Valley 4b Gordon Valley/Vaca Fault, the Green Valley Fault, the Hunting Creek-Berryessa Fault, and the West Napa Fault, located approximately one mile west, 10.4 miles southwest, 11.8 miles northwest, and 19.2 miles west of the site, respectively. Therefore, fault rupture through the site is not anticipated and the proposed project would not directly or indirectly cause substantial adverse effects related to fault rupture, and this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

*ii. Strong seismic ground shaking? **(Less Than Significant Impact)***

Due to the location of the project site in a seismically active area, strong seismic ground shaking at the site is highly probable during the life of the project. The intensity of ground shaking would depend on the characteristics of the fault, distance from the fault, the earthquake magnitude and duration, and site-specific geologic conditions. The Geotechnical Investigation completed for the proposed project includes design recommendations to manage potential concerns associated with strong seismic shaking and conformance with the American Society of Civil Engineers (ASCE) 7-16 and the California Building Code (CBC) would ensure potential impacts associated with strong seismic ground shaking would be reduced to a less than significant level. Additionally, the proposed project would be required to comply with the following Standard Conditions of Approval (SCOAs) required for all design permits, use permits, and planned developments that address geotechnical and seismic concerns:

> ***SCOA 104:*** Developer shall prepare and submit to the City of Vacaville (City) Engineer a Geotechnical Investigation Report prepared by a Civil Engineer or Geotechnical Engineer, licensed in the State of California, to be used in the preparation of the grading plan. The Geotechnical Investigation Report shall provide recommendations for all grading and remediation work. The Developer shall comply with the recommendations of the Geotechnical Investigation Report and any additional requirements deemed necessary by the City Engineer and Chief Building Official.
>
> ***SCOA 105:*** A grading, geotechnical, and erosion control plan shall be submitted concurrently with the Final Map and Improvement Plans. Plans shall show any effect on adjacent properties.
>
> ***SCOA 106:*** For projects with greater than 5,000 cubic yards of grading, grading plans shall be prepared by a Civil Engineer licensed by the State of California in accordance with Appendix Chapter 33 of the California Building Standards Code and Section 11 of the Standard Specifications. The plans shall be accompanied by a Soils Report prepared, signed, and wet-stamped by a geotechnical engineer licensed by the State of California, and shall be

submitted to the City of Vacaville Engineer for concurrent review with the Improvement Plans and Final Map.

With implementation of these SCOAs, conformance with the CBC, and implementation of the design recommendations in the Geotechnical Investigation, impacts related to seismic ground shaking would be less than significant. **This topic will not be analyzed further in the EIR.**

iii. Seismic-related ground failure, including liquefaction? ***(Less Than Significant Impact)***

Soil liquefaction is a phenomenon primarily associated with saturated soil layers located close to the ground surface. During ground shaking, these soils lose strength and acquire "mobility" sufficient to permit both horizontal and vertical movements. Soils most susceptible to liquefaction are loose to moderately dense, saturated, non-cohesive soils with poor drainage, such as sands and silts with interbedded or capping layers of relatively low permeability soil. However, loose sands that contain a significant amount of fines (i.e., silt and clay) may also liquefy.

Lateral spreading typically occurs as a form of horizontal displacement of relatively flat-lying alluvial material toward an open or "free" face such as an open body of water, channel, or excavation. In soils, this movement is generally due to failure along a weak plane and may often be associated with liquefaction. As cracks develop within the weakened material, blocks of soil displace laterally towards the open face. Cracking and lateral movement may gradually propagate away from the face as blocks continue to break free. Generally, failure in this mode is analytically unpredictable since it is difficult to evaluate where the first tension crack will occur.

The project site is located within an area zoned by the State of California as having a very low liquefaction potential for seismically induced liquefaction hazards by the State of California for seismically induced liquefaction hazards. Based on the results of soil testing, the project site consists of alluvial fan deposits underlain by weathered bedrock. Firm to stiff highly expansive clay was encountered between the depths of approximately two to six feet below ground surface, underlain by stiff to very stiff layers of sandy clay, and medium dense to dense clayey sand between the depths of approximately 15 to 20 feet below ground surface. Highly weathered and friable to weak siltstone, tuff, and sandstone bedrock was encountered between the depths of approximately 1.5 to six feet below ground surface. Given that the project site generally consists of firm to stiff cohesive soil with some medium to dense clayey sand layers, these soils are not liquefiable. Therefore, the probability of lateral spreading occurring at the site during a seismic event is low.

The proposed project would be required to conform with the CBC and **SCOAs 104 through 106** (discussed in Response 4.7 (a)(ii)). With implementation of the SCOAs and conformance with the CBC, any potential impacts related to seismic-related ground failure and liquefaction would be less than significant. **This topic will not be analyzed further in the EIR.**

iv. Landslides? ***(Less Than Significant with Mitigation incorporated)***

The project site is located in a relatively flat area with gentle sloping hills to the east and west. According to the Vacaville General Plan the project area is characterized as a low to medium

Landslide Hazard Zone.[33] In its existing condition, the project site contains a relatively small landslide above McMurtry on southwest portion of the project site. Development of the proposed project would require removal of the landslide, and replacement with engineered fill. No other landslides have been identified within the project site or area. **Mitigation Measure GEO-1** would require the Construction Contractor to comply with the recommendations in the Geotechnical Evaluation to reduce the proposed project's impact related to landslides.

Mitigation Measure GEO-1 **Implementation of Geotechnical Evaluation Recommendations.** The Applicant's Construction Contractor shall implement the recommendations of the Geotechnical Evaluation prepared for the proposed project, as applicable, to the satisfaction of the City of Vacaville (City) Chief Building Official, or designee. The City's Chief Building Official, or designee, shall confirm recommendations have been implemented into the design and construction of the proposed project prior to the issuance of a building permit.

Therefore, with conformance with the CBC, implementation of the design recommendations in the Geotechnical Investigation, and **Mitigation Measure GEO-1,** potential risks to people and structures as a result of landslides would be reduced to a less than significant level. **This topic will not be analyzed further in the EIR.**

b. Would the project result in substantial soil erosion or the loss of topsoil? ***(Less Than Significant with Mitigation Incorporated)***

Topsoil is defined as the upper part of the soil profile that is relatively rich in humus and is technically known as the A-horizon of the soil profile.[34] Grading and earthmoving during project construction has the potential to result in erosion and loss of topsoil. Exposed soils could be contained in stormwater runoff and transported off the project site. During construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion and sedimentation compared to existing conditions. In addition, chemicals, liquid products, petroleum products (e.g., paints, solvents, and fuels), and concrete-related waste may spill or leak, and they have the potential to be transported via stormwater runoff into receiving waters.

Construction of the proposed project would disturb greater than one acre of soil and is subject to the requirements of the Construction General Permit (CGP). The proposed project would also be required to comply with the VMC,[35] which specifies provisions for urban stormwater quality, management, and discharge control during project construction, including the preparation of a

[33] City of Vacaville. 2015c. *Vacaville General Plan – Safety Element.* Figure SAF-4.

[34] California State Mining and Geology Board. 2014. Surface Mining Reclamation Act Regulations. California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1.

[35] City of Vacaville 2022b. Municipal Code. Codified through Ordinance 1796. *Title 14.26 Urban Stormwater Quality Management*. Website: https://www.codepublishing.com/CA/Vacaville/#!/Vacaville14/Vacaville1426.html (accessed January 25, 2024).

construction erosion and sediment control plan, as described in the City's Grading, Erosion, and Sediment Control Ordinance, Division 14.19.

Operation of the proposed project would increase the amount of impervious surface area. The increase in impervious surface area could result in increased stormwater runoff (both flow rate and volume) from the project site relative to pre-project conditions, which may result in hydromodification impacts (i.e., increased potential for erosion of creek beds and banks, silt pollution generation, or other adverse impacts on beneficial uses due to increased erosive force).

With implementation **SCOAs 104 through 105 and Mitigation Measure HYD-1**, which includes preparation of a Stormwater Pollution Prevention Plan (SWPPP) (refer to Section 4.10, Hydrology and Water Quality), this impact would be reduced to a less than significant level. Although designed primarily to protect stormwater quality, the SWPPP would incorporate best management practices (BMPs) to minimize erosion. Additional details regarding the SWPPP are provided in Section 4.10 of this Initial Study. With incorporation of **Mitigation Measure HYD-1**, impacts from the project would result in a less than significant impact. **This topic will not be analyzed further in the EIR.**

c. Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? ***(Less Than Significant Impact)***

See Response 4.7 (a)(iii) and (iv), above. Ground subsidence is the settling or sinking of surface soil deposits with little or no horizontal motion. Soils with high silt or clay content are subject to subsidence. Subsidence typically occurs in areas with groundwater withdrawal or oil or natural gas extraction. The topography of the site is relatively flat, with gentle sloping (two to nine percent slopes) from a central high point towards the north and south. Additionally, the western and eastern edges of the site slope up along the adjoining hillsides from north to south. Soils within the project site generally consists of firm to stiff cohesive soils with some medium dense to dense clayey sand layers which are not liquefiable due to the lack of groundwater and the presence of underlying bedrock as described below.

As part of the Geotechnical Investigation, seven exploratory borings were drilled to depths ranging from approximately 1.5 to 21.5 feet to determine subsurface conditions at the project site. Borings one and two, encountered firm to stiff highly expansive clay between two to three feet, underlain by stiff to very stiff layers of sandy clay and medium dense to dense clayey sand at depths of 15 to 20 feet below ground surface. Borings three through seven encountered highly expansive firm to stiff clay and sandy clay between 1.5 to six feet, underlain by highly weathered and friable to weak siltstone, tuff, and sandstone bedrock.

Perched groundwater was encountered in Boring two at a depth of 20 feet below ground surface, no groundwater was encountered in the other borings at the time of drilling.

As discussed in Response 4.7 (a), site soils would not be subject to lateral spreading or liquefaction but could be subject to landslides. However, implementation of **SCOAs 104 through 106** (discussed in Response 4.7 (a)(ii)), conformance with the CBC, and implementation of the design recommendations in the Geotechnical Investigation would ensure that potential risks to people and

structures as a result of landslides would be reduced to a less than significant level. **This topic will not be analyzed further in the EIR.**

d. Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property? ***(Less Than Significant Impact)***

Expansive soils are characterized by the potential for shrinking and swelling as the moisture content of the soil decreases and increases, respectively. The shrink-swell potential is influenced by the amount and type of clay minerals present and can be measured by the percent change of the soil volume. Testing at the project site indicates that near-surface soils on the project site are highly expansive.

The Geotechnical Investigation includes recommendations to reduce the potential for damage to the proposed project buildings and associated improvements due to the presence of highly expansive surficial soils, such as the use of slabs-on grade, use of post-tension slab foundations, and the installation of a vapor retarder membrane between the prepared building pad and the interior slab. Additionally, the proposed project would be required to conform with the CBC and **SCOAs 104 through 106** (discussed in Response 4.7 (a)(ii)). With implementation of the SCOAs, conformance with the CBC, and implementation of the design recommendations in the Geotechnical Investigation, impacts related to expansive soils would be less than significant. **This topic will not be analyzed further in the EIR.**

e. Would the project 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? ***(No Impact)***

The proposed project would connect to the City's wastewater conveyance system. On-site treatment and disposal of wastewater are not proposed for the project; therefore, the proposed project would have no impacts associated with soils incapable of supporting alternative wastewater disposal systems. **This topic will not be analyzed further in the EIR.**

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? ***(Less Than Significant with Mitigation Incorporated)***

Although no paleontological resources or unique geological features are known to exist within or near the project site, the proposed project would require ground disturbance to a depth of up to five feet below ground surface for the installation of utilities proposed utility excavation. The possibility of accidental discovery of paleontological resources during project construction cannot be discounted and the following mitigation measure shall be incorporated.

Mitigation Measure GEO-2 **Discovery of Paleontological Resources.** Should paleontological resources be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet shall be redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make

recommendations for the treatment of the discovery. For purposes of this mitigation, a "qualified paleontologist" shall be an individual with the following qualifications: (1) a graduate degree in paleontology or geology and/or a person with a demonstrated publication record in peer-reviewed paleontological journals; (2) at least two years of professional experience related to paleontology; (3) proficiency in recognizing fossils in the field and determining their significance; (4) expertise in local geology, stratigraphy, and biostratigraphy; and (5) experience collecting vertebrate fossils in the field. If the paleontological resources are found to be significant and project activities cannot avoid them, measures shall be implemented to ensure that the project does not cause a substantial adverse change in the significance of the paleontological resource. Measures may include monitoring, recording the fossil locality, data recovery and analysis, a final report, and accessioning the fossil material and technical report to a paleontological repository. Upon completion of the assessment, a report documenting methods, findings, and recommendations shall be prepared and submitted to the City for review. If paleontological materials are recovered, this report also shall be submitted to a paleontological repository such as the University of California Museum of Paleontology, along with significant paleontological materials. Public educational outreach may also be appropriate.

The Applicant shall inform its contractor(s) of the sensitivity of the project site for paleontological resources and shall verify that the following directive has been included in the appropriate contract documents:

> *"The subsurface of the construction site may be sensitive for fossils. If fossils are encountered during project subsurface construction, all ground-disturbing activities within 25 feet shall be redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Project personnel shall not collect or move any paleontological materials. Fossils can include plants and animals, and such trace fossil evidence of past life as tracks or plant imprints. Ancient marine sediments may contain invertebrate fossils such as snails, clam and oyster shells, sponges, and protozoa; and vertebrate fossils such as fish, whale, and sea lion bones. Contractor acknowledges and understands that excavation or removal of paleontological material is*

prohibited by law and constitutes a misdemeanor under California Public Resources Code, Section 5097.5."

Therefore, implementation of **Mitigation Measure GEO-2** would reduce potential impacts to paleontological resources to a less than significant level. **This topic will not be analyzed further in the EIR.**

4.8 GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Greenhouse gases (GHGs) are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are:

- Carbon dioxide (CO_2);
- Methane (CH_4);
- Nitrous oxide (N_2O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulfur hexafluoride (SF_6).

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, believed to be causing global warming. While manmade GHGs include naturally occurring GHGs such as CO_2, methane, and N_2O, some gases (e.g., HFCs, PFCs, and SF_6) are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

These gases vary considerably in terms of Global Warming Potential (GWP), a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere (i.e., atmospheric lifetime). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e).

a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? ***(Less Than Significant Impact)***

Section 15064.4 of the *State CEQA Guidelines* states "A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." In performing that analysis, the lead agency has discretion to determine whether to use a model or methodology to quantify GHG emissions, or to rely on a qualitative analysis or performance-based standards. In making a determination as to the significance of potential impacts, the lead agency then considers the extent to which the project may increase or reduce GHG emissions compared to the existing environmental setting, whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project, and the extent to which the project complies with regulations or requirements adopted to implement a Statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The City of Vacaville Energy and Conservation Action Strategy (ECAS),[36] adopted in 2021, meets the requirements for a Qualified GHG Reduction Strategy designed to streamline environmental review of future development projects in the City, consistent with *State CEQA Guidelines*, Section 15183.5. Therefore, the proposed project is evaluated for consistency with the City's ECAS. The ECAS includes a range of GHG reduction measures, implementation of which would enable the City to meet its 2035 GHG emissions reduction target. Projects that are consistent with the goals and reduction measures of the City's ECAS would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. GHG emissions from the proposed project would result from construction and operational activities, as further discussed below.

Construction Activities. Construction activities, such as site preparation, site grading, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting the construction crew would produce combustion emissions from various sources. During construction activities, GHGs would be emitted through the operation of construction equipment and from worker vehicles, which typically use fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment.

The Yolo-Solano Air Quality Management District (YSAQMD) does not have an adopted threshold of significance for construction-related GHG emissions. However, lead agencies are encouraged to quantify and disclose GHG emissions that would occur during construction. Using CalEEMod, it is estimated that construction of the proposed project would generate approximately 262.3 metric tons of CO_2e. Therefore, project construction impacts associated with GHG emissions would be considered less than significant.

Operational Emissions. Long-term GHG emission impacts are associated with stationary sources and mobile sources. Stationary source emissions result from the consumption of natural gas and

[36] City of Vacaville. 2021b. *City of Vacaville Energy and Conservation Action Strategy.* September. Website: https://www.cityofvacaville.gov/government/community-development/general-plan/energy-and-conservation-action-strategy (accessed May 2024)

electricity. Mobile source emissions result from vehicle trips and result in air pollutant emissions affecting the entire air basin.

GHG emissions for operation of the project were calculated using CalEEMod. Based on the analysis results, summarized in Table 4.8.A, the proposed project would result in emissions of approximately 199.8 MT CO_2e per year. These estimated emissions are provided for informational purposes, and the significance of the proposed project is further analyzed below. CalEEMod output sheets are provided in Appendix A.

Table 4.8.A: Greenhouse Gas Emissions

Emission Type	Operational Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	CO_2e
Mobile Sources	144.4	<0.1	<0.1	147.2
Area Sources	0.2	<0.1	<0.1	0.2
Energy Sources	46.6	<0.1	<0.1	46.9
Water Sources	0.4	<0.1	<0.1	1.2
Waste Sources	1.2	0.1	0.0	4.3
Total Operational Emissions				**199.8**

Source: Compiled by LSA (February 2025).
CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
N_2O = nitrous oxide

As discussed above, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds or consistency with a regional GHG reduction plan. The City's ECAS meets the requirements of *State CEQA Guidelines*, Section 15183.5; therefore, the proposed project is evaluated for consistency with the City's ECAS. Table 4.8.B below presents the proposed project's consistency with the ECAS.

As shown in Table 4.8.B, the proposed project is consistent with most aspects of the City of Vacaville ECAS, the project is not expected to obstruct the attainment of the State's long-term GHG reduction goal for 2050. Therefore, the proposed project would be consistent with the City's ECAS and would not generate GHG emissions that may have a significant effect on the environment. Therefore, impacts would be less than significant. **This topic will not be analyzed further in the EIR.**

b. Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? ***(Less Than Significant Impact)***

The proposed project was analyzed for consistency with the goals of the 2022 Scoping Plan and Plan Bay Area 2050.

2022 Scoping Plan. The following discussion evaluates the proposed project according to the goals of Assembly Bill (AB) 32, the AB 32 Scoping Plan, Executive Order (EO) B-30-15, Senate Bill (SB) 32, and AB 197.

Table 4.8.B: Proposed Project Consistency with the ECAS

ECAS Action	Descriptions	Consistency
Transportation and Land Use		
LU-1	**Continue Telecommuting.** Encourage telecommuting. The City's goal is to have half of eligible employees telecommuting three days a week.	**Not applicable.** The project does not include employment land uses.
LU-2	**Improve Capacity for Electric Vehicles.** The City requires that all new multifamily, retail, and office developments provide 15% of required parking spaces as EV ready and 15% of required parking spaces with EV chargers. The cost of charging must be priced to provide energy and maintain the chargers. These standards will also be required for new City managed parking lots and may be adjusted if demand for EV charging increases.	**Not applicable.** The project is not a multifamily development project and does not include new parking lots.
LU-3	**Implement Transportation Demand Management for New Development.** New projects subject to CEQA review must develop and implement transportation demand management programs. Residential developments will separate parking from leases and charge for off-street parking. Lease holders will also provide transit subsidies and carpool incentives to employees. The City will establish paid on-street and permit parking. Retail, office, and industrial projects will also offer employees cash out programs, where they can receive the cost of their parking spot in cash if they choose not to use it; a 50% transit subsidy; and a $100 per month carpool incentive.	**Not applicable.** The proposed project is a single-family housing development and would not include mixed-use buildings with employment land uses. Street parking and leasing is not expected as part of the proposed project. The proposed project is also not expected to generate a substantial number of vehicle trips. Furthermore, the proposed project would include the construction of internal roadways that would increase connectivity to the surrounding residential areas. Therefore, a transportation demand management program would not be required for the proposed project.
LU-4	**Implement Transportation Demand Management for Existing Development.** Businesses in Vacaville with more than 15 employees are required to offer cash out and commute market reductions.	**Not applicable**. The project does not include employment land uses.
LU-5	**Improve Bus Electrification.** All urban buses should be replaced by electric buses by 2035.	**Not applicable.** This measure applies to the City, not individual residential projects.
LU-6	**Improve City Fleet.** The City will inventory publicly owned vehicles and equipment and identify vehicles that will be phased out before 2030 and can be replaced with more fuel-efficient models. City will develop fuel economy standards for each type of vehicle.	**Not applicable.** This measure applies to the City, not individual residential projects.
LU-7	**Increase Land Use Diversification**. Reducing car trips by creating mixed neighborhoods where daily activities are within a quarter mile of residences. Increasing density to maximize the number of people who have access to these uses.	**Not applicable.** The project is a single-family housing development and would not include mixed-use buildings. However, residential uses are located within a quarter mile from the proposed project site. Additionally, a multi-use path would be installed to provide multi-modal connectivity to surrounding residences. Therefore, the proposed project would

Table 4.8.B: Proposed Project Consistency with the ECAS

ECAS Action	Descriptions	Consistency
		provide connectivity to other residential areas.
LU-8	**Transit Oriented Development.** Implement traffic calming and discourage excessive parking. Provide affordable housing near transit. The city will explore increasing the number of homes and jobs within a quarter mile of high-quality transit.	**Not consistent**. No public transportation currently serves this area.
Energy		
E-1	**Become a Marine Clean Energy (MCE) Member Community.** Join a community choice energy provider to provide cleaner energy. MCE is an option that offers customers 60% and 100% renewable options for energy consumption.	**Not applicable.** PG&E would provide natural gas and electricity for the project. However, future residents may elect to join a community choice provider.
E-2	**Require Energy Audits for Sales of Existing Residential Units.** All residential units are required to provide an energy audit as part of their closing documents and to advertise the benefits of energy audits to all residents. Exemptions can be made for homes built within the last ten years in order to reduce unnecessary costs.	**Not applicable**. This measure applies to existing buildings that do not meet the latest building efficiency standards, not new construction.
E-3	**Adopt an All-Electric New Construction Preferred Ordinance.** The City will adopt an all-electric ordinance and enforce it through building inspections. Special exceptions will be made for industrial, hospital, and similar uses that demonstrate there is no viable electrification option for important equipment due to technological constraints.	**Not applicable.** The City has not adopted an all-electric ordinance at the time of this writing.
E-4	**Develop an Existing Building Electrification Plan.** Phase out natural gas in existing buildings by incentivizing residents to replace existing natural gas appliances, such as stoves and water heaters, with efficient electric options.	**Not applicable**. No existing buildings are included as part of the project.
Solid Waste		
S-1	**Implement Organic Waste Reduction Requirements.** Reduce organics to 50% below 2014 levels by 2020 and 75% below 2014 levels by 2025 through organics collection programs, contamination monitoring, education and outreach, enforcement and penalties, edible food recovery programs, organics self-haul programs, ordinances and policy changes, procurement of recovered organic materials and more.	**Not applicable.** This measure applies to the City, not individual projects. However, the proposed project would be consistent with County Solid Waste and State waste reduction requirements for the construction of the proposed project. In addition, the proposed project would include green bins and trash enclosures for operational waste activities.

Table 4.8.B: Proposed Project Consistency with the ECAS

ECAS Action	Descriptions	Consistency
Off Road Equipment		
O-1	**Increase Renewable and Alternative Fuel for Construction.** Construction equipment is a source of both GHG emissions and air pollution from the heavy-duty equipment used. Many large pieces of equipment do not yet have feasible alternative fuel sources; however, reducing the emissions of construction equipment in Vacaville holistically will result in meaningful GHG reductions. The City will revise its construction bid process so that to be eligible for City construction contracts, a bidder must submit documentation that their fleet will reduce conventional fuel use by 20 percent by 2035.	**Not applicable**. This measure is not applicable as it is intended to be implemented by the City and not project specific.
Carbon Sequestration		
C-1	**Plant Trees.** Create a more all-encompassing push to add to both City-owned trees and trees on private property. Strategically place trees in line with buildings and sunlight so as to shade buildings and reduce the need to heat and cool buildings. The City's goal is to plant at least 10,000 trees through initiatives such as street tree planting programs on major streets where there are major gaps, shading requirements for commercial and residential projects, and providing trees to residents.	Approximately 38 trees would be planted as part of the project.
C-2	**Farm Carbon.** Apply compost to public greenspaces to allow more carbon to be held by the soil. 4.57MT CO_2e is anticipated to be reduced by 2035 for every acre of land spread with compost.	**Not applicable.** This measure applies to the City, not individual residential projects.

Source: Compiled by LSA (May 2024).
Note: Not applicable refers to measures that are not relevant to new development and measures not within the project applicant's control.
CO_2e = carbon dioxide equivalent
ECAS = City of Vacaville General Plan and Energy and Conservation Action Strategy
EV = electric vehicle
MCE = Marine Clean Energy
MT = metric ton
PG&E = Pacific Gas & Electric
sq ft = square feet

AB 32 is aimed at reducing GHG emissions to 1990 levels by 2020. AB 32 requires the CARB to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce GHGs that contribute to global climate change. The AB 32 Scoping Plan has a range of GHG reduction actions, which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 implementation fee to fund the program.

EO B-30-15 added the immediate target of reducing GHG emissions to 40 percent below 1990 levels by 2030. The California Air Resources Board (CARB) released a second update to the Scoping Plan,

the 2017 Scoping Plan,[37] to reflect the 2030 target set by EO B-30-15 and codified by SB 32. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in EO B-30-15. SB 32 builds on AB 32 and keeps California on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels. The companion bill to SB 32, AB 197, provides additional direction to the CARB related to the adoption of strategies to reduce GHG emissions. Additional direction in AB 197 intended to provide easier public access to air emissions data that are collected by CARB was posted in December 2016.

In addition, the Draft 2022 Scoping Plan Update[38] assesses progress toward the statutory 2030 target, while laying out a path to achieving carbon neutrality no later than 2045. The 2022 Scoping Plan Update focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

The Scoping Plan contains GHG reduction measures that work towards reducing GHG emissions, consistent with the targets set by AB 32, EO B-30-15 and codified by SB 32 and AB 197. The measures applicable to the proposed project include energy efficiency measures, water conservation and efficiency measures, and transportation and motor vehicle measures, as discussed below.

Energy efficiency measures are intended to maximize energy efficiency building and appliance standards, pursue additional efficiency efforts including new technologies and new policy and implementation mechanisms, and pursue comparable investment in energy efficiency from all retail providers of electricity in California. In addition, these measures are designed to expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings. As discussed above, the proposed project would comply with the California Green Building Standards Code (CALGreen Code) regarding energy conservation and green building standards. Therefore, the proposed project would comply with applicable energy measures.

Water conservation and efficiency measures are intended to continue efficiency programs and use clean energy sources to move and treat water. Increasing the efficiency of water transport and reducing water use would reduce GHG emissions. As noted above, the project would comply with the CALGreen Code, which includes a variety of different measures, including reduction of wastewater and water use. In addition, the proposed project would be required to comply with the California Model Water Efficient Landscape Ordinance. Therefore, the proposed project would not conflict with any of the water conservation and efficiency measures.

The goal of transportation and motor vehicle measures is to develop regional GHG emissions reduction targets for passenger vehicles. Specific regional emission targets for transportation emissions would not directly apply to the proposed project. The Pavley II (LEV III) Advanced Clean

[37] California Air Resources Board (CARB). 2017b. *California's 2017 Climate Change Scoping Plan*. November.

[38] CARB. 2021. *Draft 2022 Scoping Plan Update*. May 10. Website: https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf (accessed August 2022).

Cars Program will reduce GHG emissions from new cars by 34 percent from 2016 levels by 2025. Vehicles traveling to the project site would comply with the Pavley II (LEV III) Advanced Clean Cars Program. Therefore, the proposed project would not conflict with the identified transportation and motor vehicle measures.

Plan Bay Area 2050. Plan Bay Area 2050 is a State-mandated, integrated long-range transportation and land use plan that integrates transportation, land use and housing to meet GHG reduction targets set by the CARB. Plan Bay Area 2050 connects the elements of housing, the economy, transportation and the environment through 35 strategies that will make the Bay Area more equitable for all residents and more resilient in the face of unexpected challenges.

The proposed project would support the overarching intent of the Plan Bay Area 2050 by reducing GHG emissions within the City from residential development. The proposed project specifically includes transportation/land-use-related features that would minimize GHG emissions. The proposed project is located in the vicinity of several other housing developments and would offer pedestrian and bicycle connectivity and parkways along nearby roadways to encourage the use of alternative transportation. Furthermore, the proposed project would directly increase the availability of housing opportunities in Vacaville. Therefore, the proposed project would support and not conflict with applicable goals and strategies set forth in the Plan Bay Area 2050.

The proposed project would comply with existing State regulations adopted to achieve the overall GHG emissions reduction goals identified in AB 32 and SB 32. In addition, as described above, the proposed project would be consistent with the City's ECAS, the CARB 2022 Scoping Plan, and Plan Bay Area 2050. Therefore, the proposed project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the GHG emissions. This impact would be less than significant. **This topic will not be analyzed further in the EIR.**

4.9 HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d. 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?	☐	☐	☒	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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?	☐	☐	☒	☐
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? ***(Less Than Significant Impact)***

The proposed project would result in the development of 20 residential lots for future custom-built homes and associated site improvements, including a General Plan Amendment to change the General Plan designation from Hillside Agriculture (HA) to Residential Estates (RE) and would apply the RE-12 pre-zoning district to the project site. Additionally, the proposed project would annex approximately 15.73 acres into the City of Vacaville (City). Because the proposed project is for private residential use, it would generally not involve transport, use, or disposal of significant quantities of hazardous materials; only small quantities of chemicals would be used for routine maintenance that would not pose a significant threat to human or environmental health.

Construction of the proposed project would involve the use and transport of hazardous materials. These materials could include fuels, oils, paints, and other chemicals used during construction activities. Handling and transportation of hazardous materials could result in accidental releases or spills and associated health risks to workers, the public, and environment.

Transport and use of hazardous materials would be subject to all applicable State and federal laws, such as Hazardous Materials Transportation Act, the Resource Conservation and Recovery Act, the California Hazardous Materials Management Act, California Health and Safety Code, and California Code of Regulations Title 8 and Title 22. Therefore, compliance with existing regulations would ensure that the proposed project would not create a significant hazard to the public or the environment associated with the routine transport, use, or disposal of hazardous materials by ensuring these materials are properly handled during construction of the proposed project. Therefore, this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? ***(Less Than Significant with Mitigation Incorporated)***

There are two main ways that the public and/or the environment could be affected by the release of hazardous materials from the project site, including: (1) exposing workers and/or the public to potentially contaminated soil and groundwater during construction and/or operation of the project; or (2) exposing workers and/or the public to hazardous building materials (e.g., lead paint, asbestos) during demolition of existing structures.

As described above in Response 4.9 (a), small quantities of common hazardous materials would be used at the project site during construction and operation of the proposed project. Improper use, storage, or handling could result in a release of hazardous materials into the environment which could pose a risk to construction workers and the public. However, the Applicant would be required to comply with existing government regulations during the use and disposal of these materials, and such materials would not be used in sufficient strength or quantity to create a substantial risk to human or environmental health. Additionally, the proposed project would not demolish any existing structures.

Because the proposed project would result in soil disturbance greater than one acre, management of hazardous materials during construction activities would be subject to the requirements of the California State Water Resources Control Board (SWRCB) National Pollution Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit [CGP]), which requires preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes hazardous materials storage requirements. For example, construction site operators must store chemicals in watertight containers (with appropriate secondary containment to prevent any spillage or leakage) or in a storage shed that is completely enclosed.

With implementation **Mitigation Measure HYD-1**, which includes preparation of an SWPPP (refer to Section 4.10, Hydrology and Water Quality), this impact would be reduced to a less than significant level. Conformance with existing government regulations (federal, State, regional, and local) regarding the transport, use, and disposal of hazardous materials associated with the proposed project would also ensure the proposed project would have a less than significant impact related to the potential release of hazardous materials commonly associated with construction activities into the environment. **This topic will not be analyzed further in the EIR.**

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? ***(No Impact)***

There are no existing or proposed schools within a quarter mile of the proposed project. Additionally, as noted in Response 4.9 (a), development of 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 and, as noted in Response 4.9 (b), construction activities would not create a hazard to the public and environment through reasonably foreseeable upset and accident conditions. Therefore, there would be no impact. **This topic will not be analyzed further in the EIR.**

d. Would the project 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? ***(No Impact)***

The project site does not include any active storage sites listed on the State Water Resources Control Board (SWRCB) Leaking Underground Storage Tanks database or the SWRCB's site cleanup program database, [39]which are two of the component databases that comprise the Cal/EPA Hazardous Waste and Substances Sites List (Cortese List) of known hazardous materials compiled pursuant to Government Code Section 65962.5. Active sites are not listed for the project on other components of the Cortese List, including the DTSC hazardous waste and substance list.[40] Therefore, no impacts associated with locating a project on a site included on a list of hazardous materials is expected to occur.

The project site and a one-half-mile radius around the project site were reviewed via the State Water Resources Control Board (SWRCB) GeoTracker database,[41] the California Department of Toxic Substances Control (DTSC) EnviroStor database,[42] and the Cortese List[43] for the purposes of identifying recognized environmental conditions or historical recognized environmental conditions. No properties with recognized environmental conditions or historical recognized environmental conditions were identified within one-half mile of the project site. Therefore, potential migration of residual contaminants in groundwater beneath the project site does not pose a risk to human health and the environment and the proposed project would result in no impacts. **This topic will not be analyzed further in the EIR.**

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39 State Water Resources Control Board (SWRCB). 2023. GeoTracker. Website: https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=4420+McMurtry+Lane%2C+Vacaville%2C+CA+95688 (accessed March 15, 2024).

40 California Department of Toxic Substances Control (DTSC). 2023a. Hazardous Waste and Substances Site List (Cortese). Website: https://www.envirostor.dtsc.ca.gov/public/search.asp?cmd=search&reporttype=CORTESE&site_type=CSITES,FUDS&status=ACT,BKLG,COM&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+228CORTESE%29 (accessed March 15, 2024).

41 State Water Resources Control Board (SWRCB). 2023. Op. cit.

42 California Department of Toxic Substances Control (DTSC). 2023b. EnviroStar Database. Website: https://www.envirostor.dtsc.ca.gov/public/map/ (accessed February 24, 2024).

43 California Department of Toxic Substances Control (DTSC). 2023a. Op. cit.

e. Would the project be located within an airport land use plan or, where such a plan has not been adopted, within 2 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? ***(Less Than Significant Impact)***

The Nut Tree Airport is located approximately 2.5 miles northwest of the project site. Travis Air Force Base is located approximately 9.4 miles north of the site. According to the Nut Tree Airport Compatibility Map,[44] the project site is not located within the Nut Tree Airport influence compatibility. Additionally, the project site is not located within the vicinity of a private airstrip, or within the Travis Air Force Base Land Use Compatibility Plan. Therefore, the proposed project would not result in a safety hazard or excessive noise for people residing or working in the project area, and impacts would be less than significant. **This topic will not be analyzed further in the EIR.**

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? ***(Less Than Significant Impact)***

The City of Vacaville adopted the Association of Bay Area Governments' (ABAG) Taming Natural Disasters report[45] as its official Local Hazard Mitigation Plan. The Local Hazard Mitigation Plan offers methods to mitigate natural hazards and enhance disaster resistance. The Plan focuses on natural disasters, including earthquake hazards (surface faulting, ground shaking, liquefaction, landslides, and tsunamis), and weather-related hazards (flooding, landslides, wildfires, drought, and climate change).[46]

The proposed project would not alter or block adjacent roadways and implementation of the proposed project would not be expected to impair the function of nearby emergency evacuation routes. Additionally, the proposed project would be required to comply with the following SCOAs required for all design permits, use permits, and planned developments that addresses access roads and emergency vehicle access:

> ***SCOA 262:*** Access roads with a minimum unobstructed width of 20 feet shall be provided to the front and rear of structures. A minimum vertical clearance of 13 feet, six inches, shall be provided. Access roads shall be engineered to support the imposed load of the apparatus which is typically 25 tons and shall be designed per the City Public Work's Department Standards. An access road shall be provided to within 150 feet of all exterior walls of the first floor of the buildings. The route of the access road shall be approved by the Fire Marshal. Dead-end access roads in excess of 150 feet in length shall be provided with an approved means for turning around the apparatus. The final design of the turnaround shall be reviewed and approved by the Fire Marshal prior to installation.

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44 Nut Tree Airport. n.d. Land Use Compatibility Plan Map. Website: https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=35380 (accessed September 2023).

45 Association of Bay Area Governments (ABAG). 2010. Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area. 2010 Update of 2005 Plan. Website: https://abag.ca.gov/sites/default/files/theplan-chapters-intro.pdf (accessed September 2023).

46 City of Vacaville. 2021a. *Vacaville General Plan and ECAS EIR.*

SCOA 263: Every building shall be accessible to the City of Vacaville Fire Department apparatus by way of all-weather access roadways during the time of construction. These roads shall have a minimum unobstructed width of 20 feet and shall be required to have a minimum 'first lift' of pavement applied which shall support the imposed load of a fire apparatus which is typically 25 tons. The developer shall be required to provide the Fire Marshal with a site plan showing the location, width, grades, and cross section of the proposed access roads to be used during construction. Permits shall not be issued and combustible construction shall not be allowed on the site until this site plan is reviewed and approved and stamped by the City of Vacaville Fire Department.

SCOA 265: Prior to the issuance of any grading or building permits, the Fire Marshal shall approve the location of all Emergency Vehicle Access Roads within the project site. Unless otherwise approved, the access points to any Emergency Vehicle Access Roads shall be located at the end of cul-de-sacs and across utility easements and shall be kept locked at all times with a City 1C04 lock.

SCOA 266: Prior to the issuance of any grading or building permits, the Fire Marshal shall approve the location of all Emergency Vehicle Access Roads around the perimeter of the site. Such Emergency Vehicle Access roads shall have average grades of not more than 20% with no section greater than 25%. The minimum width of such roads shall be 20 feet. Side slopes shall not exceed 4%. These roads shall be engineered to withstand a minimum load of 12 tons. At a minimum, this road shall be graded and compacted with decomposed granite or equivalent and shall be kept clear of all flammable vegetation at all times. The Fire Marshal may require the road to be surfaced with pavement if it is determined the road will not be or is not being properly maintained in accordance with these standards.

SCOA 267: The Fire Marshal shall identify on the final site development plans where metal grates shall be provided for emergency fire apparatus cross V-ditches in the event of a fire or emergency. These grates shall have a minimum width of 10 feet and be designed and engineered to accommodate a minimum load of 12 tons.

With implementation of these SCOAs, the proposed project would have a less than significant impact on the implementation of an adopted emergency response plan or emergency evacuation plan. **This topic will not be analyzed further in the EIR.**

g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? ***(Less Than Significant Impact)***

In its existing condition the project site is not located in close proximity to heavily wooded wildlands; however, portions of the project site are bordered by uncultivated annual grassland and grassy hillsides. According to the California Department of Forestry and Fire Protection (CAL FIRE) Fire Hazard Severity Zone (FHSZ), the project site is located in a State Responsibility Area and designated

as a High Fire Hazard Severity Zone (HFHSZ).[47] As part of the proposed project, 15.73 would be annexed into the City of Vacaville and the proposed project would be redesignated from a State Responsibility Area (SRA) to Local Responsibility Area (LRA) zone.

Although the project site is designated as a HFHSZ, the proposed project would include a 150-foot irrigated landscape buffer along the northern boundary of the property; a fire access road around the perimeter of the development, connecting to the new multi-use path on the eastern side of the proposed development, allowing access to White Stone Court, Rolling Sage Circuit, and Peacock Way within the Cheyenne development; a new Emergency Access Road extending easterly from the project site through an open space area to connect with White Stone Court, which itself connects to Whispering Ridge Drive that becomes Browns Valley Road; approximately 3.7 acres of landscaping for fire protection, which would act as a buffer; a 25-foot front yard setback, a 20-foot rear yard setback, and a 10-foot side yard setback, consistent with the VMC.

Additionally, the proposed project would be required to meet all applicable fire standards relating to construction quality, equipment access, and fire flow requirement from Chapter 15.20.273 of the VMC, the California Building Code (CBC), California Fire Code, the City of Vacaville Fire Department (VFD), and the Solano County Fire Protection District. Therefore, the proposed project would have a less than significant impact on exposing people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. **This topic will not be analyzed further in the EIR.**

[47] California Department of Forestry and Fire Protection (CAL FIRE). 2023. *Fire Hazard Severity Zones in State Responsibility Area*. September Website https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones (accessed March 15, 2024).

4.10 HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☒	☐	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c. 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:				
i. Result in substantial erosion or siltation on- or off-site;	☐	☒	☐	☐
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☒	☐	☐
iii. 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	☐	☒	☐	☐
iv. Impede or redirect flood flows?	☐	☒	☐	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☒	☐	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☒	☐	☐

a. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality? ***(Less Than Significant with Mitigation Incorporated)***

The State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) regulate water quality of surface water and groundwater bodies throughout California. In Solano County, the Central Valley RWQCB is responsible for implementation of the Water Quality Control Plan (Basin Plan). The Basin Plan establishes beneficial water uses for waterways and water bodies in the region. Section 303(d) of the federal Clean Water Act (CWA) requires that states identify water bodies including bays, rivers, streams, creeks, and coastal areas that do not meet water quality standards and the pollutants that are causing the impairment. Total Maximum Daily Loads (TMDLs) describe the maximum amount of a pollutant that a water body can receive while still meeting established water quality standards. A TMDL establishes limits for pollutant discharges into impaired water bodies.

According to the City's General Plan Environmental Impact Report (EIR),[48] existing drainage systems in the City include creeks, constructed channels, and an extensive network of storm drain pipes that collect and convey runoff from the streets and adjacent land. The storm drain system is made up of series of pipes under City streets that convey stormwater runoff to the various creeks. In general, creeks in the City flow in an east-south easterly direction and ultimately drain into the Sacramento River via Cache Slough.

The project site generally consists of non-native annual grassland and other non-native species, and is developed with existing structures located along the western edge of the site adjacent to McMurtry Lane, including a single-family home, trailer, livestock enclosures, and a number of other storage structures, including a barn and shed. The residential and storage structures are currently in use, and the livestock enclosures are vacant. The project site is relatively flat with low, gently rolling hills that slope from south to east, with site elevations ranging from 252 to 326 feet above mean sea level. There is one 0.31-acre constructed stock pond/seasonal wetland in the south-central part of the site and two ephemeral drainage channels in the southern portion of the site that convey flows from upslope and the adjacent landscapes. These drainages likely flow during the rainy season and dry shortly after the end of the season. The two drainages were historically connected, but land modification on the project site has severed the connection. One drainage runs west to east, crossing under McMurtry Lane via a culvert before flowing approximately 200 feet to its terminus. At its terminus, past grading activities around the stock pond/seasonal wetland has modified the topography such that the drainage's bed and bank disappear and water from the drainage either seeps into the ground or sheet flows into the stock pond/seasonal wetland. The second drainage flows north to south beginning just south of the stock pond/seasonal wetland and continuing approximately 209 feet south and off the project site. Downstream of the project site, this drainage develops into a more robust channel. Under existing conditions, stormwater from the project site either infiltrates at the site or sheet flows into the two ephemeral drainages which drain south and off-site. Off-site, stormwater flows southeast within an unnamed earthen channel and discharges into the concrete lined Putah South Canal. Putah South Canal starts at Putah Diversion Dam and runs easterly for approximately three miles, before turning south to follow the edge of the foothills for approximately 30 miles. The canal terminates near the town of Cordelia and provides irrigation water to farmland in Solano County.[49] The SWRCB Surface Water Quality Assessment 2020–2022 Integrated Report for Clean Water Act Sections 303(d) and 305(b)[50] does not list Putah South Canal as impaired for any constituents, and no TMDLs have been adopted.

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48 City of Vacaville. 2015b. *Draft General Plan and ECAS Environmental Impact Report, Section 4.9: Hydrology and Water Quality.* February 27. Website: https://www.cityofvacaville.gov/home/showpublished document/5502/636234161698230000 (accessed April 3, 2024).

49 United States Bureau of Reclamation. *Projects and Facilities, Damns, Putah Dam.* Website: https://www.usbr.gov/projects/index.php?id=234 (accessed April 2, 2024).

50 State Water Resources Control Board (SWRCB). 2023a. *2020-2022 California Integrated Report (Clean Water Act Section 303(d) List and 305(b) Report)*. Website: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.waterboards.ca.gov%2Fwater_issues%2Fprograms%2Ftmdl%2F2020_2022state_ir_reports_revised_final%2Fapx-a-303d-list.xlsx&wdOrigin=BROWSELINK (accessed April 3, 2024).

Runoff water quality is regulated by the National Pollutant Discharge Elimination System (NPDES) Program (established through the federal Clean Water Act [CWA]). The NPDES program objective is to control and reduce pollutant discharges to surface water bodies. Compliance with NPDES permits is mandated by State and federal statutes and regulations. Locally, the NPDES Program is administered by the Central Valley RWQCB.

Construction activities are subject to the SWRCB NPDES Construction General Permit (Construction General Permit), Order No. 2022-0057-DWQ, NPDES No. CAS000002.[51] Any construction activity, including grading, that would result in the disturbance of one acre or more would require compliance with SWRCB's Construction General Permit, which requires preparation of Stormwater Pollution Prevention Plan (SWPPP) and implementation of Construction Best Management Practices (BMPs) during construction activities. Construction BMPs would include, but not be limited to, Erosion Control and Sediment Control BMPs designed to minimize erosion and retain sediment on site and Good Housekeeping BMPs to prevent spills, leaks, and discharge of construction debris and waste into receiving waters.

Project operations are subject to the requirements of the NPDES General Permit for Waste Discharge Requirements (WDRs) for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) RWQCB Order No. 2013-001-DWQ, NPDES No. CAS000004, as amended by Order 2015-0133-EXEC, Order WQ 2016-0069-EXEC, Order 2017-XXXX-DWQ, Order 2018-0001-EXEC, and Order 2018-0007-EXEC (Small Phase II MS4).[52] This permit is for small community operators to efficiently regulate stormwater discharges under a single permit. Permittees must develop and implement a Stormwater Management Plan (SWMP) with the goal of addressing the rate and volume of runoff as well as reducing the discharge of pollutants to the maximum extent practicable. Permittees shall regulate development through the following: site design measures, source control measures, Low Impact Development (LID) Design Standards, Hydromodification Measures, Operation and Maintenance of Storm Water Control Measures, and Post-Construction BMPs. Additionally, the MS4 requires ongoing water quality monitoring and corrective actions if water quality thresholds are not maintained.

Construction. The proposed project involves the construction of 20 new single-family residential lots and associated improvements. Pollutants of concern during construction include sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on water quality. During construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion and sedimentation compared to existing conditions. In addition, chemicals, liquid products, petroleum products (e.g., paints, solvents, and fuels), and concrete-

51 NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order No. 2022-0057-DWQ, NPDES No. CAS000002).

52 California Regional Water Quality Control Board (RWQCB). 2019. Order No. 2013-001-DWQ, NPDES No. CAS000004, as amended by Order 2015-0133-EXEC, Order WQ 2016-0069-EXEC, Order 2017-XXXX-DWQ, Order 2018-0001-EXEC, and Order 2018-0007-EXEC*, National Pollutant Discharge Elimination System (NPDES) General Permit for Waste Discharge Requirements (WDRs) for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s)* (accessed April 3, 2024).

related waste may be spilled or leaked, and they have the potential to be transported via stormwater runoff into receiving waters.

During construction, approximately 7.8 acres of soil would be disturbed. Because construction of the proposed project would disturb greater than one acre of soil, the project is subject to the requirements of the Construction General Permit. The proposed project would also be required to comply with the City's Municipal Code[53] which specifies provisions for urban storm water quality, management and discharge control during project construction including the preparation of a construction erosion and sediment control plan, as described in the City's Grading, Erosion, and Sediment Control Ordinance, Division 14.19.

The purpose of the construction BMPs is to control the volume, rate, and potential pollutant load of stormwater runoff during construction. As specified in **Mitigation Measures HYD-1 and HYD-2,** and as required by the Construction General Permit and the VMC, the Construction Contractor would be required to prepare a SWPPP and implement construction BMPs detailed in the SWPPP during construction activities. Construction BMPs would include, but are not limited to, Erosion Control and Sediment Control BMPs designed to minimize erosion and retain sediment on site and Good Housekeeping BMPs to prevent spills, leaks, and discharge of construction debris and waste into receiving waters.

Mitigation Measure HYD-1

Construction General Permit. Prior to the commencement of any land-disturbing activities, the Construction Contractor shall obtain coverage under the State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order No. 2022-0057-DWQ, National Pollutant Discharge Elimination System No. CAS000002) (Construction General Permit). This shall include submission of Permit Registration Documents (PRDs), including a Notice of Intent for coverage under the permit to the SWRCB via the Stormwater Multiple Application and Report Tracking System (SMARTS). The City shall provide the Waste Discharge Identification Number (WDID) to the Planning Manager of the City of Vacaville (City) or designee, to demonstrate proof of coverage under the Construction General Permit. Project construction shall not be initiated until a WDID is received from the SWRCB and is provided to the City, or designee.

A Stormwater Pollution Prevention Plan (SWPPP) shall be prepared by a Qualified SWPPP Developer in accordance with the requirements of the Construction General Permit. These include: BMPs for erosion and sediment control, site management/housekeeping/waste management, management of

[53] City of Vacaville. 2022b. Municipal Code. Codified through Ordinance 1796. *Title 14.26 Urban Stormwater Quality Management*. Website: https://www.codepublishing.com/CA/Vacaville/#!/Vacaville14/Vacaville1426.html (accessed January 25, 2024).

non-stormwater discharges, run-on and runoff controls, and BMP inspection/maintenance/repair activities. BMP implementation shall be consistent with the BMP requirements in the most recent version of the California Stormwater Quality Association's Stormwater Best Management Handbook: Construction.

The SWPPP shall include a construction site monitoring program that identifies requirements for dry weather visual observations of pollutants at all discharge locations, and as appropriate (depending on the Risk Level), sampling of the site effluent and receiving waters. A Qualified SWPPP Practitioner shall be responsible for implementing the BMPs at the site and performing all required monitoring and inspection/maintenance/repair activities.

Upon completion of construction and stabilization of the site, a Notice of Termination shall be submitted via SMARTS.

Mitigation Measure HYD-2

City of Vacaville Municipal Code (VMC). Prior to issuance of a grading permit, the City shall review and approve final project plans, which address compliance with the water quality management requirements of Title 14 of the VMC. Title 14 includes specific provisions for urban storm water quality, management and discharge control to be implemented during construction activities including the requirement that new development must submit for review and approval by the City a construction erosion and sediment control plan, as described in the City's Grading, Erosion, and Sediment Control Ordinance, Division 14.19.

In addition, prior to the issuance of a building or construction permit, the City shall prepare a post-construction BMP design plan including a storm water management Facilities Operation and Maintenance Plan (O&M Plan) in accordance with the Small Phase II Municipal Separate Storm Sewer System (MS4) Permit. The O&M Plan shall detail the post-construction BMPs intended to control the volume, rate, and potential pollutant load of storm water runoff from the project site. Post-construction BMP shall comply with the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook for Construction.

According to the Geotechnical Investigation Report,[54] perched groundwater was encountered during exploratory borings at 20 feet below ground surface (bgs). Excavation associated with the proposed

[54] KC Engineering Company. 2022. *Geotechnical Exploration Report on Proposed Residential Subdivision, McMurtry Creek Estates at 4420 McMurtry Lane, Vacaville, California for Suresh Paranjpe.* April 6.

project is anticipated to reach a maximum depth of five feet bgs for installation of utility lines. Therefore, groundwater dewatering is not anticipated to be required during construction.

Adherence to the Construction General Permit and the VMC, as specified in **Mitigation Measures HYD-1 and HYD-2**, would ensure that the proposed project would not violate any water quality standards or waste discharge requirements associated with State or City requirements. With implementation of **Mitigation Measures HYD-1 and HYD-2**, construction impacts related to surface water quality standards, waste discharge requirements, and surface water quality would be less than significant.

Operation. The proposed project would develop 20 new single-family residential lots and the associated roadway and utility improvements on approximately 7.8 acres (developable area) of the 15.73-acre project site, which would increase the amount of impervious surface area on the project site from approximately 5,303 square feet to approximately 213,856 square feet (approximately 63 percent of the developable area). The increase in impervious surface area could result in increased stormwater runoff (both flow rate and volume) from the project site relative to pre-project conditions, which may result in hydromodification impacts (i.e., increased potential for erosion of creek beds and banks, silt pollution generation, or other adverse impacts on beneficial uses due to increased erosive force).

During operation, anticipated pollutants of concern associated with the proposed project include bacteria/virus, heavy metals, toxic organic compounds, nutrients, pesticides, sediment/turbidity, trash and debris, oils, and grease. Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on water quality.

Project operations would be subject to the requirements of the Small Phase II MS4 Permit. The Small Phase II MS4 Permit is designed to avoid and minimize water quality impacts attributable to discharge from the stormwater drainage systems owned and/or operated by the co-permittees, which includes the City of Vacaville. This permit regulates stormwater runoff by requiring implementation of BMPs to reduce pollutants in runoff to the maximum extent practicable to protect water quality. The provisions of the Small Phase II MS4 Permit are implemented through Municipal Code Chapter 14.26, Urban Storm Water Quality Management and Discharge Control. Permittees must develop and implement a SWMP with the goal of addressing the rate and volume of runoff and the discharge of pollutants to the maximum extent practicable. Permittees shall regulate development through the following: site design measures, source control measures, LID Design Standards, Hydromodification Measures, Operation and Maintenance of Storm Water Control Measures, and Post-Construction BMPs. Finally, the Small Phase II MS4 Permit requires ongoing water quality monitoring and corrective actions if water quality thresholds are not maintained. As detailed in **Mitigation Measure HYD-2** and required by VMC Section 14.26, the proposed project would be required to prepare a post-construction BMP design plan and storm water management facilities operation and maintenance plan (O&M Plan) in accordance with the Small Phase II MS4 Permit that details the post-construction BMPs intended to control the volume, rate, and potential pollutant load of storm water runoff.

The City's standard conditions of approval require development projects to demonstrate to the City Engineer and Director of Public Works that the proposed development meets the requirements of

the Small Phase II MS4 Permit and corresponding design standards, as detailed in **Mitigation Measure HYD-3**.

Additionally, the project has the potential to adversely affect existing City storm drain capacity. Therefore, the project would be required to comply with the *Storm Drain Design Standards Section DS 4* developed by the City of Vacaville. These standards provide the minimum requirements for design of a storm drain system that will collect storm water to ensure that stormwater runoff from storms up to the 100-year frequency event are adequately conveyed through storm facilities so as not to cause flooding.[55] As part of these requirements, the project would need to develop a Storm Drainage Master Plan (SDMP) Report, as detailed in **Mitigation Measure HYD-4**.

Development of the proposed project would result in an increase in impervious surfaces on the project site from approximately 5,303 square feet to approximately 213,856 square feet (approximately 63 percent of the developable area), which could generate pollutants that infiltrate into the groundwater. However, the on-site soils have high to very high runoff potential.[56] Therefore, infiltration at the project site is likely to be low. Furthermore, perched groundwater at the project site occurs at approximately 20 feet bgs and is bound by underlying claystone bedrock. Pollutants in stormwater are generally removed by soil through absorption as water infiltrates. In areas of deeper groundwater, there is more absorption potential and, as a result, less potential for pollutants to reach groundwater. Due to the depth to groundwater, it is not expected that any stormwater that may infiltrate would affect groundwater quality because there is not a direct path for pollutants to reach groundwater.

With implementation of **Mitigation Measures HYD-2, HYD-3, and HYD-4**, which require compliance with the requirements of the VMC, Small Phase II MS4 Permit, and the *Storm Drain Design Standards Section DS 4* developed by the City, operation impacts related to a violation of any water quality standards or waste discharge requirements would be less than significant**.**

Mitigation Measure HYD-3

Small Phase II MS4 Permit. Prior to issuance of grading permit, the City of Vacaville (City) shall review and approve a Final Storm Water Management Plan (SWMP) in compliance with the *National Pollutant Discharge Elimination System (NPDES) General Permit for Waste Discharge Requirements (WDRs) for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s)* RWQCB Order No. 2013-001-DWQ, NPDES No. CAS000004, as amended by Order 2015-0133-EXEC, Order WQ 2016-0069-EXEC, Order 2017-XXXX-DWQ, Order 2018-0001-EXEC, and Order 2018-0007-EXEC, including specifying project-specific site design measures, source control measures, Low Impact Development (LID) Design Standards, Hydromodification Measures, Operation and Maintenance of Storm Water Control Measures, and Post-Construction BPMs and associated water quality monitoring actions to ensure water quality

55 City of Vacaville. 2006. Storm Drain Design Standards. May.

56 U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS). n.d. Web Soil Survey. Website: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx (accessed April 2, 2024).

thresholds are maintained and facilities meet the required sizing design criteria.

Mitigation Measure HYD-4 **Storm Drain Design Standards Section DS 4.** Prior to issuance of grading, the City of Vacaville shall review and approve a Final Storm Drainage Master Plan to ensure it is in compliance with the City of Vacaville *Storm Drain Design Standards Section DS 4*.

Overall, because the proposed project would be required to comply with existing regulations including the Construction General Plan, the Small Phase II MS4 Permit, and all applicable VMC and requirements, the proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. Impacts would be less than significant with mitigation incorporated. **This topic will not be analyzed further in the EIR.**

b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? ***(Less Than Significant Impact)***

The City, including the project site, is located within the Solano Subbasin, which includes the southernmost portion of the Sacramento Valley Groundwater Basin and extends unto the northern portion of the Sacramento Joaquin Delta.[57] The Solano Subbasin boundaries are defined by Putah Creek on the north, the Sacramento River on the East (from Sacramento to Walnut Grove), the North Mokelumne River on the southeast (from Walnut Grove to the San Joaquin River), the San Joaquin River on the South (from the North Mokelumne River to the Sacramento River), the Lower Members of the Great Valley Group on the Northwest, and the Suisun-Fairfield Valley Basin on the Southwest. In addition to the City of Vacaville, the Solano Subbasin underlies the Cities of Dixon and Rio Vista, and is pumped extensively for local agricultural and municipal uses. Recharge of the Solano Subbasin primarily comes from direct percolation of rainfall and return flows of applied water by agricultural and municipal users.[58] The surface area of the Solano Subbasin is approximately 425,000 acres or 664 square miles, with average annual rainfall over the basin ranging from approximately 23 inches in the western portion of the subbasin to 16 inches in the eastern portion.[59] In 2014, the Department of Water Resources (DWR) identified the Solano Sub-Basin as a medium-priority basin, and maintained the priority level in the 2019 prioritization

[57] City of Vacaville. 2015b. *Draft General Plan and ECAS Environmental Impact Report, Section 4.9: Hydrology and Water Quality.* February 27. Website: https://www.cityofvacaville.gov/home/showpublished document/5502/636234161698230000 (accessed April 3, 2024).

[58] Solano Subbasin Groundwater Sustainability Agencies Collaborative. 2021. *Solano Subbasin Groundwater Sustainability Plan*. November 30.

[59] State Water Resources Control Board Division of Water Rights. 2004. *Sacramento Valley Groundwater Basin, Solano Subbasin Bulletin 118*. February 27.

update.[60] To date, there has been no groundwater storage calculation for the Solano Subbasin as it is described by the DWR Bulletin 118.[61]

According to the City's 2020 Amended Urban Water Management Plan (2020 UWMP)[62], the City has multiple sources of water available for its use including Solano Project water from Lake Berryessa, State Water Project and Settlement Water, and groundwater from local wells. These water sources allow the City to manage use of the water supply based on each source's availability. The City uses more surface water during wet years, and can rely more on groundwater during dry years. Groundwater conditions at local wells are consistently monitored, and levels have been stable for over a decade. The City does not expect any water supply shortages in future years, even in a drought, as determined by a drought risk assessment that showed that even in five consecutive dry years, the City has enough supply to meet customer demands. The City also has the ability to put measures in place to reduce demand in response to water shortages, if necessary.[63]

Construction. As previously discussed, perched groundwater was encountered at the project site at 20 feet bgs. Because the maximum depth of excavation during project construction is approximately five feet for installation of utility lines, construction groundwater dewatering is not anticipated. Therefore, impacts related to the decrease of groundwater supplies or interference with groundwater recharge during construction would be less than significant. No mitigation is required.

Operation. Water service for the proposed project would be provided by the City. The City's water utility system was purchased from Pacific Gas and Electric Company (PG&E) in 1959 by issuing voter-approved water revenue bonds and is run by the Utilities Department with support from other City departments. As previously discussed, the City has multiple sources of water available for its use including Solano Project water from Lake Berryessa, State Water Project and Settlement Water, and groundwater from local wells. Therefore, operation of the proposed project would likely involve the use of both surface and groundwater sources for potable water. Water for the proposed project would be supplied by the Reynolds Ranch Reservoir, an approximately 0.55-million-gallon City-owned water tank located adjacent to McMurtry Lane. The Reynolds Ranch Reservoir is an upper zone system that serves higher elevation properties. This reservoir stores City water and currently serves the existing Cheyenne Estates, Reserve at Browns Valley Phase 2 (Knoll Creek), and Reserve at Browns Valley Phase 3 (Rogers Ranch) developments.

The 2020 UWMP indicates the City does not expect any water supply shortages in future years, even in a drought. A drought risk assessment showed that even in five consecutive dry years, the City has enough supply to meet customer demands. The City also has the ability to put measures in place to reduce demand in response to water shortages, if necessary. Additionally, because the proposed project is consistent with the existing land use and zoning designation for the project site, the water demand associated with development of the site was assumed in the City's future water demand projections. Therefore, it is expected the City would rely on existing groundwater entitlements to

60 City of Vacaville. n.d.-a. *Groundwater Sustainability.* Website: https://www.cityofvacaville.gov/government/utilities/groundwater-sustainability?locale=en (accessed April 3, 2024).
61 State Water Resources Control Board Division of Water Rights. 2004. Op cit.
62 City of Vacaville. 2023. *City of Vacaville 2020 Amended Urban Water Management Plan.* August.
63 Ibid.

serve the proposed project's water needs. Therefore, implementation of the proposed project would not contribute to a substantial depletion of groundwater supplies.

Development of the proposed project would result in an increase in impervious surfaces on the project site from approximately 5,303 square feet to approximately 213,856 square feet (approximately 63 percent of the developable area), which would decrease opportunities for infiltration and groundwater recharge. According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCA) Web Soil Survey, the soils on the project site consist of approximately 61 percent Altamont clay (AcC and AcF2), 14 percent Dibble-Los Osos loams (DbF2), and 25 percent Rincon clay loam (RoC).[64] The RoC soils present on the project site are considered have a high runoff potential and the AcC, AcF2, and DbF2 soils are considered to have very high runoff potential.[65] Although some stormwater may infiltrate at the site under existing conditions, because the soils present on-site have a high to very high runoff potential, infiltration at the project site is likely to be low. Furthermore, perched groundwater at the project site occurs at approximately 20 feet bgs and is bound by underlying claystone bedrock, which likely prevents substantial recharge to the Solano Subbasin. As such, the project site is not considered a significant source of groundwater recharge.

Because implementation of the proposed project would not contribute to a substantial depletion of groundwater supplies and the project site is not a significant source of groundwater recharge, the proposed project would not result in a significant decrease in groundwater recharge that would result in a net deficit in aquifer volume or a lowering of the local groundwater table level. Therefore, impacts related to the decrease of groundwater supplies or interference with groundwater recharge would be less than significant, and no mitigation is required. **This topic will not be analyzed further in the EIR.**

c. Would the project 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:

i. Result in substantial erosion or siltation on- or off-site; ***(Less Than Significant with Mitigation Incorporated)***

Under existing conditions, stormwater from the project site either infiltrates at the site or sheet flows into the two ephemeral drainages which drain south and off-site. Off-site, stormwater is discharged into the concrete lined channel, Putah South Canal. Putah South Canal starts at Putah Diversion Dam and runs easterly for approximately three miles, before turning south to follow the edge of the foothills for approximately 30 miles. The canal terminates near the town of Cordelia and provides irrigation water to farmland in Solano County.[66] With implementation of the proposed project, an on-site stormwater collection system consisting of 15- to 24- inch storm drainpipes, with

64 U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS). Web Soil Survey, Soil Map. Website: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx (accessed April 2, 2024).

65 Ibid.

66 United States Bureau of Reclamation. *Projects and Facilities, Damns, Putah Dam.* Website: https://www.usbr.gov/projects/index.php?id=234 (accessed April 2, 2024).

associated catch basins and/or manholes, would be installed throughout the project area to direct on-site storm water flows to an approximately 15,000-square-foot landscaped detention pond located at the northern end of the project site.

The proposed project would also reconnect and preserve the two existing ephemeral streams with a conservation easement, culvert approximately 88.7 linear feet of the ephemerally drainages, and result in the fill of the 0.311-acre stock pond/seasonal wetland. A portion of the eastern ephemeral drainage will be culverted so that a road may be constructed across the drainage and provide access into the development. In addition, McMurtry Lane would be widened and the existing culvert along the western ephemeral drainage, which connects the drainage beneath the lane, would be replaced and extended. The loss of 88.7 linear feet of ephemeral drainage will be mitigated through the creation of 164.3 linear feet of new ephemeral drainage to re-connect and restore the historical drainage through the project site. Mitigation for the loss of the 0.311-acre stock pond/seasonal wetland will be completed on-site, just east of the drainage along the southern portion of the project site, at a ratio of just over 1:1 impacted to created.

The on-site stormwater collection system and proposed detention pond would manage and treat storm water runoff before discharging flows into existing 24-inch storm drain infrastructure located along Preserve Lane to the south of the project site. In addition, the detention pond would include rock riprap energy dissipaters which would neutralize the erosive force of concentrated, moving stormwater in order to protect soil from turbulence and high velocities, which can otherwise cause scour erosion. The proposed detention pond would be designed to collect, treat, and convey the 10- and 100-year post-development peak flows for the project site in accordance with the Small Phase II MS4 Permit and City requirements, as detailed in **Mitigation Measures HYD-1 and HYD-2,** above.

Stormwater from the project site currently either infiltrates at the site or sheet flows into the two ephemeral drainages which drain south and off-site. During construction activities, more than one acre of soil would be disturbed. During grading and other construction activities, soil would be exposed, drainage patterns would be temporarily altered, and there would be an increased potential for soil erosion and siltation compared to existing conditions. Additionally, during a storm event, soil erosion and siltation could occur at an accelerated rate. As specified in **Mitigation Measures HYD-1 and HYD-2**, the proposed project would be required to comply with the Construction General Permit and the VMC, which require the preparation of a SWPPP to identify construction BMPs that comply with the CASQA *Stormwater BMP Handbook for Construction* to be implemented during construction of the proposed project to reduce impacts on water quality, including those impacts associated with soil erosion and siltation. Compliance with the requirements in the Construction General Permit and the VMC, including implementation of construction BMPs, would ensure that construction impacts related to on- or off-site erosion or siltation would be less than significant.

After the completion of project construction, the proposed project would not significantly alter the existing drainage pattern of the site. However, operation of the proposed project would result in an increase in impervious surfaces on the project site from approximately 5,303 square feet to approximately 213,856 square feet (approximately 63 percent of the developable area), which would result in a net increase in stormwater runoff that could lead to downstream erosion in receiving waters. However, as discussed above, the proposed project would be required to prepare

a post-construction BMP design plan and storm water management facilities O&M plan in accordance with the Small Phase II MS4 Permit that details the post-construction BMPs intended to control the volume, rate, and potential pollutant load of storm water runoff, as specified in **Mitigation Measure HYD-2**. In addition, the proposed project would be required to prepare a Final SWMP, which would demonstrate that the stormwater facilities meet water quality treatment and stormwater rate and volume requirements in compliance with the Small Phase II MS4 Permit, as specified in **Mitigation Measure HYD-3**. Further, the proposed project would also be required to submit a Final SDMP Report to the City of Vacaville, for review and approval, in compliance with the City's *Storm Drain Design Standards Section DS 4,* as specified in **Mitigation Measure HYD-4**. With implementation of **Mitigation Measures HYD-2, HYD-3**, **and HYD-4**, operational impacts related to on- or off-site erosion or siltation would be less than significant. **This topic will not be analyzed further in the EIR.**

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; ***(Less Than Significant with Mitigation Incorporated)***

As previously discussed, project construction would comply with the requirements of the Construction General Permit and the City's Municipal Code and would include the preparation and implementation of a SWPPP pursuant to **Mitigation Measures HYD-1 and HYD-2**. The SWPPP would include construction BMPs (e.g., soil binders, straw mulch, non-vegetative stabilization, fiber rolls, sandbag barrier, straw bale barrier, stabilized construction entrance/exit, stabilized construction roadway, and entrance/outlet tire wash) to control the rate and amount of on-site surface runoff and direct flows to ensure that stormwater runoff from the construction site does not result in on- or off-site flooding. With adherence to **Mitigation Measures HYD-1 and HYD-2**, construction impacts related to a substantial increase in the rate or amount of surface runoff that would result in flooding and impede or redirect flood waters would be less than significant.

Under existing conditions, the project site consists of approximately 5,303 square feet of impervious surface area. Development of the proposed project would result in an increase in the amount of impervious surface area on the project site to approximately 213,856 square feet (approximately 63 percent of the developable area), which could have the potential to increase the volume and rate of stormwater runoff discharged from the project site. The proposed project would include an on-site stormwater collection system consisting of 15- to 24- inch storm drainpipes, with associated catch basins and/or manholes, would be installed throughout the project area to direct on-site storm water flows to an approximately 15,000-square-foot landscaped detention pond located at the northern end of the project site. The on-site stormwater collection system and proposed bioswales would be used for stormwater treatment and peak flow mitigation prior to discharging into the City's storm drain system, in compliance with the requirements of the VMC, Small Phase II MS4 Permit and the City's *Storm Drain Design Standards Section DS 4*, as specified in **Mitigation Measures HYD-2, HYD-3, and HYD-4**. Therefore, with implementation of the requirements of the VMC, Small Phase II MS4 Permit, mitigation measures, and the City's Storm Drain Design Standards Section DS 4, including the implementation of LID techniques to address the volume and rate of stormwater runoff in the post-project condition, the proposed project would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site and impacts would be less than significant. **This topic will not be analyzed further in the EIR.**

iii. 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 ***(Less Than Significant with Mitigation Incorporated)***

Stormwater Drainage System Capacity. The proposed project would include an on-site stormwater collection system consisting of 15- to 24- inch storm drainpipes, with associated catch basins and/or manholes, which would direct on-site storm water flows to an approximately 15,000-square-foot landscaped detention pond located at the northern end of the project site. The on-site stormwater collection system and proposed detention pond would manage the rate and volume of storm water runoff before discharging flows into existing 24-inch storm drain infrastructure located in Preserve Lane to the south of the project site, so as not to exceed the capacity of the storm drain system in compliance with the requirements of the Small Phase II MS4 Permit and the City's *Storm Drain Design Standards Section DS 4*, as specified in **Mitigation Measures HYD-3 and HYD-4**. Therefore, the proposed project would not contribute to an exceedance of existing or planned stormwater drainage systems, and impacts would be less than significant.

Polluted Runoff. Implementation of BMPs to reduce pollutants of concern in stormwater runoff in compliance with the Construction General Permit, Small Phase II MS4 Permit, and City regulations, as detailed in **Mitigation Measures HYD-1 through HYD-4,** such as the use of an on-site landscaped detention pond and rock riprap energy dissipaters to manage the volume of stormwater flows to minimize erosion and siltation and to target and reduce pollutants of concern, would ensure that the proposed project would result in less than significant impacts related to discharge of polluted runoff during project construction and operations. Therefore, the proposed project would not contribute additional sources of polluted runoff, and impacts would be less than significant. **This topic will not be analyzed further in the EIR.**

iv. Impede or redirect flood flows? ***(Less Than Significant Impact)***

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) No. 06095C0163E (effective 5/4/2009), the project site is located within Zone X, which is identified as an area of minimal flood hazard.[67] Further, the project site is not within a 100-year floodplain. As the proposed project would not place improvements and structures within a 100-year floodplain or an identified flood hazard area, the proposed project would not impede or redirect flood flows. Therefore, impacts related to impeding or redirecting of flood flows would be less than significant, and no mitigation is required. **This topic will not be analyzed further in the EIR.**

d. In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation? ***(Less Than Significant with Mitigation Incorporated)***

Flooding. As discussed above, according to FEMA FIRM No. 06095C0163E, the entirety of the project site is located in Zone X, which is identified as an area of minimal flood. During construction, BMPs would be implemented to ensure that during a rain event, pollutants would be retained on site and would be prevented from reaching downstream receiving waters in accordance with **Mitigation**

[67] Federal Emergency Management Agency (FEMA). 2009. *Flood Insurance Rate Map (FIRM) No. 06095C0163E.* May 4.

Measures HYD-1 and HYD-2. During operation, the proposed project would include an approximately 15,000-square-foot landscaped detention basin, pursuant to the requirements of **Mitigation Measures HYD-3 and HYD-4**, which would ensure that pollutants would be treated and prevented from reaching downstream receiving waters. In addition, according to the California Department of Water Resources Division of Safety of Dams, the project site is not located within the dam inundation area.[68] Therefore, the proposed project would not result in the release of pollutants due to flooding cause by a dam failure.

Tsunami. Tsunamis are ocean waves generated by tectonic displacement of the seafloor associated with shallow earthquakes, seafloor landslides, rock falls, and exploding volcanic islands. Tsunamis can have wavelengths of up to 120 miles and travel as fast as 500 miles per hour across hundreds of miles of deep ocean. Upon reaching shallow coastal waters, the waves can reach up to 50 feet in height, causing great devastation to near-shore structures. The project site is located approximately 57 miles from the Pacific Ocean shoreline which is well outside of the Tsunami zone. Therefore, the project site would not be subject to inundation from tsunamis, and there would be no risk of release of pollutants due to inundation from tsunami.

Seiches. Seiching occurs when seismic ground shaking induces standing waves (seiches) inside water retention facilities (e.g., reservoirs and lakes). Such waves can cause retention structures to fail and flood downstream properties. The nearest sizeable, enclosed body of water to the project site is Lake Curry located approximately eight miles east of the project site. Because impacts from seiches are very localized and the project site is located miles from enclosed bodies of water, implementation of the proposed project would not result in the release of pollutants due to inundation cause by a seiche. Therefore, the project site would not be subject to inundation from seiche waves, and there would be no risk of release of pollutants due to inundation from seiche.

With implementation of **Mitigation Measures HYD-1 through HYD-4**, including development of an approximately 15,000-square-foot landscaped detention pond that would address the volume and rate of post-project stormwater flows, and because the project site is not within a tsunami or seiche zone, impacts of the proposed project would be less than significant. **This topic will not be analyzed further in the EIR.**

*e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? **(Less than Significant with Mitigation Incorporated)***

The project is within the jurisdiction of the Central Valley RWQCB, which has adopted a Water Quality Control Plan (i.e., Basin Plan)[69] which designates beneficial uses for all surface and

[68] Department of Water Resources, Division of Safety of Dams. n.d. *Dam Breach Inundation Map Web Publisher.* Website: https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2 (accessed April 3, 2024).

[69] California Regional Water Quality Control Board Central Valley Region (RWQCB). 2019c. *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region*. Fifth Edition. Website: https://www.waterboards.ca.gov/centralvalley/water_issues?basin_plans/ sacsjr_201902.pdf (accessed June 19, 2024).

groundwater within its jurisdiction and establishes the water quality objectives and standards necessary to protect those beneficial uses. As previously discussed, the project would comply with existing NPDES permit requirements, including the Construction General Permit and Small Phase II MS4 Permit, and would implement construction and operational BMPs to reduce pollutants of concern in stormwater runoff as detailed in **Mitigation Measures HYD-1 through HYD-4**. Compliance with these regulatory requirements would ensure that the proposed project would not degrade or alter water quality, which would cause the receiving waters to exceed the water quality objectives or impair the beneficial use of receiving waters. As such, the proposed project would not result in water quality impacts that would conflict with the Basin Plan. Construction and operational impacts related to a conflict with the Basin Plan would be less than significant.

The Sustainable Groundwater Management Act (SGMA) was enacted in September 2014. SGMA requires governments and water agencies of high- and medium-priority basins to halt overdraft of groundwater basins. SGMA requires the formation of local Groundwater Sustainability Agencies (GSAs), which are required to adopt Groundwater Sustainability Plans to manage the sustainability of the groundwater basins. The project site is located within the Solano Subbasin of the Sacramento Valley Groundwater Basin, which the DWR designates as a medium-priority basin.

On January 18, 2024, the DWR approved the Solano Subbasin Groundwater Sustainability Plan (GSP),[70] which provides a detailed roadmap for the Solano Subbasin to maintain long-term groundwater sustainability and went into effect when it was submitted to DWR on January 31, 2022. The GSP was the product of significant collaboration amongst various water management entities in the Subbasin, including the five GSAs comprising the Solano Subbasin GSA Collaborative, who worked together to fulfill the requirements of the SGMA. Solano Subbasin GSA Collaborative incudes the Solano GSA, City of Vacaville GSA, Sacramento County GSA, Solano Irrigation District GSA, and the Northern Delta GSA. The GSP indicates that the groundwater conditions in the Subbasin suggest the Subbasin is currently sustainable and anticipated to remain sustainable under projected future conditions. Although an area in the northwestern portion of the Subbasin was identified to have recent localized lowered groundwater levels, groundwater levels reflecting the amount (storage) and movement of water in the groundwater system generally exhibit stable long-term trends. In addition, the GSP indicates that groundwater quality in the Subbasin is generally suitable for all beneficial uses, most notably for drinking water uses that typically have the most restrictive standards for water quality.

Implementation of the GSP will involve regular monitoring and reporting on conditions in the Subbasin and performing management actions indicated in the GSP. Several potential projects focused on enhanced groundwater recharge in the northwestern part of the Subbasin are also noted for consideration as part of GSP implementation. Table 4.10.A below summarizes the various projects and management actions (PMAs) identified in the GSP.

[70] Solano Subbasin Groundwater Sustainability Agencies Collaborative. 2021. *Solano Subbasin Groundwater Sustainability Plan.* November 30.

Table 4.10.A: Solano Subbasin Projects and Management Actions

PMA	Description
Ongoing PMAs	
Municipal and industrial Water Use Efficiency Outreach and Implementation	Develop Outreach materials and incentives for municipal and industrial water users to increase water use efficiency
PMAs Developed for Implementation	
City of Vacaville Recycled Water	Develop City's Recycled Water Program as recommended in the 2020 Recycled Water Master Plan Feasibility Study
Westside Streams Stormwater Capture Project	Develop an implementation schedule for potential projects in the Northwest Focus Area to enhance groundwater recharge and support local groundwater sustainability
Rainfall Managed Aquifer Recharge Demonstration Project	Evaluate the use of specific managed aquifer recharge activities on local farms to generate multiple benefits for groundwater sustainability and stormwater management
Potential PMAs	
Other Groundwater Recharge Opportunities	Several conceptual recharge projects have been identified along Ulatis Creek to support ongoing groundwater sustainability in the Solano Subbasin. The Nature Conservancy has provided GSAs with guidelines to implement on-farm, multi-benefit groundwater recharge efforts that would also be applicable in the Solano Subbasin
Grower Education Related to On-Farm Practices for Sustainable Groundwater Management	Use of Solano Agricultural Scenario Planning System (SASPS), a web-based application that GSAs and other local agencies can use to design voluntary programs to engage agricultural producers in on-farm sustainable groundwater management projects
Demand Management	Develop a program that would incentivize voluntary participants to reduce water consumption
Groundwater Trading Institution	Monitor Solano Subbasin conditions and consider a groundwater trading market to increase flexibility (options) to respond to potential demand management programs
Education and Collaboration	The Solano Resource Conservation District, The Freshwater Trust, Local Government Commission, and RD 2068 all provide groundwater and water conservation education to classrooms and growers within the Solano Subbasin
Well Owner Outreach and Education	Develop and implement education and outreach about private domestic well monitoring
Participation in Other Water Resources Management Programs	Implement other groundwater management strategies including further use of recycled water, expanded conjunctive water management, changes to well regulations, and other actions

Source: *Solano Subbasin GSP* (2021).
GSA = Groundwater Sustainability Agency
GSP = Groundwater Sustainability Plan
PMA = Projects and Management Actions

As previously discussed, groundwater was encountered at the project site at 20 feet bgs. The proposed project would require excavation to a maximum depth of five feet below the existing grade for installation of utility lines. Therefore, groundwater dewatering would not be required during construction of the proposed project and construction of the proposed project would not conflict with or obstruct implementation of the GSP.

The proposed project would increase water use, which would be partially obtained from groundwater. However, as previously discussed, the 2020 UWMP completed for the City indicates the City does not expect any water supply shortages in future years, even in a drought. A drought risk assessment showed that even in five consecutive dry years, the City has enough supply to meet customer demands. The City also has the ability to put measures in place to reduce demand in response to water shortages, if necessary.[71] Additionally, the GSP established management actions to ensure that future development will not significantly impact groundwater resources.

Recharge of the Solano Subbasin primarily comes from direct percolation of rainfall and return flows of applied water by agricultural and municipal users.[72] As described above, soils on the project site consist of approximately 61 percent AcC and AcF2, 14 percent DbF2, and 25 percent RoC.[73] The RoC soils present on the project site are considered have a high runoff potential and the AcC, AcF2, and DbF2 soils are considered to have very high runoff potential.[74] Although some stormwater may infiltrate at the site under existing conditions, because the soils present on-site have a high to very high runoff potential, infiltration at the project site is likely to be low. Furthermore, perched groundwater at the project site occurs at approximately 20 feet bgs and is bound by underlying claystone bedrock, which likely prevents substantial recharge to the Solano Subbasin. As such, the project site is not considered a significant source of groundwater recharge. Nevertheless, the proposed project would include an on-site stormwater collection system consisting of 14- to 24- inch storm drainpipes, with associated catch basins and/or manholes, throughout the project area to direct on-site storm water flows to an approximately 15,000-square-foot landscaped detention pond located at the northern end of the project site. The on-site stormwater collection system and proposed detention pond, including rock riprap energy dissipaters, would collect on-site stormwater and be used for stormwater treatment and peak flow mitigation prior to discharging into the City's storm drain system in compliance with the requirements of the VMC and Small Phase II MS4 Permit, as detailed in **Mitigation Measures HYD-2 and HYD-3**. For these reasons, the proposed project would not conflict with or obstruct the implementation of a sustainable groundwater management plan. Therefore, construction and operational impacts related to conflict with, or obstruction of water quality control plans or sustainable groundwater management plans would be less than significant with mitigation incorporated. **This topic will not be analyzed further in the EIR.**

71 City of Vacaville. 2023. *City of Vacaville 2020 Amended Urban Water Management Plan.* August.

72 Solano Subbasin Groundwater Sustainability Agencies Collaborative. 2021. *Solano Subbasin Groundwater Sustainability Plan*. November 30.

73 United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS). Web Soil Survey. Website: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx (accessed April 2, 2024).

74 Ibid.

4.11 LAND USE AND PLANNING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	☐	☐	☒	☐
b. 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?	☐	☐	☒	☐

*a. Would the project physically divide an established community? **(Less Than Significant Impact)***

The physical division of an established community typically refers to the construction of a physical feature (e.g., an interstate highway or railroad tracks) or removal of a means of access (e.g., a local road or bridge) that would impair mobility within an existing community or between a community and outlying area. For instance, the construction of an interstate highway through an existing community may constrain travel from one side of the community to another; similarly, such construction may also impair travel to areas outside the community.

The project site is located in a semi-rural area in the City of Vacaville and is surrounded primarily by vacant lands to the north and west, and residential uses to the east and south. The proposed project would result in the annexation of 15.73 acres of land from Solano County into the City of Vacaville to develop a subdivision consisting of 20 single-family residential estate lots and associated roadway and utility improvements. The proposed project would not require the construction of any new infrastructure that would divide an established community and would not remove any means of access. The proposed project would not result in a physical division of an established community or adversely affect the continuity of land uses in the vicinity. Therefore, this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

*b. Would the project 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? **(Less Than Significant Impact)***

As stated in Section 2.1.4 of the Project Description, the proposed project is located within the City's Sphere of Influence (SOI) and the Urban Growth Boundary (UGB). According to the Vacaville General Plan, the SOI is a boundary that identifies land that the City may annex in the future for which urban services, if available, would be provided. The UGB indicates the maximum allowable extent of urbanization. Beyond this boundary, only agricultural or open space uses are typically permitted.

According to the General Plan Land Use Element,[75] the proposed project is currently designated as Hillside Agriculture (HA), which is intended for low-intensity agricultural uses and allows for the

[75] City of Vacaville. 2015. Vacaville General Plan Land Use Element. Website: https://www.ci.vacaville.ca.us/home/showpublisheddocument/5416/638157981726430000 (accessed June 21, 2024).

development of one residential unit per 20 acres. The proposed project is located in an unincorporated area of Solano County and has not been zoned by the City of Vacaville.

The proposed project would require a General Plan Amendment to change the General Plan designation for the site from Hillside Agriculture (HA) to Residential Estates (RE) and a Zoning Map Amendment to apply the RE-12 pre-zoning district to the project site. The RE designation is generally characterized by very low-density residential uses, while the RE-12 district is intended to provide for residential development in a semi-rural setting on lots with a minimum lot size of 12,000 square feet and permits residential densities between 0.5 and 3.0 dwelling units per acre.[76] The proposed project would have a density of 2.56 units per acre. In addition, the proposed project would also require a Tentative Map Approval, and Annexation approval from the Solano County Local Agency Formation Commission (LAFCO).

It should be noted that according to the California Environmental Quality Act (CEQA), policy conflicts do not, in and of themselves, constitute a significant environmental impact. Policy conflicts are considered to be environmental impacts only when they would result in direct physical impacts or are related to avoiding or mitigating environmental impacts. As such, associated physical environmental impacts are discussed in this Initial Study under specific topical sections. The proposed project would not result in any direct physical impacts that cannot be mitigated to a less than significant level. As a result of the proposed Annexation, General Plan Amendment and Zoning Map Amendment to Pre-Zone as RE-12, the proposed project would not conflict with any applicable land use plans, policies, or regulations that were adopted for the purpose of avoiding or mitigating an environmental effect and this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

[76] City of Vacaville. 2015c. Vacaville General Plan Land Use Element. Website: https://www.ci.vacaville.ca.us/home/showpublisheddocument/5416/638157981726430000 (accessed June 21, 2024).

4.12 MINERAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. 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?	☐	☐	☐	☒
b. 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?	☐	☐	☐	☒

*a. Would the project 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? **(No Impact)***

According to the Solano County General Plan, known mineral resource zones (MRZs) are located to the northeast of Vallejo, to the south and southeast of Green Valley, in areas south and east of Travis Air Force Base, and in pockets located within both Vacaville and Fairfield. Stone, gravel, sand, and clay mines are spread out around the County. MRZs are classified by the State Geologist on the basis of geologic factors and may fall into one of four general classifications (MRZ-1 through MRZ-4). MRZ-3 zones occur throughout the County while only one MRZ-2 zone is mapped near Vallejo and Benicia. MRZ-2 zones have the highest probability of having significant mineral deposits, while MRZ-3 zones are likely to have mineral deposits which may or may not be significant. Additionally, the City of Vacaville General Plan identifies three areas with the potential to contain mineral resources including along Cement Hill, in the Vaca Mountains, and the western hills, none of which are in the nearby vicinity of the project site.[77] As such, development of the proposed project would not result in the loss of availability of a known mineral resource of value to the region or residents of the State, and there would be no impact related to the availability of mineral resources. **This topic will not be analyzed further in the EIR.**

*b. Would the project 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? **(No Impact)***

Refer to Response 4.12 (a). The proposed project would not result in the loss of availability of any known locally important mineral resource recovery site. Therefore, no impact related to the availability of a mineral resource's recovery site would occur. **This topic will not be analyzed further in the EIR.**

[77] City of Vacaville, 2015a. *General Plan Conservation and Open Space Element*.

4.13 NOISE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
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 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 2 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 following provides an overview of the characteristics of sound and the regulatory framework that applies to noise within the vicinity of the project site. The existing noise environment in and around the project site is also described.

Characteristics of Sound. Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, or sleep. Several noise measurement scales exist that are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative intensity of a sound. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a ten-fold increase in acoustic energy, while 20 dB is 100 times more intense and 30 dB is 1,000 times more intense. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness; and similarly, each 10 dB decrease in sound level is perceived as half as loud. Sound intensity is normally measured through the A-weighted decibel (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. The A-weighted sound level is the basis for 24-hour sound measurements which better represent how humans are more sensitive to sound at night. As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level would be. Geometric spreading causes the sound level to attenuate or be reduced, resulting in a six dB reduction in the noise level for each doubling of distance from a single point source of noise to the noise sensitive receptor of concern.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq}, the community noise equivalent level (CNEL), and the day-night average level (L_{dn}) based on dBA. L_{dn}, sometimes denoted as DNL, represents the time varying noise over a 24-hour period, with a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours).

L_{dn} is similar to the CNEL scale, but without the adjustment for events occurring during the evening relaxation hours of 7:00 p.m. to 10:00 p.m.

Regulatory Framework. The City addresses noise in the Noise Element of the General Plan and in Section 14.09.240.140 of the VMC. The Noise Element of the City's General Plan provides an understanding of existing and future noise conditions within the City, establishes a basis for evaluating potential noise impacts on future development, and includes policy statements to guide public and private planning to attain and maintain acceptable noise levels. The City's Noise Compatibility Standards are shown in Table 4.13.A (Table NOI-3 in the City's General Plan) below. As shown in Table 4.13.A, the "Normally Acceptable" noise level for single-family residential uses is 60 dBA L_{dn}, with a "Conditionally Acceptable" range between 55 dBA and 70 dBA. The "Normally Unacceptable" noise level is between 70 dBA and 75 dBA L_{dn}. Additionally, the following policies from the City's General Plan would be applicable to the proposed project:

- **Policy NOI-P1.1:** Require an acoustical analysis for all proposed projects that would locate noise sensitive land uses where the projected ambient noise level is greater than the respective "Normally Acceptable" noise level as indicated on Table NOI-3 and require mitigation of noise impacts that exceed the land use compatibility standards.

- **Policy NOI-P1.2:** Require that noise created by new transportation and non-transportation noise sources be mitigated, to the extent that is technically and economically feasible, to comply with the noise level standards of Table NOI-3.

- **Policy NOI-P2.1:** Reduce outdoor noise levels in existing residential areas, where economically and aesthetically feasible.

- **Policy NOI-P2.3:** Design subdivisions to minimize the transportation-related noise impacts to adjacent residential areas.

- **Policy NOI-P2.5:** Encourage the use of open space, earthen berms, parking, accessory buildings, and landscaping to buffer new and existing development from noise. Use sound walls only when other methods are not practical or when recommended by an acoustical expert as part of a mitigation program.

- **Policy NOI-P2.6:** Require that the effects of sound walls on noise levels in surrounding areas be considered and taken into account in the design, location, and construction of sound walls.

- **Policy NOI-P4.2:** Require the following construction noise control measures:

    - Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.

    - Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction area.

Table 4.13.A: City of Vacaville Noise Compatibility Standards

Land Use Category	Community Noise Exposure, L_{dn} or CNEL, dB 55 60 65 70 75 80 85
Residential – Low Density Single Family, Duplex, Mobile Homes	
Residential – Multi-Family	
Transient Lodging Motels, Hotels	
Schools, Libraries, Churches, Hospitals, Nursing Homes	
Auditoriums, Concert Halls, Amphitheaters	
Sports Arena, Outdoor Spectator Sports	
Playgrounds, Neighborhood Parks	
Golf Courses, Riding Stables, Water Recreation, Cemeteries	
Office Buildings, Business Commercial and Professional	
Industrial, Manufacturing, Utilities, Agriculture	

Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. Buildings are of conventional construction.
Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
Normally Unacceptable	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable	New construction or development should generally not be undertaken.

Source: *City of Vacaville General Plan* (2010).
CNEL = community noise equivalent level
dB = decibel
L_{dn} = day-night average level

- Utilize "quiet" air compressors and other stationary noise sources where technology exists.
- Limit hours of operation of outdoor noise sources through conditions of approval.

Section 8.10.060(O) of the VMC prohibits construction activities within 500 feet from any occupied residence between the hours of 7:00 p.m. to 7:00 a.m., Monday through Saturday, and anytime on Sundays or holidays. These restrictions do not apply to interior work, construction, repair work or grading activities that are performed by or under the direction of the homeowner at his or her residence on a Sunday or holiday, provided such work is performed only between the hours of 8:00 a.m. and 7:00 p.m.

Because the City of Vacaville has yet to establish vibration thresholds related to potential damage, vibration standards included in the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment Manual* (FTA Manual) (FTA 2018)[78] are used in this analysis. The criteria for environmental impact from ground-borne vibration are based on the maximum levels for a single event. FTA guidelines show that a vibration level of up to 0.5 inch per second (in/sec) in peak particle velocity (PPV) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster) and would not result in any construction vibration damage. For a nonengineered timber and masonry building, the construction building vibration damage criterion is 0.2 in/sec in PPV.

Existing Noise Conditions. Certain land uses are considered more sensitive to noise than others. Examples of these include residential areas, educational facilities, hospitals, childcare facilities, and senior housing. The project site is located in an area surrounded by single-family homes.

Existing Ambient Noise Level Measurements. To quantify the existing ambient noise environment in the project vicinity, the Environmental Noise and Vibration Assessment included continuous (24-hour) noise level measurements at two locations near the project site. A summary of the noise level measurement survey results is provided in Table 4.13.B. Appendix D contains the complete results of the noise monitoring. The sound level meters were programmed to record the maximum, minimum, and average noise levels at each site during the survey. The maximum value, denoted L_{max}, represents the highest noise level measured. The average value, denoted L_{eq}, represents the energy average of all the noise received by the sound level meter microphone during the monitoring period. The minimum value, denoted L_{min}, represents the lowest noise level measured. Larson Davis Laboratories model 706RC precision integrating sound level meters were used for the ambient noise level measurement survey. The meters were calibrated before and after use with a CAL 200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

[78] Federal Transit Administration (FTA). 2018. Office of Planning and Environment. *Transit Noise and Vibration Impact Assessment Manual, FTA-VA-90-1003-06*. September.

Table 4.13.B: Long-Term and Short-Term Ambient Noise Level Measurements

Location	Date	L_{dn} (dBA)	Daytime Noise Level (dBA)	Nighttime Noise Level (dBA)
			L_{eq}	L_{eq}
LT-1: On a utility pole on McMurtry Lane, approximately 200 feet west of the center of the Preserve Lane cul-de-sac	4/2/2024	52.4	39.9 – 58.6	39.8 – 49.3
LT-2: On a metal signpost on the west most end of White Stone Court, approximately 50 feet from the center of the cul-de-sac	4/2/2024	60.4	41.3 – 70.4	41.7 – 45.2

Source: LSA (2024).
Note: Daytime hours: 7:00 a.m. to 10:00 p.m. Nighttime hours: 10:00 p.m. to 7:00 a.m.
dBA = A-weighted decibels
L_{dn} = day-night average noise level
L_{eq}= equivalent continuous noise level

In California Building Industry Association versus Bay Area Air Quality Management District, the Supreme Court of California ruled that "CEQA generally does not require an analysis of how existing environmental conditions will affect a project's future users or residents."[79] With this ruling, CEQA no longer considers the impact of the environment on a project to be an environmental impact, unless the project could exacerbate an existing environmental hazard. Therefore, an environmental document is not required to include an evaluation of whether the project would have the potential to expose project site residential receptors to excessive noise from existing noise sources near the project site, and such an analysis is not included the impact analysis below. However, the City of Vacaville General Plan requires that a noise analysis be completed for a residential project to ensure that the residents are not exposed to noise levels in excess of General Plan standards. To address this requirement, an analysis of noise levels that would be experienced in the private exterior living areas as well as inside the proposed residences was conducted. That analysis is presented below.

Exterior Noise Assessment. The existing measured noise levels at the project site range from approximately 52.4 dBA L_{dn} to 60.4 dBA L_{dn}, based on existing noise levels measured between April 2, 2024, and April 3, 2024, in the vicinity of the project. As established in the City's General Plan, an exterior noise level of up to 60 dBA L_{dn} would be considered the standard for community noise exposure.

Based on the project site plan, the backyards of the proposed houses are considered as an exterior sensitive use. The exterior noise level measured south of the project site near McMurtry Lane was 52.4 dBA L_{dn}, which is below the City's 60 dBA L_{dn} exterior noise level standard. All other lots located farther from McMurtry Lane would experience lower noise levels due to distance attenuation and shielding from the other lots. Therefore, additional noise reduction measures would not be required.

[79] Supreme Court of California. *California Building Industry Assn. v. Bay Area Air Quality Management District*. (2015) 62 Cal.4th 369, 386.

Interior Noise Assessment. As discussed above, per the City's interior noise level standard, an interior noise level standard of 45 dBA L_{dn} or less is required for all noise-sensitive rooms. Based on a conservative estimate at second floor elevations, the expected future exterior noise levels at the residences closest to McMurtry Lane would be below 60 dBA L_{dn}, requiring a minimum noise reduction of no more than 15 dBA.

Based on reference information from transmission loss test reports for various Milgard windows[80], the necessary reduction can be achieved with standard building construction and standard windows with Sound Transmission Class (STC) ratings of 25–28. With standard windows with STC 25, interior noise levels would be below 45 dBA, and this noise level would not exceed the City's interior noise standard of 45 dBA L_{dn} for residential uses. Other façades on the project site are farther from surrounding roadways and would be exposed to lower traffic noise levels.

Noise Level Criteria for Short-Term Construction-Related Noise Level Increases. The FTA suggests a residential noise limit of 90 dBA L_{eq} for construction noise. This limit is applied to the proposed project.

a. Would the project 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 applicable standards of other agencies? ***(Less Than Significant Impact)***

Construction Noise Impacts. Implementation of the proposed project would include construction activities that would result in a temporary increase in ambient noise levels in the vicinity of the project site.

The closest sensitive receptors would be the existing single-family homes located approximately 40 feet south and the existing single-family homes located approximately 530 feet east of the project site. Project construction would result in short-term noise impacts to these receptors. Maximum construction noise would be short-term, generally intermittent depending on the construction phase, and variable depending on receiver distance from the active construction zone. The duration of noise impacts generally would be from one day to several days depending on the phase of construction. Project construction would occur for approximately eight months. The level and types of noise impacts that would occur during construction are described below.

Table 4.13.C lists maximum noise levels recommended for noise impact assessments for typical construction equipment, based on a distance of 50 feet between the equipment and a noise receptor. Construction-related short-term noise levels would be higher than existing ambient noise levels in the project area but would no longer occur once construction of the proposed project is complete. As shown in Table 4.13.C, construction activities would generate maximum noise levels ranging from 76 to 90 dB at a distance of 50 feet. The majority of construction activity would occur at an average distance of 50 feet, or more, from the nearest sensitive receptors. Assuming that the worst-case noise level of 90 dBA L_{max} at 50 feet were to occur for a full hour, the hourly noise level would be 90 dBA L_{eq}.

[80] Milgard Manufacturing. 2008. Various Transmission Loss Reports.

Table 4.13.C: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (%)[1]	Maximum Noise Level (L_{max}) at 50 ft[2]
Auger Drill Rig	20	84
Backhoes	40	80
Compactor (ground)	20	80
Compressor	40	80
Cranes	16	85
Dozers	40	85
Dump Trucks	40	84
Excavators	40	85
Flat Bed Trucks	40	84
Forklift	20	85
Front-end Loaders	40	80
Graders	40	85
Impact Pile Drivers	20	95
Jackhammers	20	85
Paver	50	77
Pickup Truck	40	55
Pneumatic Tools	50	85
Pumps	50	77
Rock Drills	20	85
Rollers	20	85
Scrapers	40	85
Tractors	40	84
Trencher	50	80
Welder	40	73

Source: *FHWA Roadway Construction Noise Model User's Guide,* Table 1 (FHWA 2006).
Note: Noise levels reported in this table are rounded to the nearest whole number.
[1] Usage factor is the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power.
[2] Maximum noise levels were developed based on Specification 721.560 from the Central Artery/Tunnel program to be consistent with the City of Boston's Noise Code for the "Big Dig" project.
FHWA = Federal Highway Administration
ft = foot/feet
L_{max} = maximum instantaneous sound level

While this level is quite high, it complies with the FTA 90 dBA L_{eq} limit for residential noise exposure from construction activity and would be unlikely to occur at this level and at the same location for a long duration. It should also be noted that construction could occur at distances as close as approximately 25 feet, resulting in maximum (L_{max}) noise levels of up to 96 dBA L_{max}. However, it is not expected that this would be of long duration. Therefore, the predicted maximum average (L_{eq}) noise level is 90 dBA L_{eq}, as noted above.

Construction noise associated with development of new streets would be similar to noise that would be associated with public works projects, such as a roadway widening or paving projects. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours.

Noise would also be generated during the construction phase by increased truck traffic on area roadways. A project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from the construction site. This noise increase would be of short duration and would likely occur primarily during daytime hours.

In addition to the reference maximum noise level, the usage factor provided in Table 4.13.C is used to calculate the hourly noise level impact for each piece of equipment based on the following equation:

$$L_{eq}(equip) = E.L. + 10\log(U.F.) - 20\log\left(\frac{D}{50}\right)$$

L_{eq} (equip) is the L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified time period, E.L. is the noise emission level of the particular piece of equipment at a reference distance of 50 feet, U.F. is the usage factor that accounts for the fraction of time that the equipment is in use over the specified period of time, and D is the distance from the receiver to the piece of equipment.

Each piece of construction equipment operates as an individual point source. Using the following equation, a composite noise level can be calculated when multiple sources of noise operate simultaneously:

$$Leq\ (composite) = 10 * \log_{10}\left(\sum_{1}^{n} 10^{\frac{Ln}{10}}\right)$$

Using the equations from the methodology above, the reference information in Table 4.13.C, and the construction equipment list provided, the composite noise level of each construction phase was calculated. The project construction composite noise levels at a distance of 50 feet would range from 74 dBA L_{eq} to 87 dBA L_{eq}, with the highest noise levels occurring during the grading phase.

Once composite noise levels are calculated, reference noise levels can then be adjusted for distance using the following equation:

$$Leq\ (at\ distance\ X) = Leq\ (at\ 50\ feet) - 20 * \log_{10}\left(\frac{X}{50}\right)$$

In general, this equation shows that doubling the distance would decrease noise levels by six dBA while halving the distance would increase noise levels by six dBA.

Table 4.13.D shows the nearest sensitive uses to the project site, their distance from the center of construction activities, and composite noise levels expected during construction. These noise level projections do not consider intervening topography or barriers.

Table 4.13.D: Potential Construction Noise Impacts at Nearest Receptor

Receptor (Location)	Composite Noise Level at 50 feet[1] (dBA L_{eq})	Distance from Center of Construction Activities (feet)	Composite Noise Level (dBA L_{eq})
Residential (South)	87	690	65
Residential (East)		720	64

Source: Compiled by LSA (2024).
[1] The composite construction noise level represents the grading phase which is expected to result in the greatest noise level compared to other phases.
dBA L_{eq} = average A-weighted hourly noise level

While construction noise will vary, it is expected that average noise levels during construction at the nearest sensitive use to the south would approach 65 dBA L_{eq} during the grading phase. Average noise levels during other construction phases would range from 51 dBA L_{eq} to 63 dBA L_{eq}. This is well below the FTA limit of 90 dBA L_{eq} for construction noise. Therefore, no noise reduction measures are required.

Long-Term Noise Impacts. The proposed project would generate long-term noise impacts from traffic noise sources, as discussed below. Based on Institute of Transportation Engineers (ITE) rates for single-family homes, the proposed project would result in an increase in ADT of approximately 200 along Preserve Lane, south of the project site. Because the existing number of homes along Preserve Lane north of Bent Tree Lane are greater than the proposed project, the existing ADT would be greater than 200. Since the proposed project does not double the traffic volume along Preserve Lane, the increase in noise would be less than three dBA resulting in less than perceptible increase in noise. Furthermore, the resulting noise level due to traffic along Preserve Lane would be well below 65 dBA L_{dn}. Therefore, all off-site traffic noise impacts would be less than significant, and the proposed project would not create a substantial permanent increase in ambient noise levels. **This topic will not be analyzed further in the EIR.**

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels? ***(Less Than Significant Impact)***

Ground-borne vibration from construction activity has the potential to be high when activities occur near project boundaries but would be mostly low to moderate as activities are more central to the project site. While there is currently limited information regarding vibration source levels, the levels shown in Table 4.13.E are utilized in this analysis and are based on the FTA Manual.

The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project boundary (assuming the construction equipment would be used at or near the project boundary). The formula for vibration transmission is provided below.

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

Table 4.13.E: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 ft	
	PPV (in/sec)	L_V (VdB)[1]
Vibratory Roller	0.210	94
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] RMS VdB re 1 µin/sec.
µin/sec = microinches per second
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity in decibels

As stated above, it would take a minimum of 0.2 in/sec PPV for damage to occur to a non-engineered timber and masonry building. The project site is bounded by single family residences to the south, vacant land followed by single family residences to the east, and vacant land to the north and west. The closest structure, located at 378 Preserve Lane, is approximately 40 feet from the project construction area limits. Utilizing the equation above, the operation of typical heavy construction equipment such as large bulldozers and drilling rigs at a distance of 40 feet would generate ground-borne vibration levels of 0.044 in/sec PPV which would not exceed the 0.2 in/sec PPV guideline that is considered safe for non-engineered timber and masonry buildings.

Therefore, impacts resulting in generation of excessive ground-borne vibration and ground-borne noise would be less than significant. **This topic will not be analyzed further in the EIR.**

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 2 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? ***(No Impact)***

The project site is not located within the vicinity of a private airstrip, an airport land use plan, or within two miles of a public airport or public use airport. The closest airport to the project site is the Nut Tree Airport, located approximately 2.5 miles southeast of the project site. The project site is not within the 65 dBA CNEL noise contours of this or any other airport.[81] Therefore, the proposed project would not expose people residing or working in the project area to excessive noise levels, and no impact would occur. **This topic will not be analyzed further in the EIR.**

[81] Solano County Airport Land Use Commission. 1988. Airport/Land Use Compatibility Plan: Nut Tree Airport and Vacaville Gliderport. May.

4.14 POPULATION AND HOUSING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐

*a. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? **(Less Than Significant Impact)***

The proposed project would include the annexation of 15.73 acres of land from Solano County into the City of Vacaville and the construction of 20 single-family residential estate lots for the future development of custom-built homes. Based on the household size of 2.56 persons per household, the proposed project would increase the local population by approximately 51 persons.[82] The population of the City is estimated to be approximately 101,918 persons as of July 1, 2022.[83] The anticipated population growth associated with the proposed project represents less than a one percent increase to the City's current population. The City's population is projected to grow by 1,987 persons to a total of 105,065 persons by 2040.[84] The proposed project represents approximately 2.5 percent of the population growth anticipated through 2040. Therefore, the proposed project would not result in substantial unplanned population growth in the area, and this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

*b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? **(Less Than Significant Impact)***

The project site is largely undeveloped, with the exception of an existing a single-family home, a trailer, livestock enclosures, and a number of other associated storage structures, including a barn and shed. Although development of the proposed project would not demolish the existing residence and associated structures, these structures are currently vacant. As such, the existing structures would be retained within Lot 1. Therefore, the proposed project would not result in the displacement of people or housing, and it would not require the construction of replacement housing elsewhere. As a result, impacts would be less than significant. **This topic will not be analyzed further in the EIR.**

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82 2.56 persons per household x 20 units = 51 persons

83 United States Census Bureau. 2022. Census Quick Facts. Website: https://www.census.gov/quickfacts/fact/dashboard/solanocountycalifornia/PST045222 (accessed January 2, 2024).

84 Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC). 2017. *Projections 2040*. Website: projections.planbayarea.org (accessed July 2023).

4.15 PUBLIC SERVICES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. 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:				
i. Fire protection?	☐	☐	☒	☐
ii. Police protection?	☐	☐	☒	☐
iii. Schools?	☐	☐	☒	☐
iv. Parks?	☐	☐	☒	☐
v. Other public facilities?	☐	☐	☒	☐

a. Would the project 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:

i. Fire protection? ***(Less Than Significant Impact)***

Fire Protection. The City of Vacaville Fire Department (VFD) provides fire and emergency medical services (EMS) to approximately 28 square miles within the City of Vacaville, as well as EMS to approximately 160 square miles of unincorporated county land surrounding the City. The VFD is organized into two divisions: the Field Operations Division and the Support Services Division. The Operations Division is responsible for firefighting, emergency rescue and medical response, and hazardous materials response. The Field Operations Division is currently staffed with 91 employees.

The VFD operates five fire stations which are staffed 24 hours per day, seven days per week within the City. The closest Fire Station is Station 73, located at 650 Eubanks Court, which is approximately 1.5 miles southeast of the project site. Fire Station 71 is located at South Orchard Avenue, approximately three miles southwest of the project site; Fire Station 72 is located at 2001 Ulatis Drive, approximately 3.5 miles southeast from the project site; Fire Station 74 is located at 1850 Alamo Drive, approximately 4.5 miles south of the project site; and Fire Station 75 is located at 111 Cogburn Circle, approximately 5.5 miles southeast of the project site.

In 2022, the VFD received 13,204 calls for service, the majority (72 percent) being rescues and EMS related calls. VFD's average response time to arrive on scene was approximately 5.14 minutes.[85]

[85] Vacaville Fire Department Annual Report.2022. Website: https://indd.adobe.com/view/f8d6dcdd-9dcf-400a-b3b1-1bdcfea4f976 (accessed January 3, 2024).

As noted in Section 4.14, Population and Housing, the proposed project would result in an incremental increase in the population of the City and therefore incrementally increase the demand for emergency fire services and emergency medical services. However, the proposed project would be required to comply with all applicable codes for fire safety and emergency access. In addition, the VFD would review the site plans, fire truck access, and site fire flow design for the proposed project to ensure that adequate emergency access is provided prior to issuance of a building permit.

The VFD would continue providing services to the project site and would not likely require additional firefighters to serve the proposed project. The construction of a new or expanded fire station would also not be required. The potential increase in demand for service is not expected to adversely affect existing response times to the site or within the City. The Applicant would be required to pay a fire development impact fee of $425 per dwelling unit which would be directed towards maintaining adequate service levels, ensuring that any impact to fire protection that could result from the proposed project would be offset by development fees, and in effect, reduce potential impacts to a less than significant level.

Additionally, in January 2006, Community Facilities District No. 10 ("CFD 10 Cheyenne") was formed to provide fire and law enforcement services within the district. There have been two annexations into the district: Annex 1, which includes the Rancho Rogelio and Knoll Creek developments, and Annex 2, which includes the Reserves Phase 3 development. As such, the Fiscal Year 2023 and 2024 maximum special tax rate for the CFD 10 Cheyenne District is $2,532.05 dollars per single-family detached residential unit. The Fiscal Year 2023 and 2024 special tax rate levied for the district is $2,232.52 dollars per single-family detached residential unit. A total of 307 single-family detached units were levied for 2023 and 2024, totaling $685,383.64 dollars. As a result, the proposed project would be required to annex into CFD No. 10 to provide ongoing property tax contribution for fire and law enforcement services within this district. **This topic will not be analyzed further in the EIR.**

*ii. Police protection? **(Less Than Significant Impact)***

Police Protection. The City of Vacaville Police Department (VPD) provides law enforcement services within the City through three divisions: Administrative Services Division, Investigative Services Divisions, and the Field Operations Division. VPD operates out of a central station located at 660 Merchant Street, which is approximately 3.5 miles south of the project site. VPD has 103 sworn law enforcement officers and 58 full-time civilian employees.

As previously discussed, development of the proposed project would increase the population on the project site and incrementally increase demand for emergency police services to the project site. However, the Police Department would continue to provide service to the project site and would likely not require additional officers to serve the project. The construction of new or expanded police facilities would not be required. Additionally, the Applicant would be required to pay a police development impact fee of $949 per dwelling unit which would be directed towards maintaining adequate service levels, ensuring that any impact to police protection that could result from the proposed project would be offset by development fees, and in effect, reduce potential impacts to a less than significant level.

As stated above in Response 4.15 (a), the proposed project would be required to annex into CFD No. 10 to provide ongoing property tax contribution for fire and law enforcement services within this district. **This topic will not be analyzed further in the EIR.**

iii. Schools? ***(Less Than Significant Impact)***

Schools. The project site is located within the Vacaville Unified School District (VUSD) service area. School facilities operated by VUSD include twelve elementary schools (K-6), four middle schools, and six high schools.

The estimated number of students the proposed project would generate is derived by multiplying the number of students per dwelling unit (the student yield factor) by the number of dwelling units in the proposed project (12 new units). The California State Allocation Board Office of Public School Construction reports that the Statewide student yield factor of 0.7 students per dwelling unit is applicable for unified school districts.[86] Applying the Statewide average student yield factor, the proposed project would generate nine students.

Senate Bill (SB) 50, which revised the existing limitation on developer fees for school facilities, was enacted as urgency legislation which became effective on November 4, 1998, as a result of the California voters approving a bond measure (Proposition 1A). SB 50 established a 1998 base amount of allowable developer fees (Level One fee) for residential construction (subject to adjustment) and prohibits school districts, cities, and counties from imposing school impact mitigation fees or other requirements in excess or in addition to those provided in the statute.

The Vacaville Unified School District (VUSD) requires payment of a school impact fee of $5.17 per square foot of residential development. The project sponsor would be required to pay this fee, prior to issuance of a certificate of occupancy. The VUSD is responsible for implementing the specific methods for mitigating school impacts under the Government Code. These fees would be directed towards maintaining adequate service levels, which would ensure that any impact to schools that could result from the proposed project would be offset by development fees, and in effect, reduce potential impacts to a less than significant level. **This topic will not be analyzed further in the EIR.**

iv. Parks? ***(Less Than Significant Impact)***

Parks. Development of the proposed project could incrementally increase the use of parks within the vicinity of the project site (e.g., Magnolia Park, South Town Park, Cannon Station Park, and Meadowlands Park) and within the region (e.g., Lagoon Valley Regional Park). However, this increase in use is not expected to adversely affect the physical conditions of local and regional open space areas or recreational facilities or require the provision of new parks or facilities because the proposed project is anticipated to increase the City population by less than one percent. The proposed project would not result in a substantial increase in demand for park or recreation services in the vicinity, such that new facilities would be required to serve the project. Additionally, the Applicant would be required to pay a park and recreation development impact fee of $5,564 per dwelling unit and a greenbelt preservation fee of $296 per dwelling unit which would be directed towards funding the development of additional park sites and recreation facilities and the

[86] California Office of Public School Construction. 2019. *School Facility Program Handbook*. January.

acquisition of greenbelt property surrounding Vacaville. These fees would ensure that any impact to parks that could result from the proposed project would be offset by development fees, and in effect, reduce potential impacts to a less than significant level. Therefore, the proposed project would have a less than significant impact related to the provision of park and recreational facilities. **This topic will not be analyzed further in the EIR.**

v. Other public facilities? ***(Less Than Significant Impact)***

Other Public Facilities. Development of the proposed project could also incrementally increase demand for other public services, including libraries, community centers, and public health care facilities. However, due to the minimal increase in population, the proposed project would not result in a substantial increase in the use of these facilities, such that new facilities would be needed to maintain service standards, as these facilities are not currently overused and have capacity to serve new demand. Therefore, impacts to other public facilities would be less than significant. **This topic will not be analyzed further in the EIR.**

4.16 RECREATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project 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?	☐	☐	☒	☐
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

*a. Would the project 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? **(Less Than Significant Impact)***

Development of the proposed project could increase the use of parks within the vicinity of the project site (e.g., Ridgeview Park, Browns Valley Park, Centennial Park, Trower Park, and Alamo Creek Park) and parks within the region (e.g., Lagoon Valley Regional Park). Although the proposed project would incrementally increase the use of these facilities, this minor increase in use is not expected to result in substantial physical deterioration of local parks, trails, and community centers. The proposed project is anticipated to increase the City's population by less than one percent and these facilities are anticipated to have capacity to serve this minimal increase in demand. Additionally, the Applicant would be required to pay a park and recreation development impact fee of $5,564 per dwelling unit and a greenbelt preservation fee of $296 per dwelling unit, which would be directed towards funding the development of additional park sites and recreation facilities and the acquisition of greenbelt property surrounding Vacaville. These fees would ensure that any impact to parks that could result from the proposed project would be offset by development fees and, in effect, reduce potential impacts to a less than significant level. Therefore, the proposed project would have a less than significant impact on existing parks or other recreational facilities. **This topic will not be analyzed further in the EIR.**

*b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? **(No Impact)***

The proposed project would involve the subdivision of the project site for the development of future residential uses. The proposed project does not include or require the construction or expansion of existing public recreational facilities. Therefore, development of the proposed project and associated recreational opportunities for use by project residents would not result in additional environmental effects beyond those described in this document, and no impact would occur. **This topic will not be analyzed further in the EIR.**

4.17 TRANSPORTATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☒	☐	☐	☐
b. Conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b)?	☒	☐	☐	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d. Result in inadequate emergency access?	☐	☐	☒	☐

a. Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? ***(Potentially Significant Impact)***

The following Vehicle Miles Traveled (VMT) analysis is based on the Fehr & Peers' Technical Memorandum for the proposed project.[87] The City of Vacaville's Transportation Element has established goals, objectives, and policies that are intended to provide direction for transportation implementation in the City's unincorporated areas. Because vehicle trips to and from the proposed project would increase upon project implementation, the proposed project has the potential to conflict with a program, plan, ordinance, or policy addressing the circulation system. As described in the VMT analysis, the proposed project would significantly increase VMT beyond the city-wide average thresholds and would pose a potential adverse impact on the circulation system. **This topic will be analyzed further in the EIR.**

b. Would the project conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b)? ***(Potentially Significant Impact)***

The following VMT analysis is based on the Fehr & Peers Technical Memorandum for the proposed project[88] (Appendix E). The City's General Plan Transportation Element and Energy and Conservation Action Strategy (ECAS) Supplemental EIR (State Clearinghouse [SCH] #2020090526) addresses VMT in the City based on modeling by land use type and grouping similar land uses by Traffic Analysis Zones (TAZs).

VMT Screening Criteria. The City's Interim Guidelines present screening criteria, consistent with the Governor's Office of Planning and Research's 2018 (OPR) Technical Advisory,[89] to identify when a proposed land use project is anticipated to result in a less than significant impact without

87 Fehr & Peers. 2024a. *Technical Memorandum, McMurtry Creek Estates Rezone VMT Analysis*. January.

88 Ibid.

89 Governor's Office of Planning and Research (OPR). 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December 2018.

conducting a more detailed VMT analysis. A land use project needs only to meet one of the below screening criteria to have a presumption of less than significance.

Small Projects: The OPR Technical Advisory concludes that, absent of any information to the contrary, projects that generate 110 trips per day or less may be assumed to cause a less than significant transportation impact. This level of trip generation equates to about 10,000 square feet of office space, 11 single-family dwelling units, or 17 multi-family dwelling units. The project does not meet this screening criterion based on its proposed size and land use.

Project Near Transit Stations: Projects located within one-half mile of an existing "major transit stop" or an "existing stop along a high-quality transit corridor" may be presumed to have a less than significant impact absent substantial evidence to the contrary. The project site is not located within one-half mile of an existing major transit stop, or along a high-quality transit corridor, and therefore does not meet this screening criterion.

Affordable Residential Development: Projects consisting of a high percentage of affordable housing may be assumed to cause a less than significant transportation impact on VMT because they may improve jobs-housing balance and/or otherwise generate less VMT than market-based units. The project does not include an affordable housing component and therefore does not meet this screening criterion.

Redevelopment Projects: If a proposed redevelopment project leads to a net overall decrease in VMT (when compared against the VMT of the existing land uses), the project would lead to a less than significant transportation impact. The project consists of new single-family homes located on a vacant parcel and would not qualify as a redevelopment project.

Local Serving Retail: Trip lengths may be shortened and VMT reduced by adding "local-serving" retail opportunities that improve retail destination proximity. The Technical Advisory generally describes retail development including stores less than 50,000 square feet as locally serving. The project is not a local serving retail use and therefore does not meet this screening criterion.

Low VMT Generating Area: The City's Interim Guidelines provide VMT screening maps for the most common land use types in the city. The maps present an estimate of VMT by land use for TAZs throughout the City and are used to identify areas within the City that are "low VMT generating" areas. The TAZs are color coded based on the percentage difference in VMT compared to the citywide average VMT per thousand square feet or VMT per dwelling unit. The project site is currently designed as Hillside Agriculture (HA) in the General Plan and based on the City's VMT maps, the project is in an area that has a VMT that is 20 percent to 10.1 percent above the citywide average (for single-family land use), which does not qualify as a low VMT generating area. Therefore, the project does not meet this screening criterion.

As outlined above, the proposed project does not meet any of the screening criteria identified in the City's Interim Guidelines.

VMT Threshold of Significance for Residential Land Uses. For projects that do not qualify for any of the screening opportunities identified in the City's Interim Guidelines, the City of Vacaville applies the following thresholds of significance when analyzing the VMT transportation impacts of residential land use projects under CEQA.

1. The project would cause a significant transportation impact if it would generate an average VMT per dwelling unit that is greater than 85 percent of the citywide average for that land use type.

2. If the above threshold is exceeded, the project's VMT impact could still be found to be less than significant if it does not cause the total VMT generated by the City of Vacaville to increase.

For Threshold 1, the City's Interim Senate Bill (SB) 743 Implementation Guidelines provide additional specific VMT metrics by land use, based on outputs from the City's travel demand model for the Base Year (2015) and Cumulative Year (2050) conditions. The thresholds for single-family unit uses are presented in Table 4.17.A below and are based on average VMT per dwelling unit (DU). As shown in the table below, for single-family residences, the Base Year City-wide VMT is 86.4 VMT per DU and the Cumulative City-wide VMT is 76.6 VMT per DU. The proposed project would exceed the Base Year City-wide threshold of 73.4 VMT per DU by 33.4 percent and would exceed the Cumulative City-wide VMT threshold of 65.1 VMT per DU by 28.1 percent. As the proposed project would exceed both the Base Year and Cumulative Year City-wide average threshold, the proposed project would not meet this threshold criteria set forth in the City's Interim Guidelines, as detailed above, and impacts would be potentially significant.

Table 4.17.A: Average VMT Per Dwelling Unit Generated by City of Vacaville

Scenario	Land Use	Unit	(Average VMT per DU)	Threshold (Average VMT per DU)[1]	Project VMT Per DU	Comparison with Threshold
Base Year (2015)	Single-Family Unit	Dwelling Unit (DU)	86.4	73.4	98.0[1]	+33.4%
Cumulative Year (2050)	Single-Family Unit	Dwelling Unit (DU)	76.6	65.1	83.4	+28.1

Source: *Interim SB 743 Implementation Guidelines for City of Vacaville* (Fehr & Peers 2021).
Note: VMT for this TAZ is -4.9 percent to 0 percent of the regional average.
SB = Senate Bill
TAZ = Traffic Analysis Zone
VMT = vehicle miles traveled

For Threshold 2, as noted above, the City's Interim Guidelines provide VMT screening maps for the most common land use types in the City. As part of the proposed project, the land use designation would be changed from Hillside Agriculture (HA) to Residential Estates (RE) and the RE-12 pre-zoning district would be applied to the project site. Based on the proposed pre-zone and current land use changes, the proposed project would result in a net increase of 2,508 VMT in Base Year and a net increase of 4,964 VMT in the Cumulative Year, resulting in an increase to the total VMT generated by the City, as shown in Table 4.17.B below.

Table 4.17.B Total VMT Generated by City of Vacaville

Scenario	No Project	Plus Project	Increase
Base Year (2015)	6,785,800	6,788,308	2,508
Cumulative Year (2050)	9,570,720	9,575,684	4,964

Source: Fehr & Peers, 2023

As indicated in the table above, the proposed project would cause the total VMT generated by the City to increase. Therefore, the proposed project would not meet this threshold criteria set forth in the City's Interim Guidelines and impacts would be potentially significant. **This topic will be analyzed further in the EIR.**

c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? ***(Less Than Significant Impact)***

Vehicular access to the project site would be provided by the existing McMurtry Lane and Preserve Lane. As part of the proposed project, McMurtry Lane would be extended to the north and the existing cul-de-sac at Preserve Lane within the Reserves at Browns Valley Development would be removed to connect McMurtry Lane to Preserve Lane. A 22-foot-wide fire access road would be constructed around the perimeter of the development and connect to a new multi-use path on the eastern side of the proposed development, allowing access to White Stone Court, Rolling Sage Circuit, and Peacock Way within the Cheyenne Estates development.

The design, construction, and maintenance of project access locations and on-site roads would be in compliance with the VMC. Additionally, the proposed project would be required to comply with the City's **Standard Conditions of Approval (SCOAs) 186 and 188** discussed in Response 4.17 (a), as well as the following additional SCOAs required for all design permits, use permits, and planned developments that address public and private access roads:

> ***SCOA 192:*** Sight distance at the driveways intersecting public streets shall conform to Section 3-09 Stopping Sight Distance, and Standard Drawing 3-03 A and B and 3-04 of the Vacaville Standard Specifications. Special attention shall be given to Notes 1 and 2 on Standard Drawing 3-03 A and B. This may affect the location of any monument signs and landscaping, walls etc.
>
> ***SCOA 199:*** Intersections and expanded corners shall have a maximum 5-degree variance between 90-degree tangents and demonstrate that the corner is designed in accordance with City criteria. Developer's engineer shall adequately show that two American Association of State Highway and Transportation Officials (AASHTO) type SU-30 vehicle can turn the corner simultaneously, and that two cars can pass each other while making the turn with parked vehicles on each of the expanded corners to the satisfaction of the City Engineer and Director of Public Works. Developer shall also stripe the corners and intersections in accordance with City criteria.

SCOA 210: All private streets shall meet the minimum standards set forth in the City's Private Street Standards.

With implementation of these SCOAs, the proposed project would not substantially increase hazards due to a geometric design feature or incompatible uses, and impacts would be less than significant. **This topic will not be analyzed further in the EIR.**

d. Would the project result in inadequate emergency access? ***(Less Than Significant Impact)***

The design, construction, and maintenance of project access locations and on-site roads would be in compliance with the VMC and would meet all emergency access standards. The City of Vacaville Fire Department (VFD) would also review the proposed site plan and Fire Access Plan and would provide input on final design in relation to emergency access prior to issuance of a building permit. The proposed project would not alter or block adjacent roadways and implementation of the proposed project would not be expected to impair the function of nearby emergency evacuation routes. Additionally, the proposed project would be required to comply with the following City SCOAs required for all design permits, use permits, and planned developments that address access roads and emergency vehicle access:

SCOA 262: Access roads with a minimum unobstructed width of 20 feet shall be provided to the front and rear of structures. A minimum vertical clearance of 13 feet, 6 inches, shall be provided. Access roads shall be engineered to support the imposed load of the apparatus which is typically 25 tons and shall be designed per the City Public Work's Department Standards. An access road shall be provided to within 150 feet of all exterior walls of the first floor of the buildings. The route of the access road shall be approved by the Fire Marshal. Dead-end access roads in excess of 150 feet in length shall be provided with an approved means for turning around the apparatus. The final design of the turnaround shall be reviewed and approved by the Fire Marshal prior to installation.

SCOA 263: Every building shall be accessible to the City of Vacaville Fire Department apparatus by way of all-weather access roadways during the time of construction. These roads shall have a minimum unobstructed width of 20 feet and shall be required to have a minimum 'first lift' of pavement applied which shall support the imposed load of a fire apparatus which is typically 25 tons. The developer shall be required to provide the Fire Marshal with a site plan showing the location, width, grades, and cross section of the proposed access roads to be used during construction. Permits shall not be issued, and combustible construction shall not be allowed on the site until this site plan is reviewed and approved and stamped by the Fire Department.

SCOA 265: Prior to the issuance of any grading or building permits, the Fire Marshal shall approve the location of all Emergency Vehicle Access Roads within the project site. Unless otherwise approved, the access points to any Emergency Vehicle Access Roads shall be located at the end of cul-de-sacs and across utility easements and shall be kept locked at all times with a City 1C04 lock.

SCOA 266: Prior to the issuance of any grading or building permits, the Fire Marshal shall approve the location of all Emergency Vehicle Access Roads around the perimeter of the site.

Such Emergency Vehicle Access roads shall have average grades of not more than 20% with no section greater than 25 percent. The minimum width of such roads shall be 20 feet. Side slopes shall not exceed 4 percent. These roads shall be engineered to withstand a minimum load of 12 tons. At a minimum, this road shall be graded and compacted with decomposed granite or equivalent and shall be kept clear of all flammable vegetation at all times. The Fire Marshal may require the road to be surfaced with pavement if it is determined the road will not be or is not being properly maintained in accordance with these standards.

SCOA 267: The Fire Marshal shall identify on the final site development plans where metal grates shall be provided for emergency fire apparatus cross V-ditches in the event of a fire or emergency. These grates shall have a minimum width of 10 feet and be designed and engineered to accommodate a minimum load of 12 tons.

With implementation of these SCOAs, the proposed project would have a less than significant impact on emergency access. **This topic will not be analyzed further in the EIR.**

4.18 TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. 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:				
i. 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	☐	☒	☐	☐
ii. 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.	☐	☒	☐	☐

Assembly Bill (AB) 52, a law signed by then-Governor Jerry Brown in 2014, amended the California Environmental Quality Act (CEQA) to require tribal cultural resources to be considered as potentially significant cultural resources under the CEQA environmental review process. The procedures under AB 52 offer tribes an opportunity to take an active role in the CEQA process in order to protect tribal cultural resources. Pursuant to AB 52, if a Native American identifies tribal cultural resources within a project site, the Native American shall contact the local Lead Agency.

As discussed in Section 4.5, Cultural Resources, the findings of the Cultural Resources Evaluation[90] support a finding that there are no known historical resources listed or eligible for listing in the California Register of Historical Resources (CRHR) at the project site. To address tribal cultural resources, the Native American Heritage Commission (NAHC) was contacted on January 18, 2022, to conduct a Sacred Lands File search and provide a Native American Consultation List for the project. The NAHC responded on February 2, 2022, that the Sacred Lands File search was negative for the presence of tribal cultural resources and provided a list of Native American contacts to be sent project notification letters per AB 52.

[90] ECORP Consulting Inc. 2022. *Cultural Resources Inventory and Evaluation Report for the McMurtry Creek Estates Project.* March 2022.

a. Would the project 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:

i. 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

ii. 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. ***(Less than Significant with Mitigation Incorporated)***

AB 52, which became law on January 1, 2015, provides for consultation with California Native American tribes during the CEQA environmental review process, and equates significant impacts to "tribal cultural resources" with significant environmental impacts. Public Resources Code (PRC) Section 21074 states that "tribal cultural resources" are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe and are one of the following:

- Included or determined to be eligible for inclusion in the CRHR.
- Included in a local register of historical resources as defined in subdivision (k) of PRC Section 5020.1.
- 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. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

A "historical resource" (PRC Section 21084.1), a "unique archaeological resource" (PRC Section 21083.2(g)), or a "non-unique archaeological resource" (PRC Section 21083.2 (h)) may also be a tribal cultural resource if it is included or determined to be eligible for inclusion in the CRHR.

The consultation provisions of the law require that a public agency consult with local Native American tribes that have requested placement on that agency's notification list for CEQA projects. Within 14 days of determining that a project application is complete or a decision by a public agency to undertake a project, the lead agency must notify tribes of the opportunity to consult on the project if a tribe has previously requested to be on the agency's notification list. California Native American tribes must be recognized by the NAHC as traditionally and culturally affiliated with the project site and must have previously requested that the lead agency notify them of projects. Tribes have 30 days following notification of a project to request consultation with the lead agency.

The purpose of consultation is to inform the lead agency in its identification and determination of the significance of tribal cultural resources. If a project is determined to result in a significant impact on an identified tribal cultural resource, the consultation process must occur and conclude prior to adoption of a Negative Declaration (ND) or Mitigated Negative Declaration (MND), or certification of an Environmental Impact Report (EIR) (PRC Sections 21080.3.1, 21080.3.2, 21082.3).

Tribal Outreach and Consultation contacted the NAHC on January 18, 2024, to request a review of their Sacred Lands File (SLF) for any tribal cultural resources that might be present within the project site. Also requested were the names of Native American individuals and organizations that may have knowledge of cultural resources within the project site. Cameron Vela NAHC Cultural Resources Analyst, responded to the SLF search request on February 2, 2024, stating that the results were negative and that there were no known Native American cultural resources in the project site.

The City sent letters describing the proposed project and maps depicting the project site to Native American tribes that the NAHC identified as traditionally and culturally affiliated with the project area on February 12, 2024. On March 25, 2024, the City received a letter from the Yocha DeHe Cultural Resources Department regarding a request for a formal consultation on the proposed project. On May 16, 2024, during the consultation, Eric from Yocha DeHe Wintun Nation, requested that the proposed project include cultural sensitivity training and spot-monitoring 1–2 times per week. Additionally, the Yocha Dehe Wintun Nation sent the City mitigation measures for tribal cultural resources, which the City accepted with no modifications or revisions.

Tribal Cultural Resources. As discussed in Response 4.5 (a), Cultural Resources, a record search was conducted at the Northwest Information Center of the California Historical Resources Information System, which identified no archaeological or historical resources within the boundary of the project site. Field surveys conducted on March 11, 2022, did not identify any archaeological artifacts or built-environment historical resources at the project site. However, two historic period resources including a historic-era ranch property, and a historic-era Pacific Gas and Electric (PG&E) transmission line were identified; however, it was determined that these resources were not eligible for listing in the National Register of Historic Places (NRHP) or the CRHR under any criteria.

As such, no known significant archaeological or tribal cultural resources are located within the project site. Additionally, there are no tribal cultural resources within the project site that have been determined by the lead agency to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. The proposed project would not cause a substantial adverse change in the significance of a tribal cultural resource defined as 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 CRHR or in a local register of historical resources as defined in PRC Section 5020.1(k). With implementation of **Mitigation Measure CUL-1**, as detailed in Section 4.5, Cultural Resources, and **Mitigation Measures TCR-1 through TCR-6**, which incorporate the recommendations of the Yocha Dehe Wintun Nation, and compliance with Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the PRC, the potential construction-period discovery of previously unidentified human remains, which may be of tribal origin, would be reduced to a less than significant level. **This topic will not be analyzed further in the EIR.**

Mitigation Measure TCR-1 **Cultural Affiliation.** The Yocha Dehe Wintun Nation ("Tribe") traditionally occupied lands in Yolo, Solano, Lake, Colusa and Napa Counties. The Tribe has designated its Cultural Resources Committee("Committee") to act on the Tribe's behalf with respect to the provisions of this Protocol. Any human remains which are found in conjunction with Projects on lands culturally-affiliated with the Tribe shall be treated in accordance with Section III (Mitigation Measure TCR-3) of this Protocol. Any other cultural resources shall be treated in accordance with Section IV (Mitigation Measure TCR-4) of this Protocol.

Mitigation Measure TCR-2 **Inadvertent Discovery of Native American Human Remains.** Whenever Native American human remains are found during the course of a Project, the determination of Most Likely Descendant ("MLD") under California Public Resources Code Section 5097.98 will be made by the Native American Heritage Commission ("NAHC") upon notification to the NAHC of the discovery of said remains at a Project site. If the location of the site and the history and prehistory of the area is culturally-affiliated with the Tribe, the NAHC contacts the Tribe; a Tribal member will be designated by the Tribe to consult with the landowner and/or project proponents.

Should the NAHC determine that a member of an Indian tribe other than Yocha Dehe Wintun Nation is the MLD, and the Tribe is in agreement with this determination, the terms of this Protocol relating to the treatment of such Native American human remains shall not be applicable; however, that situation is very unlikely.

Mitigation Measure TCR-3 **Treatment of Native American Remains.** In the event that Native American human remains are found during development of a Project and the Tribe or a member of the Tribe is determined to be MLD pursuant to Section II (Mitigation Measure TCR-2) of this Protocol, the following provisions shall apply. The Medical Examiner shall immediately be notified, ground disturbing activities in that location shall cease and the Tribe shall be allowed, pursuant to California Public Resources Code Section 5097.98(a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and grave goods should be treated and disposed of with appropriate dignity.

The Tribe shall complete its inspection and make its MLD recommendation within forty-eight (48) hours of getting access to the site. The Tribe shall have the final determination as to the disposition and treatment of human remains and grave goods. Said determination may include avoidance of the human remains,

reburial on-site, or reburial on tribal or other lands that will not be disturbed in the future.

The Tribe may wish to rebury said human remains and grave goods or ceremonial and cultural items on or near the site of their discovery, in an area which will not be subject to future disturbances over a prolonged period of time. Reburial of human remains shall be accomplished in compliance with the California Public Resources Code Sections 5097.98(a) and (b).

The term "human remains" encompasses more than human bones because the Tribe's traditions call for the burial of associated cultural items with the deceased (funerary objects), and/or the ceremonial burning of Native American human remains, funerary objects, grave goods and animals. Ashes, soils and other remnants of these burning ceremonies, as well as associated funerary objects and unassociated funerary objects buried with or found near the Native American remains are to be treated in the same manner as bones or bone fragments that remain intact.

Mitigation Measure TCR-4 **Non-Disclosure of Location of Reburials.** Unless otherwise required by law, the site of any reburial of Native American human remains shall not be disclosed and will not be governed by public disclosure requirements of the California Public Records Act, Cal. Govt. Code § 6250 et seq. The Medical Examiner shall withhold public disclosure of information related to such reburial pursuant to the specific exemption set forth in California Government Code Section 6254(r). The Tribe will require that the location for reburial is recorded with the California Historic Resources Inventory System ("CHRIS") on a form that is acceptable to the CHRIS center. The Tribe may also suggest that the landowner enter into an agreement regarding the confidentiality of site information that will run with title on the property.

Mitigation Measure TCR-5 **Treatment of Cultural Resources.** Treatment of all cultural items, including ceremonial items and archeological items will reflect the religious beliefs, customs, and practices of the Tribe. All cultural items, including ceremonial items and archeological items, which may be found at a Project site should be turned over to the Tribe for appropriate treatment, unless otherwise ordered by a court or agency of competent jurisdiction. The Project Proponent should waive any and all claims to ownership of Tribal ceremonial and cultural items, including archeological items, which may be found on a Project site in favor of the Tribe. If any intermediary, (for example, an archaeologist retained by the Project Proponent) is necessary, said entity or individual shall not possess those items for

longer than is reasonably necessary, as determined solely by the Tribe.

Mitigation Measure TCR-6 **Work Statement for Tribal Monitors.**

I. Preferred Treatment. The preferred protocol upon the discovery of Native American human remains is to (1) secure the area, (2) cover any exposed human remains or other cultural items, and (3) avoid further disturbances in the area.

II. Comportment. All parties to the action are strongly advised to treat the remains with appropriate dignity, as provided in Public Resource Code Section 5097.98. We further recommend that all parties to the action treat tribal representatives and the event itself with appropriate respect. For example, jokes and antics pertaining to the remains or other inappropriate behavior are ill advised.

III. Excavation Methods. If, after the Yocha Dehe Tribal representative has been granted access to the site and it is determined that avoidance is not feasible, an examination of the human remains will be conducted to confirm they are human and to determine the position, posture, and orientation of the remains. At this point, we recommend the following procedures:

a) *Tools*. All excavation in the vicinity of the human remains will be conducted using fine hand tools and fine brushes to sweep loose dirt free from the exposure.

b) *Extent of Exposure*. In order to determine the nature and extent of the grave and its contents, controlled excavation should extend to a full buffer zone around the perimeter of the remains.

c) *Perimeter Balk*. To initiate the exposure, a perimeter balk (especially, a shallow trench) should be excavated, representing a reasonable buffer a minimum of 10 cm around the maximum extent of the known skeletal remains, with attention to counterintuitive discoveries or unanticipated finds relating to this or other remains. The dirt from the perimeter balk should be bucketed, distinctly labeled, and screened for cultural materials.

d) *Exposure Methods.* Excavation should then proceed inward from the walls of the balk as well as downward from the

surface of the exposure. Loose dirt should be scooped out and brushed off into a dustpan or other collective device. Considerable care should be given to ensure that human remains are not further impacted by the process of excavation.

e) *Provenience.* Buckets, collection bags, notes, and tags should be fully labeled per provenience, and a distinction should be made between samples collected from: (1) Perimeter Balk (described above), (2) Exposure (dirt removed in exposing the exterior/burial plan and associations, and (3) Matrix (dirt from the interstices between bones or associations). Thus, each burial may have three bags, "Burial 1 Perimeter Balk," "Burial 1 Exposure Balk," "Burial 1 Matrix.

Please note the provisions below with respect to handling and conveyance of records and samples.

f) *Records.* The following records should be compiled in the field: (1) a detailed scale drawing of the burial, including the provenience of and full for all human remains, associated artifacts, and the configuration of all associated phenomena such as burial pits, evidence for preinterment grave pit burning, soil variability, and intrusive disturbance, (2) complete a formal burial record using the consultants proprietary form or other standard form providing information on site #, unit or other proveniences, level depth, depth and location of the burial from a fixed datum, workers, date(s), artifact list, skeletal inventory, and other pertinent observations, (3) crew chief and worker field notes that may supplement or supersede information contained in the burial recording form, and (4) photographs, including either or standard photography or high-quality (400-500 DPI or 10 MP recommended) digital imaging.

g) *Stipulations for Acquisition and Use of Imagery.* Photographs and images may be used only for showing location or configuration of questionable formation or for the position of the skeleton. They are not to be duplicated for publication unless a written release is obtained from the Tribe.

h) *Association*. Association between the remains and other cultural materials should be determined in the field in consultation with an authorized Tribal representative and

may be amended per laboratory findings. Records of provenience and sample labels should be adequate to determine association or degree of likelihood of association of human remains and other cultural materials.

i) *Samples.* For each burial, all Perimeter Balk soil is to be 1/8”-screened. All Exposure soil is to be 1/8”-screened, and a minimum of one 5-gallon bucket of excavated but unscreened Exposure soil is to be collected, placed in a plastic garbage bag in the bucket. All Matrix soil is to be carefully excavated, screened as appropriate, and then collected in plastic bags placed in 5-gallon buckets.

j) *Human remains are not to be cleaned in the field.*

k) *Blessings.* Prior to any physical action related to human remains, a designated tribal representative will conduct prayers and blessings over the remains. The archaeological consultant will be responsible for insuring that individuals and tools involved in the action are available for traditional blessings and prayers, as necessary.

IV. Lab Procedures. No laboratory studies are permitted without consultation with the tribe. Lab methods are determined on a project-specific basis in consultation with Yocha Dehe Wintun Nation representatives. The following procedures are recommended:

a) *Responsibility*. The primary archaeological consultant will be responsible for insuring that all lab procedures follow stipulations made by the Tribe.

b) *Blessings.* Prior to any laboratory activities related to the remains, a designated tribal representative will conduct prayers and blessings over the remains. The archaeological consultant will be responsible for insuring that individuals and tools involved in the action are available for traditional blessings and prayers, as necessary.

c) *Physical Proximity of Associations.* To the extent possible, all remains, associations, samples, and original records are to be kept together throughout the laboratory process. In particular, Matrix dirt is to be kept in buckets and will accompany the remains to the lab. The primary archaeological consultant will be responsible for copying all field records and images, and insuring that the original

notes and records accompany the remains throughout the process.

d) *Additional Lab Finds.* Laboratory study should be done making every effort to identify unanticipated finds or materials missed in the field, such as objects encased in dirt or human remains misidentified as faunal remains in the field. In the event of discovery of additional remains, materials, and other associations the tribal representatives are to be contacted immediately.

V. Re-internment without Further Disturbance. No laboratory studies are permitted on human remains and funerary objects. The preferred treatment preference for exhumed Native American human remains is reburial in an area not subject to further disturbance. Any objects associated with remains will be reinterred with the remains.

VI. Curation of Recovered Materials. Should all, or a sample, of any archaeological materials collected during the data recovery activities – with the exception of Human Remains – need to be curated, an inventory and location information of the curation facility shall be given to tribe for our records.

4.19 UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c. 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?	☐	☐	☒	☐
d. 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?	☐	☐	☒	☐
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

a. Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? ***(Less Than Significant Impact)***

The project site is located in a developed area that is currently served by existing utilities, including water, sanitary sewer, storm drainage, electricity, gas, and telecommunications infrastructure. Existing and proposed utility connections are discussed below.

The proposed project would include the installation of new 8-inch water lines on the site that would connect to the existing 12-inch mains located within Preserve Lane, in the Reserve at Browns Valley Subdivision. A new 8-inch sewer line would be installed and would extend from the end of Preserve Lane into the proposed subdivision. The new sanitary sewer line would be constructed in conformance with City standards, and its construction would not cause significant environmental effects.

Water service is provided by the City of Vacaville (City). As stated above, the proposed project would include the installation of three new 8-inch water lines which would tie into the existing 12-inch water mains located within White Oak Court, Preserve Lane, and McMurtry Lane.

The proposed project would be supplied by the Reynolds Ranch Reservoir. The Reynolds Ranch Reservoir has a capacity of approximately 0.55 million gallons and is located adjacent to the McMurtry Reservoir. Water for the Reynolds Ranch Reservoir is sourced from the McMurtry Reservoir, which has a capacity of five million gallons and is part of the Zone 1 system. The Zone 1

system pumps water to the upper zone, Zone 2, serving properties at higher elevations. Currently, the Zone 2 system supplies water to existing developments including Cheyenne Estates, Reserve at Browns Valley Phase 2 (Knoll Creek), and Reserve at Browns Valley Phase 3 (Rogers Ranch).

The Reynolds Ranch Reservoir, originally constructed for Cheyenne Estates, was designed with sufficient capacity to accommodate the future water demands of the proposed project. Additionally, like other reservoirs within the city, both the McMurtry Reservoir and Reynolds Ranch Reservoir store City water supplied by the City's water system.

The City's potable water supply is sourced from both surface and groundwater from a variety of reservoirs including, including Solano Project water from the Lake Berryessa reservoir, State Water Project water and Settlement Water from the North Bay Aqueduct, and groundwater from local City production wells. The City's water system consists of two surface water treatment plants, thirteen groundwater wells (ten active), nine storage reservoirs, five booster pump stations, and over 340 miles of distribution and transmission pipelines.[91]

The City updated its Urban Water Management Plan (UWMP) in 2020, which was adopted in 2021 and amended it in 2023 (Resolution No. 2023-092). According to the UWMP, the annual water use in 2020 was 18,295 acre-feet. As discussed in Response 4.19 (b), the proposed project would not substantially increase demand for water and would therefore not exceed the capacity of existing water treatment facilities. The proposed project would not require the construction of new water treatment facilities or the expansion of existing facilities, other than those already planned as part of the City's Water Master Plan. The proposed project would include the installation of new 8-inch water lines on the site that would connect to the existing 12-inch mains located within Preserve Lane, in the Reserve at Browns Valley Subdivision. The proposed project would connect directly to existing mains, which have sufficient capacity to accommodate the proposed project. Therefore, the impact of the proposed project on water infrastructure would be less than significant.

The proposed project would include an on-site stormwater collection system consisting of 14- to 24-inch storm drainpipes, with associated catch basins and/or manholes, throughout the project area to direct on-site storm water flows to an approximately 15,000-square-foot landscaped detention pond located at the northern end of the project site. The on-site stormwater collection system and proposed detention pond, including rock riprap energy dissipaters, would collect on-site stormwater and be used for stormwater treatment and peak flow mitigation prior to discharging into the City's storm drain system in compliance with the requirements of the City's Municipal Code and Small Phase II MS4 Permit, as detailed in **Mitigation Measures HYD-2 and HYD-3**. For these reasons, the proposed project would not conflict with or obstruct the implementation of a sustainable groundwater management plan. Therefore, construction and operational impacts related to conflict with, or obstruction of water quality control plans or sustainable groundwater management plans would be less than significant.

The proposed project would include connections to the existing PG&E electrical and gas infrastructure that runs along the southern and northern border of the project site adjacent to the

91 City of Vacaville. 2021e. *City of Vacaville 2020 Urban Water Management Plan.* June.

project site, along the existing PG&E easement. The project and would not require any new infrastructure, aside from project-specific tie-ins and lines to serve the proposed project.

Therefore, because the proposed project would connect to existing utility services within or adjacent to the project site, the relocation or reconstruction of new or expanded water, wastewater treatment or stormwater drainage, electric power, or telecommunications facilities would not be required, and this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

b. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? ***(Less Than Significant Impact)***

The City of Vacaville provides water to the project site. As previously discussed, the City's potable water supply is sourced from both surface and groundwater from a variety or reserves including the Solano Project, State Water Project (North Bay Aqueduct), Settlement Water provided by the Division of Water Rights, and municipal groundwater wells. In 2020, the majority of the City's water supply came from local water sources, with 77 percent of the City's water coming from groundwater and the Solano Project. The remaining 23 percent consisted of State Water Project water and Settlement Water.[92]

The City's 2020 UWMP describes the projected water supplies from each source and compares those to the projected demand over the next 25 years, in 5-year increments. The City has determined that groundwater and surface supplies are projected to meet or exceed projected water demands, even during extended drought conditions and that the future water supply will be adequate to offset future water demands during a normal year, a single dry year, and a five-consecutive-year drought.[93]

The existing water system infrastructure has adequate capacity to serve the proposed project. In addition, the proposed project would be required to coordinate with the City of Vacaville Fire Department and the Solano County Fire Protection District to assess fire flow requirements and comply with them as part of the project. Based on the above, the City would have sufficient water supply to support the proposed project, and implementation of the project would not require new or expanded entitlements for water supplies, and impacts related to water supply would be less than significant. **This topic will not be analyzed further in the EIR.**

c. Would the project 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? ***(Less Than Significant Impact)***

The City of Vacaville owns and operates its municipal wastewater collection system containing over 200 miles of sanitary sewer mains and seven lift stations. Wastewater is treated at the Easterly Wastewater Treatment Plant located at 6040 Vaca Station Road in Elmira, which treats an average

92 City of Vacaville. 2021e. *City of Vacaville 2020 Urban Water Management Plan.* June.
93 Ibid.

of 7.5 million gallons of wastewater a day before it is released into Alamo Creek.[94] The design average dry weather flow capacity of the facility is 15 million gallons of wastewater per day[95]; therefore, the facility only treats an average of approximately 50 percent of its capacity on a daily basis.

Wastewater collection and treatment for most developed areas within the City limits is provided by the City of Vacaville. The City's sewer service includes operation and maintenance of gravity sewers, lift stations, force mains, and the Easterly Wastewater Treatment Plant (Easterly WWTP). Since the project proposes to annex the project site into the City limits, wastewater collection and treatment services would be provided by the City.

The proposed project would generate domestic wastewater, treated by the Easterly WWTP. Considering the treatment plant only treats an average of approximately 50 percent of its capacity on a daily basis, the City would have sufficient capacity to serve the proposed project. Therefore, wastewater generated from the proposed project would not cause the Easterly Wastewater Treatment Plant to violate any wastewater treatment requirements, and this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

d. Would the project 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? ***(Less Than Significant Impact)***

The City of Vacaville currently contracts with Recology Vacaville Solano to provide weekly solid and yard waste and recyclable material collection to Vacaville residents. In 2010, Vacaville's per capita disposal rate was 4.9 pounds per resident per day, well below the City's California Integrated Waste Management Board (CIWMB) target disposal rate of 6.5, but slightly above the statewide average of 4.5.[96] Solid waste collected from Vacaville is deposited at the Hay Road Landfill, located at 6426 Hay Road in Vacaville. The landfill has a capacity of 37,000,000 cubic yards, a remaining capacity of 30,433,000 cubic yards, and can accept 2,400 tons per day. The Potrero Hills Landfill is estimated to reach its capacity in 2048. [97]

On average, single-family uses generate approximately 12 pounds per household per day.[98] Based on these rates, the proposed project would generate approximately 240 pounds per day of solid

94 City of Vacaville. n.d.-c. *Wastewater Treatment*. Website: https://www.ci.vacaville.ca.us/government/utilities/sewer/wastewater-treatment (accessed September 11, 2023).

95 California Regional Water Quality Control Board Central Valley Region (RWQCB). 2019. *Order R5-2019-0049, NPDES No. CA0077691, Waste Discharge Requirements for the City of Vacaville Easterly Wastewater Treatment Plant, Solano County*. June 7.

96 City of Vacaville. 2021d. *Vacaville General Plan and ECAS EIR, Utilities and Service Systems*.

97 California Department of Resources Recycling and Recovery (CalRecycle). 2019. SWIS Facility Detail. Recology Hay Road (48-AA-0002). Website: https://www2. calrecycle.ca.gov/SolidWaste/SiteActivity/Details/1184?siteID=3582 (accessed September 11, 2023).

98 California Department of Resources Recycling and Recovery (CalRecycle). 2006. Estimated Solid Waste Generation/Residential Sector Generation Rates. Website: Rateshttps://www2.calrecycle.ca.gov/WasteCharacterization/General/Rates (accessed September 11, 2023).

waste.[99] As noted above, the Hay Road Landfill has adequate capacity to serve the proposed project. As such, the project would be served by a landfill with sufficient capacity to accommodate the project's waste disposal needs, and impacts associated with the disposition of solid waste would be less than significant. **This topic will not be analyzed further in the EIR.**

e. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste? ***(Less Than Significant Impact)***

The proposed project would comply with all federal, State, and local solid waste statutes and/or regulations related to solid waste and, as noted above, the Hay Road Landfill has adequate capacity to serve the proposed project. Therefore, the proposed project would result in a less than significant impact related to solid waste regulations. **This topic will not be analyzed further in the EIR.**

[99] 12 pounds per household per day x 20 single family units= 240 pounds per day

4.20 WILDFIRE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b. 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?	☐	☐	☒	☐
c. 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?	☐	☐	☒	☐
d. 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?	☐	☒	☐	☐

a. Would the project substantially impair an adopted emergency response plan or emergency evacuation plan? ***(Less Than Significant Impact)***

The analysis in this section is based on the Wildfire Evacuation Assessment Technical Memorandum for the McMurtry Creek Estates prepared by Fehr & Peers (Wildfire Evacuation Assessment).[100] A copy of the Wildfire Evacuation Assessment is included in Appendix F of this report.

The project site is located in a High Fire Hazard Severity Zone (FHSZ) as mapped by the California Department of Forestry and Fire Protection (CAL FIRE) and Solano County. According to the Wildfire Evacuation Assessment, the proposed project is located in a high fire risk area and is characterized by low-to-intermediate density uses that are dispersed and increase the potential for wildfires to start or spread. In its existing condition, the project site is designated as a State Responsibility Area (SRA) in a High Fire Hazard Severity Zone (HFHSZ).[101] However, upon annexation of the 15.73-acre project site into the City of Vacaville, the project site would be redesignated into Local Responsibility Area (LRA). Additionally, the project site is located within a wildland-urban interface (WUI) intermix zone.[102]

Additionally, as indicated by the Wildfire Evacuation Assessment, the proposed project would construct emergency access lanes around the perimeter of the project site. Emergency vehicles

100 Fehr & Peers. 2024b. *Technical Memorandum, McMurtry Creek Estates Wildfire Evacuation Assessment*. February.

101 Solano County. 2023. State Responsibility Area. Fire Hazard Severity Zones. June. Website: Fire Hazard Severity Zones in State Responsibility Area - Solano County (34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net) (accessed May 23, 2024).

102 Ibid.

would be able to access the project via Preserve Lane (Public Street) as well as two emergency vehicle accesses (i.e., McMurtry Lane and White Stone Court). The proposed project would not require or result in any long term or permanent lane closures on roadways adjacent to the site. In addition, as noted in Response 4.9 (f), the proposed project would not impair the implementation of, or physically interfere with, an adopted emergency response plan. Therefore, this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

The proposed project would construct emergency access lanes around the perimeter of the project site. Emergency vehicles would be able to access the project via Preserve Lane (Public Street) as well as two emergency vehicle accesses (i.e., McMurtry Lane and White Stone Court). The proposed project would not require or result in any long term or permanent lane closures on roadways adjacent to the site. In addition, as noted in Response 4.9 (f), the proposed project would not impair the implementation of, or physically interfere with, an adopted emergency response plan. Therefore, this impact would be less than significant. **This topic will not be analyzed further in the EIR.**

b. Would the project, 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? ***(Less than Significant Impact)***

The project site contains areas of native or natural vegetation that may act as fuel for a potential wildfire. Furthermore, the proposed project may be exposed to criteria pollutant emissions generated by wildland fires due to the project site's location within an FHSZ. However, the potential impacts would not be exclusive to the project site since criteria pollutant emissions from wildland fires may affect the entire City as well as the surrounding cities and unincorporated county areas.

As mentioned above in Response 4.20 (a), the project, site it its existing condition, is located in an SRA in a HFHSZ. In its exiting condition the project site is primarily vacant grass land and is surrounded by areas located in HFHSZ and Very High Fire Hazard Severity Zone (VHFSZ). The annual grasslands within and surrounding the project site may act as fuel for a potential wildfire. The proposed project may be exposed to criteria pollutant emissions generated by wildland fires due to the project site's location within a FHSZ. However, the potential impacts would not be exclusive to the project site since criteria pollutant emissions from wildland fires may affect the entire City as well as the surrounding cities and unincorporated county areas.

Development of the project would introduce residential units which would be dispersed throughout the site in an area prone to wildfires; however, as stated above in Response 4.20 (b), the proposed project would include irrigated landscaping and emergency vehicle access which would serve as a fire break. As such, the proposed project would result in less than significant. **This topic will not be analyzed further in the EIR.**

c. Would the project 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? ***(Less Than Significant Impact)***

Project development would involve construction of infrastructure on site to support the proposed project, including residential roads, and utility connections. As stated in Section 4.19, Utilities and Service Systems, the proposed project would not result in the need for expanded utility infrastructure off site and would meet all VMC requirements.

The proposed project would include connections to the existing electricity and natural gas lines that run along the southern and northern borders of the project site adjacent to the site, along the existing Pacific Gas and Electric Company (PG&E) easement. Any above-ground power line connections would have the potential to exacerbate fire risks associated with sparking in the event of damage to the lines or transformers. During and following construction, The Reynolds Ranch Reservoir would remain available as an emergency water source.

As stated in the Chapter 2.0, Project Description, the proposed project would extend McMurtry Lane to the north and remove the existing cul-de-sac at Preserve Lane within the Reserves at Browns Valley Development to connect McMurtry Lane to Preserve Lane. A 22-foot-wide fire access road would be constructed around the perimeter of the development and connect to a new multi-use path on the eastern side of the proposed development, allowing access to White Stone Court, Rolling Sage Circuit, and Peacock Way within the Cheyenne Estates development. Additionally, the proposed project would include approximately 3.7 acres of landscaping for fire protection, of which 2.44 acres would be designated as open space. A 150-foot irrigated landscape buffer would be installed between the property boundary and the fire access road along the northern boundary of the project site. Therefore, the proposed project would not require the installation or maintenance of associated infrastructure which would exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. **This topic will not be analyzed further in the EIR.**

d. Would the project 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? ***(Less Than Significant with Mitigation Incorporated)***

After a wildfire passes through an area, post-fire hazards can occur based on conditions of the topography and susceptibility to flooding. Post-fire landslide hazards include fast-moving, highly destructive debris flows that can occur in the years immediately after wildfires in response to high intensity rainfall events, and those flows that are generated over longer time periods accompanied by root decay and loss of soil strength.[103] Post-fire debris flows are specifically hazardous because they can occur with little warning, can exert great impulsive loads on objects in their paths, can strip

[103] United States Geological Survey. *Natural Hazards.* "What Should I Know about Wildfires and Debris Flows?" Website: https://www.usgs.gov/faqs/what-should-i-know-about-wildfires-and-debris-flows?qt-news_science_products=0#qt-news_science_products (accessed June 28, 2024).

vegetation, block drainage ways, damage structures, and endanger human life.[104] Wildfires also have the potential to destabilize preexisting deep-seated landslides over long time periods.[105]

Landslides

As described in Section 4.7, Geology and Soils, the topography of the site is relatively flat, with gentle sloping (two to nine percent slopes) from a central high point towards the north and south. Although the project contains a relatively small landslide above McMurtry on southwest portion of the project site. Development of the proposed project would require removal of the landslide and replacement with engineered fill. No other landslides have been identified within the project site or surrounding area. Additionally, according to the California Department of Conservation, no landslides have been inventoried on or adjacent to the proposed project site.[106] Site soils would not be subject to lateral spreading or liquefaction; however, implementation of **Standard Conditions of Approval (SCOAs) 104 through 106** (discussed in Response 4.7 (a)(ii)), conformance with the California Building Code (CBC), and implementation of the design recommendations in the Geotechnical Investigation would ensure that potential risks to people and structures as a result of landslides would be reduced to a less than significant level.

In the extremely unlikely event that a wildfire should spread to the project site it would not expose any on-site slopes to erosion and potential failure because, as discussed above, the project site does not contain any steep slopes that are prone to landslide. The development of the proposed project would not expose people or structures to significant risks, including downslope landslides, as a result of runoff, post-fire slope instability, or drainage changes and this impact would be less than significant impact.

Flooding and Drainage

According to the Federal Emergency Management Agency (FEMA), the entirety of the project site is located in Zone X, which is identified as an area of minimal flood potential. During construction, best management practices (BMPs) would be implemented to ensure that during a rain event pollutants would be retained on site and would be prevented from reaching downstream receiving waters in accordance with **Mitigation Measures HYD-1 and HYD-2**.

Upon development of the proposed project, the on-site stormwater collection system and proposed bioswales would be used for stormwater treatment and peak flow mitigation prior to discharging into the City's storm drain system, as specified in **Mitigation Measures HYD-2**, **HYD-3**, **and HYD-4.** In the unlikely event that a wildfire should spread to the project site, it is not expected that the proposed project would contribute any additional runoff or sedimentation to the on-site natural drainages or other downstream drainages. This is due to the lack of steep slopes prone to landslide or erosion on the project site, and the fact that the drainage improvements would remain intact

[104] United States Geological Survey. *Natural Hazards.* "What Should I Know about Wildfires and Debris Flows?" Website: https://www.usgs.gov/faqs/what-should-i-know-about-wildfires-and-debris-flows?qt-news_science_products=0#qt-news_science_products (accessed June 28, 2024).

[105] Ibid.

[106] California Department of Conservation. Landslide Inventory. Website: https://maps.conservation.ca.gov/cgs/lsi/app/https://maps.conservation.ca.gov/cgs/lsi/app/ (accessed July 1, 2024).

after a major wildfire, allowing them to continue to reduce the potential for flooding conditions in downstream storm drain facilities. Therefore, downslope, or downstream flooding as a result of runoff, post-fire slope instability, or drainage changes are unlikely to expose occupants or structures on the project site to significant risks. Impacts to on-site occupants related to post-wildfire flooding or landslide risks would be less than significant with mitigation incorporated. **This topic will not be analyzed further in the EIR.**

4.21 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Does the project have 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 a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

The Mandatory Findings of Significance section discusses the potential of the proposed project to degrade the quality of the environment and any biological habitats. Impacts on a cumulative basis are also discussed, as well as the project having any environmental impacts that would cause substantial direct or indirect adverse impacts on human beings.

a. Does the project have 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 a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? ***(Less Than Significant with Mitigation Incorporated)***

The proposed project involves the construction of 20 new single-family residential lots and associated site improvements. Implementation of the proposed project would have the potential to adversely impact sensitive natural communities, special-status animals, and previously undiscovered cultural resources, and/or human remains. However, with implementation of the mitigation measures recommended in this Initial Study, including **Mitigation Measures AIR-1, BIO-1 through BIO-24, CUL-1, GEO-1, HYD-1 through HYD-4, and TCR-1 through TCR-6,** and compliance with City requirements and standard conditions of approval, development of the proposed project would not: (1) degrade the quality of the environment; (2) substantially reduce the habitat of fish or wildlife species; (3) cause a fish or wildlife population to drop below self-sustaining levels; (4) threaten to eliminate a plant or animal community; (5) reduce the number or restrict the range of a rare or endangered plant or animal species; or (6) eliminate important examples of the major periods of California history or prehistory. Impacts would be less than significant.

b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? ***(Potentially Significant Impact)***

California Environmental Quality Act (CEQA) defines cumulative impacts as "two or more individual effects which, when considered together, are considerable, or which can compound to increase other environmental impacts." Section 15130 of the *State CEQA Guidelines* requires evaluation of potential environmental impacts when the project's incremental effect is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of "reasonably foreseeable probable future" projects, per *State CEQA Guidelines* Section 15355. Cumulative impacts can result from a combination of the proposed project together with other closely related projects that cause an adverse change in the environment. Cumulative impacts can result from individually minor but collectively significant projects taking place over time.

When future development proposals are considered by the City, these proposals would undergo environmental review pursuant to CEQA and, when necessary, mitigation measures would be adopted as appropriate. In most cases, this environmental review and compliance with project conditions of approval, relevant policies and mitigation measures, and the City General Plan and compliance with applicable regulations would ensure that significant impacts would be avoided or otherwise mitigated to less than significant levels.

For all topics discussed in this Initial Study, excluding transportation, the proposed project's impacts would be individually limited and not cumulatively considerable, because the impacts are either temporary in nature (i.e., limited to the construction period) or limited to the project site (i.e., accidental discovery). The potentially significant impacts that can be reduced to a less than significant level with implementation of recommended mitigation measures include the topics of air quality, biological resources, cultural resources, geology and soils, noise, and tribal cultural resources. These impacts would primarily be related to construction-period activities, would be temporary in nature, and would not substantially contribute to any potential cumulative impacts associated with these topics. For the topic of air quality, potentially significant impacts to air quality standards associated with project construction would be reduced to less than significant levels with implementation of **Mitigation Measure AIR-1**. For the topic of biological resources, implementation of **Mitigation Measures BIO-1 through BIO-24** would ensure that impacts related to special-status-species and local ordinances are reduced to a less than significant level. For the topic of cultural resources, potentially significant impacts to archaeological resources would be reduced to less than significant levels with implementation of **Mitigation Measure CUL-1**. For the topic of geology and soils, potentially significant impacts related to paleontological resources would be reduced to less than significant levels with implementation of **Mitigation Measure GEO-1**. For the topic of water quality, impacts would be reduced to a less than significant level with implementation of **Mitigation Measures HYD-1 through HYD-4.** For the topic of tribal cultural resources, potentially significant impacts related to the potential construction-period discovery of previously unidentified human remains, which may be of tribal origin would be reduced to less than significant levels with

implementation of **Mitigation Measures TCR-1 through TCR-6.** Environmental impacts that could occur related to air quality, biological resources, geology and soils, and hydrology and water quality would be reduced to a less than significant level through the implementation of the mitigation measures recommended in this document. Implementation of these measures would ensure that the impacts of the project would be below established thresholds of significance and that these impacts would not combine with the impacts of other cumulative projects to result in a cumulatively considerable impact on the environment as a result of project development.

For the topic of transportation, the proposed project would result in a net increase of 2,508 VMT in the base year and would cause the total VMT generated by the City of Vacaville to increase. As a result, the proposed project would lead to potentially significant impacts to VMT and could result in cumulatively considerable impacts. **The topic of Transportation will be analyzed further in the EIR.**

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? ***(Potentially Significant Impact)***

A significant impact may occur if environmental effects related to the proposed project could cause substantial direct or indirect adverse impacts to human beings as described in the checklist responses. Specifically, a net increase of 2,508 VMT in the base year would create potentially significant transportation impacts under Section 4.17 (b) and have the potential to affect human beings both directly and indirectly. **The topic of Transportation will be analyzed further in the EIR.**

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APPENDIX A

AIR QUALITY, GREENHOUSE GAS, AND ENERGY CALEEMOD WORKSHEETS

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McMurtry Creek Estates Project Custom Report

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1.1. Basic Project Information

Data Field	Value
Project Name	McMurtry Creek Estates Project
Construction Start Date	1/5/2026
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	14.0
Location	38.40194252972148, -121.98889475689934
County	Solano-Sacramento
City	Unincorporated
Air District	Yolo/Solano AQMD
Air Basin	Sacramento Valley
TAZ	832
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	20.0	Dwelling Unit	6.80	39,000	0.00	—	56.0	—

City Park	3.70	Acre	3.70	0.00	0.00	0.00	—	—
Other Asphalt Surfaces	4.89	Acre	4.89	0.00	0.00	—	—	—
Other Non-Asphalt Surfaces	15.0	1000sqft	0.34	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.93	20.0	15.6	0.03	0.75	17.1	17.8	0.70	1.72	2.33	—	2,665	2,665	0.10	0.03	2,677
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.39	48.9	36.0	0.06	1.36	25.9	27.0	1.23	5.78	6.79	—	6,758	6,758	0.27	0.06	6,783
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.42	11.8	8.93	0.01	0.39	6.35	6.74	0.36	0.81	1.18	—	1,578	1,578	0.06	0.02	1,584
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.26	2.14	1.63	< 0.005	0.07	1.16	1.23	0.07	0.15	0.21	—	261	261	0.01	< 0.005	262

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	6.93	20.0	15.6	0.03	0.75	17.1	17.8	0.70	1.72	2.33	—	2,665	2,665	0.10	0.03	2,677
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.39	48.9	36.0	0.06	1.36	25.9	27.0	1.23	5.78	6.79	—	6,758	6,758	0.27	0.06	6,783
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.42	11.8	8.93	0.01	0.39	6.35	6.74	0.36	0.81	1.18	—	1,578	1,578	0.06	0.02	1,584
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.26	2.14	1.63	< 0.005	0.07	1.16	1.23	0.07	0.15	0.21	—	261	261	0.01	< 0.005	262

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.90	0.69	5.56	0.01	0.02	49.6	49.6	0.02	5.05	5.07	8.80	1,247	1,256	0.96	0.05	1,300
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.72	0.78	4.45	0.01	0.02	49.6	49.6	0.02	5.05	5.07	8.80	1,179	1,188	0.97	0.06	1,230
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.74	0.72	4.53	0.01	0.02	45.8	45.8	0.02	4.67	4.69	8.80	1,157	1,165	0.97	0.05	1,207
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	0.32	0.13	0.83	< 0.005	< 0.005	8.36	8.36	< 0.005	0.85	0.86	1.46	191	193	0.16	0.01	200

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.84	0.54	4.36	0.01	0.01	49.6	49.6	0.01	5.05	5.06	—	961	961	0.05	0.05	980
Area	1.05	0.01	1.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	3.03	3.03	< 0.005	< 0.005	3.04
Energy	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	282	282	0.03	< 0.005	283
Water	—	—	—	—	—	—	—	—	—	—	1.36	1.24	2.60	0.14	< 0.005	7.09
Waste	—	—	—	—	—	—	—	—	—	—	7.44	0.00	7.44	0.74	0.00	26.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28
Total	1.90	0.69	5.56	0.01	0.02	49.6	49.6	0.02	5.05	5.07	8.80	1,247	1,256	0.96	0.05	1,300
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.76	0.63	4.39	0.01	0.01	49.6	49.6	0.01	5.05	5.06	—	896	896	0.06	0.05	913
Area	0.95	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
Energy	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	282	282	0.03	< 0.005	283
Water	—	—	—	—	—	—	—	—	—	—	1.36	1.24	2.60	0.14	< 0.005	7.09
Waste	—	—	—	—	—	—	—	—	—	—	7.44	0.00	7.44	0.74	0.00	26.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28
Total	1.72	0.78	4.45	0.01	0.02	49.6	49.6	0.02	5.05	5.07	8.80	1,179	1,188	0.97	0.06	1,230
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.73	0.56	3.91	0.01	0.01	45.8	45.8	0.01	4.67	4.68	—	872	872	0.05	0.05	889
Area	1.00	0.01	0.56	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	1.50	1.50	< 0.005	< 0.005	1.50
Energy	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	282	282	0.03	< 0.005	283

Water	—	—	—	—	—	—	—	—	—	—	1.36	1.24	2.60	0.14	< 0.005	7.09
Waste	—	—	—	—	—	—	—	—	—	—	7.44	0.00	7.44	0.74	0.00	26.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28
Total	1.74	0.72	4.53	0.01	0.02	45.8	45.8	0.02	4.67	4.69	8.80	1,157	1,165	0.97	0.05	1,207
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.13	0.10	0.71	< 0.005	< 0.005	8.36	8.36	< 0.005	0.85	0.85	—	144	144	0.01	0.01	147
Area	0.18	< 0.005	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.25	0.25	< 0.005	< 0.005	0.25
Energy	< 0.005	0.03	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	46.6	46.6	0.01	< 0.005	46.9
Water	—	—	—	—	—	—	—	—	—	—	0.23	0.21	0.43	0.02	< 0.005	1.17
Waste	—	—	—	—	—	—	—	—	—	—	1.23	0.00	1.23	0.12	0.00	4.31
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.05
Total	0.32	0.13	0.83	< 0.005	< 0.005	8.36	8.36	< 0.005	0.85	0.86	1.46	191	193	0.16	0.01	200

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	39.9	28.3	0.05	1.12	—	1.12	1.02	—	1.02	—	5,298	5,298	0.21	0.04	5,316
Dust From Material Movement	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—

Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	1.09	0.78	< 0.005	0.03	—	0.03	0.03	—	0.03	—	145	145	0.01	< 0.005	146
Dust From Material Movement	—	—	—	—	—	0.21	0.21	—	0.11	0.11	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.20	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	24.1
Dust From Material Movement	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.58	0.00	0.00	18.2	18.2	0.00	1.84	1.84	—	140	140	< 0.005	0.01	142
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.48	0.48	0.00	0.05	0.05	—	3.90	3.90	< 0.005	< 0.005	3.96
Vendor	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

Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	0.09	0.09	0.00	0.01	0.01	—	0.65	0.65	< 0.005	< 0.005	0.66
Vendor	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
Hauling	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

3.3. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.33	48.8	35.3	0.06	1.36	—	1.36	1.23	—	1.23	—	6,599	6,599	0.27	0.05	6,621
Dust From Material Movement	—	—	—	—	—	3.60	3.60	—	1.43	1.43	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	4.01	2.91	0.01	0.11	—	0.11	0.10	—	0.10	—	542	542	0.02	< 0.005	544
Dust From Material Movement	—	—	—	—	—	0.30	0.30	—	0.12	0.12	—	—	—	—	—	—
Onsite truck	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

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.73	0.53	< 0.005	0.02	—	0.02	0.02	—	0.02	—	89.8	89.8	< 0.005	< 0.005	90.1
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.66	0.00	0.00	20.8	20.8	0.00	2.10	2.10	—	160	160	< 0.005	0.01	162
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	0.05	0.00	0.00	1.65	1.65	0.00	0.17	0.17	—	13.4	13.4	< 0.005	< 0.005	13.6
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	0.30	0.30	0.00	0.03	0.03	—	2.22	2.22	< 0.005	< 0.005	2.25
Vendor	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
Hauling	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

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	18.9	14.3	0.02	0.69	—	0.69	0.64	—	0.64	—	2,397	2,397	0.10	0.02	2,405
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	18.9	14.3	0.02	0.69	—	0.69	0.64	—	0.64	—	2,397	2,397	0.10	0.02	2,405
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.19	5.69	4.31	0.01	0.21	—	0.21	0.19	—	0.19	—	722	722	0.03	0.01	725
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	1.04	0.79	< 0.005	0.04	—	0.04	0.04	—	0.04	—	120	120	< 0.005	< 0.005	120
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.28	0.00	0.00	7.50	7.50	0.00	0.76	0.76	—	63.6	63.6	< 0.005	< 0.005	64.5
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	1.60	1.60	< 0.005	0.16	0.16	—	57.7	57.7	< 0.005	0.01	60.1
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.24	0.00	0.00	7.50	7.50	0.00	0.76	0.76	—	57.5	57.5	< 0.005	< 0.005	58.3
Vendor	< 0.005	0.07	0.03	< 0.005	< 0.005	1.60	1.60	< 0.005	0.16	0.16	—	57.7	57.7	< 0.005	0.01	60.0
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.07	0.00	0.00	2.17	2.17	0.00	0.22	0.22	—	17.7	17.7	< 0.005	< 0.005	17.9
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.46	0.46	< 0.005	0.05	0.05	—	17.4	17.4	< 0.005	< 0.005	18.1
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	0.40	0.40	0.00	0.04	0.04	—	2.92	2.92	< 0.005	< 0.005	2.97
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	2.88	2.88	< 0.005	< 0.005	3.00
Hauling	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

3.7. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	13.3	10.6	0.01	0.58	—	0.58	0.54	—	0.54	—	1,511	1,511	0.06	0.01	1,516
Paving	0.64	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.73	0.58	< 0.005	0.03	—	0.03	0.03	—	0.03	—	82.8	82.8	< 0.005	< 0.005	83.1
Paving	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.13	0.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	13.7	13.7	< 0.005	< 0.005	13.8
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.03	0.59	0.00	0.00	15.6	15.6	0.00	1.57	1.57	—	132	132	< 0.005	< 0.005	134
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.82	0.82	0.00	0.08	0.08	—	6.69	6.69	< 0.005	< 0.005	6.79
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	0.15	0.15	0.00	0.02	0.02	—	1.11	1.11	< 0.005	< 0.005	1.12
Vendor	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
Hauling	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

3.9. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	1.09	0.96	< 0.005	0.07	—	0.07	0.06	—	0.06	—	134	134	0.01	< 0.005	134
Architectural Coatings	5.67	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.19	0.17	< 0.005	0.01	—	0.01	0.01	—	0.01	—	23.8	23.8	< 0.005	< 0.005	23.9
Architectural Coatings	1.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.94	3.94	< 0.005	< 0.005	3.95
Architectural Coatings	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	0.06	0.00	0.00	1.50	1.50	0.00	0.15	0.15	—	12.7	12.7	< 0.005	< 0.005	12.9
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	0.26	0.26	0.00	0.03	0.03	—	2.09	2.09	< 0.005	< 0.005	2.12
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	0.05	0.05	0.00	< 0.005	< 0.005	—	0.35	0.35	< 0.005	< 0.005	0.35
Vendor	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
Hauling	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

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	0.81	0.51	4.20	0.01	0.01	47.7	47.7	0.01	4.86	4.87	—	926	926	0.05	0.05	944
City Park	0.03	0.02	0.17	< 0.005	< 0.005	1.84	1.84	< 0.005	0.19	0.19	—	35.8	35.8	< 0.005	< 0.005	36.5
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.84	0.54	4.36	0.01	0.01	49.6	49.6	0.01	5.05	5.06	—	961	961	0.05	0.05	980
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.73	0.61	4.22	0.01	0.01	47.7	47.7	0.01	4.86	4.87	—	862	862	0.06	0.05	879
City Park	0.03	0.02	0.17	< 0.005	< 0.005	1.84	1.84	< 0.005	0.19	0.19	—	33.4	33.4	< 0.005	< 0.005	34.0
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.76	0.63	4.39	0.01	0.01	49.6	49.6	0.01	5.05	5.06	—	896	896	0.06	0.05	913
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.13	0.10	0.70	< 0.005	< 0.005	8.19	8.19	< 0.005	0.83	0.84	—	141	141	0.01	0.01	144
City Park	< 0.005	< 0.005	0.01	< 0.005	< 0.005	0.17	0.17	< 0.005	0.02	0.02	—	2.94	2.94	< 0.005	< 0.005	3.00
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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

Total	0.13	0.10	0.71	< 0.005	< 0.005	8.36	8.36	< 0.005	0.85	0.85	—	144	144	0.01	0.01	147

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	95.3	95.3	0.02	< 0.005	96.2
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	95.3	95.3	0.02	< 0.005	96.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	95.3	95.3	0.02	< 0.005	96.2
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00

Total	—	—	—	—	—	—	—	—	—	—	—	95.3	95.3	0.02	< 0.005	96.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	15.8	15.8	< 0.005	< 0.005	15.9
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	15.8	15.8	< 0.005	< 0.005	15.9

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	186	186	0.02	< 0.005	187
City Park	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
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	186	186	0.02	< 0.005	187
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	186	186	0.02	< 0.005	187
City Park	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
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	186	186	0.02	< 0.005	187
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	0.03	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	30.9	30.9	< 0.005	< 0.005	31.0
City Park	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
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	< 0.005	0.03	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	30.9	30.9	< 0.005	< 0.005	31.0

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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

Consumer	0.85	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.10	0.01	1.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.03	3.03	< 0.005	< 0.005	3.04
Total	1.05	0.01	1.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	3.03	3.03	< 0.005	< 0.005	3.04
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	0.85	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.95	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	0.16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.01	< 0.005	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.25	0.25	< 0.005	< 0.005	0.25
Total	0.18	< 0.005	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.25	0.25	< 0.005	< 0.005	0.25

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	1.36	1.24	2.60	0.14	< 0.005	7.09
City Park	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	1.36	1.24	2.60	0.14	< 0.005	7.09
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	1.36	1.24	2.60	0.14	< 0.005	7.09
City Park	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	1.36	1.24	2.60	0.14	< 0.005	7.09
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	0.23	0.21	0.43	0.02	< 0.005	1.17
City Park	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.23	0.21	0.43	0.02	< 0.005	1.17

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	7.26	0.00	7.26	0.73	0.00	25.4
City Park	—	—	—	—	—	—	—	—	—	—	0.17	0.00	0.17	0.02	0.00	0.60
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	7.44	0.00	7.44	0.74	0.00	26.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	7.26	0.00	7.26	0.73	0.00	25.4
City Park	—	—	—	—	—	—	—	—	—	—	0.17	0.00	0.17	0.02	0.00	0.60
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	7.44	0.00	7.44	0.74	0.00	26.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	1.20	0.00	1.20	0.12	0.00	4.21
City Park	—	—	—	—	—	—	—	—	—	—	0.03	0.00	0.03	< 0.005	0.00	0.10
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	1.23	0.00	1.23	0.12	0.00	4.31

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.05
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.05

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	1/5/2026	1/16/2026	5.00	10.0	—
Grading	Grading	1/19/2026	2/27/2026	5.00	30.0	—
Building Construction	Building Construction	3/2/2026	7/31/2026	5.00	110	—
Paving	Paving	8/3/2026	8/28/2026	5.00	20.0	—
Architectural Coating	Architectural Coating	6/8/2026	9/4/2026	5.00	65.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Tier 2	3.00	8.00	367	0.40

Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 2	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Tier 2	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Tier 2	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Tier 2	1.00	8.00	367	0.40
Grading	Scrapers	Diesel	Tier 2	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 2	2.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Tier 2	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Tier 2	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Tier 2	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Tier 2	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Tier 2	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Tier 2	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Tier 2	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Tier 2	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Tier 2	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—

Grading	Worker	20.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	7.20	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	2.14	8.40	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	1.44	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%
Sweep paved roads once per month	9%	9%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	78,975	26,325	0.00	0.00	13,681

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	0.00	15.0	0.00	—
Grading	6,000	6,000	90.0	0.00	—
Paving	0.00	0.00	0.00	0.00	5.45

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	0.22	0%
City Park	0.00	0%
Other Asphalt Surfaces	4.89	100%
Other Non-Asphalt Surfaces	0.34	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	189	191	171	68,088	1,042	1,053	943	375,667
City Park	2.89	7.25	8.10	1,553	14.4	36.3	40.6	7,774
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0
Conventional Wood Stoves	0
Catalytic Wood Stoves	0

Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
78975	26,325	0.00	0.00	13,681

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	170,514	204	0.0330	0.0040	581,801
City Park	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00
Other Non-Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	710,217	0.00

City Park	0.00	0.00
Other Asphalt Surfaces	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	13.5	—
City Park	0.32	—
Other Asphalt Surfaces	0.00	—
Other Non-Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification
Land Use	Project site is 15.78 gross acres. The project is proposing 20 single family residential lots and road improvements. Approximately 3.77 acres would be dedicated to landscape and 15,000 feet would be dedicated to a detention pond for stormwater. The remaining area would include internal road improvements.
Construction: Construction Phases	No demolition. Proposed project construction is expected to start in the beginning of 2026 and occur for 9 months. Assumed overlap between building construction, paving, and architectural coating phases.
Construction: Off-Road Equipment	Default equipment with Tier 2 engines
Construction: Architectural Coatings	—
Construction: Paving	—
Operations: Hearths	No wood burning
Construction: Trips and VMT	No additional hauling trips since soil would be balanced on site

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APPENDIX B

BIOLOGICAL RESOURCES ASSESSMENT

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McMurtry Creek Estates

Biological Resources Assessment

Project
1146

Zentner Planning and Ecology
155 Filbert Street, Suite 206
Oakland, CA, 94607

Prepared for:
Suresh Paranjpe
Care of
Phillippi Engineering

Revised:
September 2022
And
March 2024

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McMurtry Creek Estates
Biological Resources Assessment

I. INTRODUCTION

A. Purpose

This report is intended to assess the environmental conditions of the McMurtry Creek Estates Project Site. The McMurtry Creek Estates project proposes to subdivide the McMurtry Creek Estates property and construct 20 single family residences and ancillary features. The McMurtry Creek Estates Property is hereafter referred to as the Project Site or Study Area.

This report will (1) determine the presence of or potential for the occurrence of special status plant or wildlife species that are listed by State, Federal, or local governments; (2) provide a delineation of U.S. Army Corps of Engineers jurisdictional wetlands and waters; (3) identify the sensitive habitats that occur on the Study Area and; (4) recommend appropriate measures to be incorporated into the proposed subdivision to avoid any potential impacts to special status species and to mitigate for impacts to special status habitats.

B. Methodology

Zentner Planning and Ecology conducted a site analysis and survey of the McMurtry Creek Estates Project Site, which included reviewing the site and surrounding areas for special status species and habitats and completing a wetlands and waters delineation. The analysis and survey was completed on July 11, 2022. The weather was clear and warm during the survey, which allowed for a thorough review of the Study Area given its nature and condition.

In addition to this field work, the most recent versions of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB), United States Fish and Wildlife Service (USFWS) special status species list, and the California Native Plant Society's (CNPS) Online Inventory of Rare and Endangered Plants were reviewed. The CNPS Online inventory reviewed included the USGS quadrangle that includes the Study Area (Allendale) as well as the USGS quadrangles to the north (Winters), northeast (Merritt), east (Dixon), southeast (Dozier), south (Elmira), and southwest (Fairfield North). The quadrangles to the west and northwest were excluded from this review because the topography and habitat conditions in these quadrangles vary significantly from the Study Area. These resources were used during the preparation of this analysis to determine special-status plant and wildlife species potentially occurring in the vicinity of the Study Area. The databases were searched for the Study Area, environs, and greater area (*i.e.,* the surrounding 5-mile radius).

C. Project Location

The McMurtry Creek Estates project site is located within the City of Vacaville in central western Solano County (**Figure 1**). The project is set along the northern edge of relatively dense development that is expanding into areas currently occupied by older, relatively widely spaced, single family ranch houses. The lands to the north and west are primarily foothill open space while the core of the City of Vacaville is to the south. The Reserves at Browns Valley residential development, currently under construction, is located directly south of the Project Site.

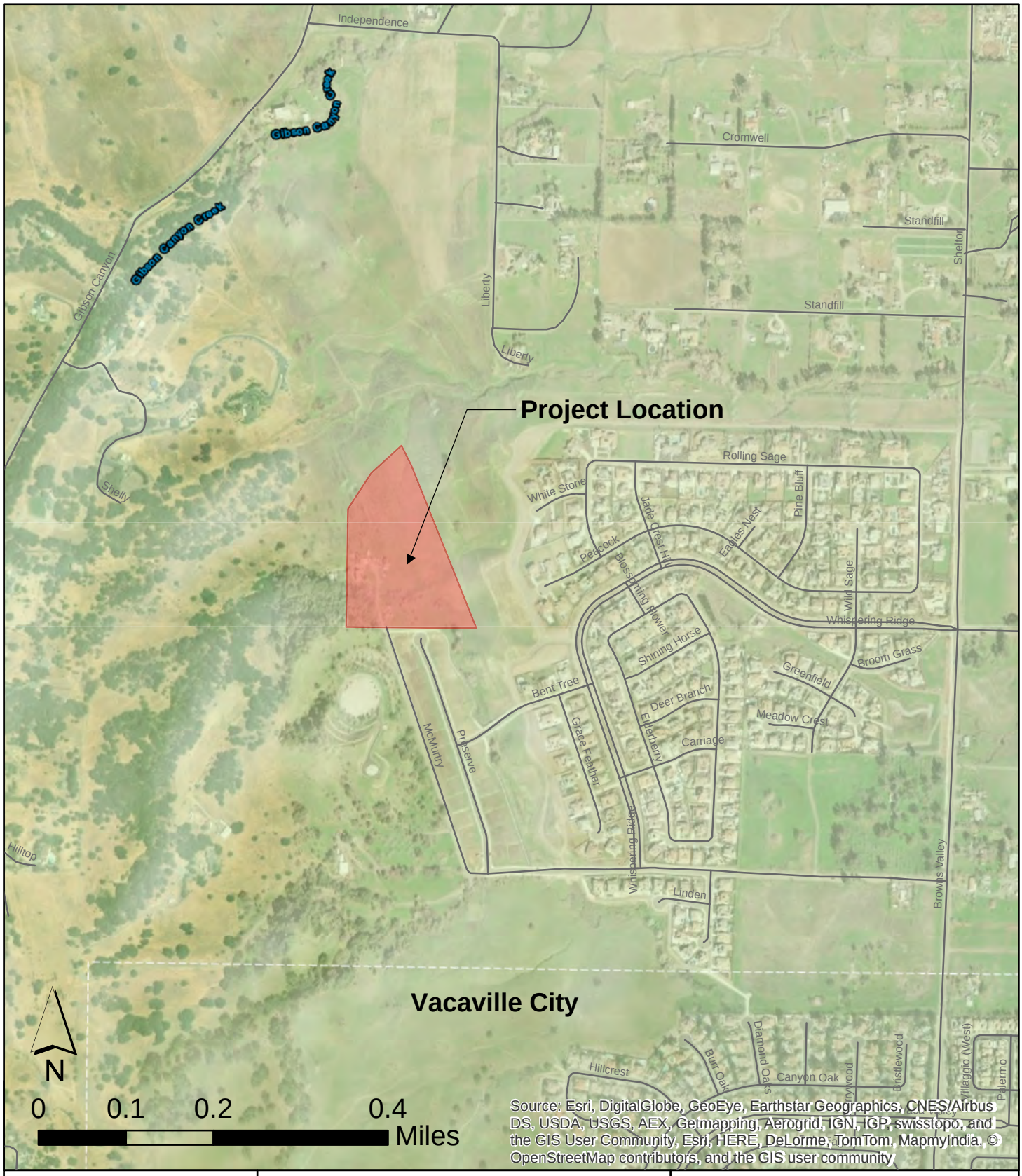
The Project Site is located at the end of McMurtry Lane and just north of Preserve Lane. The Site is west of Browns Valley Road and approximately 3 miles north of Highway 80 and 2 miles west of Highway 505. The Site is located within the Allendale USGS 7.5-minute quadrangle in section 4, township 6 north and range 1 west.

D. Project Description

The proposed project would subdivide the Project Site and construct 20 new single-family residences and ancillary features. The homes would be accessed via an extension of Preserve Lane or McMurtry Lane. A fire access road would be constructed around the outer perimeter of the Project Site and irrigated landscaping would be installed on the north and east edges of the Site.

Two ephemeral drainages that run west to east and north to south would be preserved on the Project Site with a conservation easement. The two drainages were previously connected, but land modifications, including the construction of a seasonal stockpond, have disconnected them. As part of the Project the drainages will be reconnected and preserved.

The proposed project would result in the fill of the 0.311-acre stock pond/seasonal wetland for the construction of the residential lots. The project will also culvert approximately 88.7 linear feet (0.006 acres) of the ephemeral drainages. A portion of the eastern ephemeral drainage will be culverted so that a road may be constructed across the drainage and provide access into the development. As well, McMurtry Lane will be widened and the existing culvert along the western ephemeral drainage, which connects the drainage beneath the lane, will replaced and extended. The loss of 88.7 linear feet of ephemeral drainage will be mitigated through the creation of a 164.3 linear feet of new ephemeral drainage to re-connect and restore the historical drainage through the site. Mitigation for the loss of the 0.311-acre seasonal wetland (stockpond) will be completed on site, just east of the drainage along the southern portion of the site, at a ratio of just over 1:1 impacted to created. The tentative subdivision map is included as **Appendix A.**



McMurtry Creek
Solano, California

DATE: 07/25/2022, 2:45 pm

SOURCE: D:\Graphic Designer\My Documents \ PROJECTS\1100-1199\1146 McMurtry Crk\Adobe\1146 Fig1_Location_220719

FIGURE 1
LOCATION MAP

ZENTNER Planning & Ecology

155 Filbert Street Suite 206, Oakland, CA 94607
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II. ENVIRONMENTAL SETTING

A. Site Description

The Study Area consists primarily of annual grasslands on low, rolling hills that are gently sloping south to east. The hills are the southeastern edge of the English Hills which are a significant feature east of Vacaville and are the last vestige of the Coast Range before it drops into the Central Valley. Ephemeral and intermittent channels once flowed south and east out of these hills though they have now been modified and channelized throughout much of the region. The Study Area slopes down to the north and south with a high in the approximate center. As well, the western and eastern edges of the Study Area slope up along adjoining hillsides.

The Site contains a single-family home, trailer, and a number of other storage structures, including a barn and shed, that are currently in use. The site also contains livestock enclosures that are no longer in use. The structures are all located along the western edge of the Site adjacent to McMurtry Lane. The Site is set along the northwestern edge of relatively dense, rapidly expanding development. The lands to the north and west are primarily foothill open space while the lands to the south and east are generally densely developed. The Reserves at Browns Valley residential development, currently under construction, is located directly south of the Study Area.

The Study Area is roughly rectangular in shape with McMurtry Lane entering the site near the southwestern corner of the site. A small ephemeral drainage flows from the Site's western edge through a culvert beneath McMurtry Lane and into the Study Area. A concrete check dam has been constructed within the drainage, though the check dam no longer appears to be in use. Just beyond the check dam, the drainage channel disappears and the water from the drainage seeps into the ground or sheet flows across the Site to a constructed stock pond/seasonal wetland.

A second ephemeral drainage flows north to south through the southern part of the Study Area just south of the stockpond. Water appears to enter into the drainage when the stockpond overflows, though there is no direct connection between the stockpond and the southern portion of the drainage. The two drainages were previously connected, though site modifications (construction of the stock pond/seasonal wetland) has disconnected them. The second drainage is deeply incised with several highly-eroded areas. Just south and off site, the drainage transitions to a more substantial channel with bed and bank as it passes into a permanently preserved mitigation/Open Space area as part of the adjacent Cheyenne project.

A stock pond/seasonal wetland has been constructed in the south-central part of the Study Area. The stock pond/seasonal wetland was constructed by excavating a basin and building a berm on the downslope part of the basin. The constructed stock pond/seasonal wetland does not have an outflow channel. When the stock pond has filled to capacity, water flows over top the constructed berm or sneaks around between the berm and the toe of the adjacent slope just east of the pond and sheet flows to the south. Eventually most of this water flows into the second drainage.

The southwestern corner of the Study Area consists of oak woodland habitat with a relatively dense oak canopy. However, the majority of the Study Area is dominated by non-native annual grasslands. Within the annual grasslands there are few trees and shrubs, though there are several walnut trees and other planted fruit trees and a number of scattered coyote bushes. As well, there a several elderberry shrubs scattered along both sides of the southeastern fence line that separates the property from the adjacent Cheyenne Open Space.



Photo 1: View looking southwest from the southeast part of the Study Area. The Reserve at Browns Valley is visible in the phot background. The stock pond/ seasonal wetland can be seen on the left side of the photo and is identifiable by the dark green vegetation. July 2022.

B. Habitats and Plant Communities

The Study Area contains the following habitats: annual grasslands, seasonal wetland, ephemeral drainage, oak woodland, and developed. Annual grassland is the dominant habitat type within the Study Area and the other habitat types comprise only a fraction of the total area. Each of the habitat types are discussed below and a full list of the plant species observed within the Study Area is provided in **Appendix B**.

Nomenclature used for plant names follows *The Jepson Manual*, Second Edition (Baldwin et. al. 2012) and changes made to this manual as published on the Jepson Interchange Project website (http://ucjeps.berkeley.edu/interchange/index.html).

1. Annual Grassland

Annual grassland is the dominant habitat type within the Study Area. The annual grasslands are densely vegetated with common non-native annual grass species including wild oats (*Avena fatua*), Italian ryegrass (*Festuca perennis*), soft chess (*Bromus hordeaceus*), and medusa head (*Elymus caput-medusae*). As well, other non-native species including yellow star thistle (*Centaurea solstitialis*), big heron bill (*Erodium botrys*), burclover (*Medicago polymorpha*), stink wort (*Dittrichia graveolens*) and perennial pepper weed (*Lepidium latifolium*) are also scattered throughout the annual grasslands. Trees and shrubs are generally absent though there is a scattering of native coyote brush (*Baccharis pilularis*) and several English walnut (*Juglans regia),* blue oak *(Quercus douglassii),* and interior live oak *(Quercus wislizeni)* trees present. There are also a number of planted fruit trees in the southern part of the Study Area. There are few native species within the annual grasslands though occasional native species include blue wild rye (*Elymus glaucus*), six week fescue (*Festuca microstachys),* spikeweed (*Centromadia pungens),* and sky lupine (*Lupinus nanus*).

2. Stock Pond/Seasonal Wetland

There is one 0.311 acre constructed stock pond/seasonal wetland in the south-central part of the site. The stock pond was constructed by excavating a basin and constructing a soil berm on the downslope site. The lowest parts of the stock pond/seasonal wetland are thinly vegetated with swamp grass (*Crypsis schoenoides*), rabbit'sfoot grass, and cocklebur (*xanthium strumarium*). The upper limits of the stock pond are generally more thickly vegetated with rabbit's foot grass, Italian rye grass, and bracted allocarya (*Plagiobothrys bracteatus*). The southern edge of the stock pond is densely vegetated with lamb's quarters (*Chenopodium album*).



Photo 3: View looking east across the stock pond/seasonal wetland. July 2022.

3. Channel and Eroded Gully

The Study Area contains two ephemeral drainages, both in the southern part of the site. The two drainages historically connected, but land modification on the site has severed the connection. One drainages runs from the west to the east passing below McMurtry Lane via a culvert then flowing approximately 200 feet to its terminus. At its terminus previous grading around the stock pond/seasonal wetland has modified the topography such that the drainage's bed and bank disappear and water from the drainage either seeps into the ground or sheet flows into the stock pond.

The second drainage flows north to south beginning just south of the stock pond/seasonal wetland and continuing 209 linear feet south and off the Study Area. This drainage is deeply incised and has significant areas of erosion. Downstream of the Study Area the drainage develops into a more robust channel.

Both ephemeral drainages convey flows from upslope and the adjacent landscapes. They likely flow during the rainy season and dry shortly after the end of the season. Vegetation within the drainages is generally either absent or similar to the adjacent annual grasslands; wild oats,

Italian ryegrass, and soft chess are common within the drainages. Wetland vegetation including toad rush (*Juncus bufonius*) and common rush (*Juncus effuses*) are occasionally present. There are also several walnut trees (*Juglans californica*) growing adjacent to and over the drainages and there are five, relatively small, elderberry shrubs (*Sambucus cerulea*) growing adjacent to the drainage at the southern edge of the Study Area.



Photo 4: View looking south and downstream of the eastern ephemeral drainage. Much of this channel is highly incised as demonstrated by the vertical shovel in the photo center. July 2022.

4. Oak Woodland

Oak woodland habitat occurs in the southwestern part of the Study Area just west of McMurtry Lane. The oak woodland has a dense oak canopy comprised predominately of blue oaks (*Quercus douglassii*) with occasional interior live oaks (*Quercus wislizeni*). The understory is moderately vegetated with poison oak (*Toxicondendron diversilobum*) and Himalyan

blackberry (*Rubus armeniacus*) as well as other common non-native species present elsewhere within the Study Area including wild oats, Italian ryegrass, soft chess, and star thistle.

5. Developed

The developed parts of the Study Are are located along McMurtry Lane on the western edge. These areas include a single-family home, trailer, and a number of other storage structures, including a barn and shed, that area currently in use and livestock enclosures that are not in use. As well, there is a gravel driveway and parking areas and several small landscaped areas. Vegetation is generally absent from the developed parts of the Study Area, though the annual grassland species from the adjacent landscape occur at low frequency within this area. As well, there are several landscaped areas that contain common decorative species.



Photo 5: View looking west across the Study Area from the eastern side of the Study Area. The annual grasslands are in the photo foreground and the developed part of the site is in the photo background. July 2022.

C. Wildlife

Wildlife within the Study Area appears limited primarily to common suburban/rural species. Mammals likely to occur within the Study Area include coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and lagomorphs (rabbits) such as black-tailed jackrabbit (*Lepus californicus*). Small mammals likely include California vole (*Microtus californicus*) and deer mouse (*Peromyscus maniculatus*). These small mammals are likely preyed upon by predators such as coyotes, red-tailed hawk (*Buteo jamaicensis*) and red-shouldered hawk (*Buteo lineatus*). Other predatory birds that may forage within the Study Area include the American kestel (*Falco sparverius*), white-tailed kite (*Elanus leucurus*), and Swainson's hawk (*Buteo swainsoni*), which are known from the region. However, the majority of the Study Area's trees are relatively small in stature and therefore do not provide high quality nesting habitat for raptors. The Study Area therefore provides limited roosting and nesting habitat for predatory bird species. The predatory birds that utilize the site for foraging most likely nest in the surrounding areas and the Study Area comprises only a small fraction of their foraging grounds.

Birds commonly found in habitats similar to the Study Area include mourning dove (*Zenaida macroura*), house finch (*Haemorhous mexicanus*), turkey vulture (*Cathartes aura*), and barn swallow (*Hirundo rustica*). Common reptiles likely present include western fence lizard (*Sceloperus occidentalis*), southern alligator lizard (*Gerrhonotus multicarinatus*), gopher snake (*Pituophis melanoleucus*), and western rattle snake (*Crotalus viridis*).

Nomenclature for wildlife follows the CDFW's *Complete list of Amphibian, Reptile, Bird, and Mammal Species in California* (2008) and any changes made to specie nomenclature as published in scientific journals since the publication of CDFW's list.

III. BIOLOGICAL RESOURCES

A. Regulatory Setting and Federal Framework

1. Federal Endangered Species Act

The Federal Endangered Species Act (FESA) forms the basis for the federal protection of threatened or endangered plants, insects, fish and wildlife. FESA contains four main elements, they are as follows:

1. Section 4 (16 USCA §1533): Species listing, Critical Habitat Designation, and Recovery Planning: outlines the procedure for listing endangered plants and wildlife.
2. Section 7 (§1536): Federal Consultation Requirement: imposes limits on the actions of federal agencies that might impact listed species.
3. Section 9 (§1538): Prohibition on Take: prohibits the "taking" of a listed species by anyone, including private individuals, and State and local agencies.
4. Section 10: Exceptions to the Take Prohibition: non-federal agencies can obtain an incidental take permit through approval of a Habitat Conservation Plan.

In the case of salt water fish and other marine organisms, the requirements of FESA are enforced by the National Marine Fisheries Service (NMFS). The USFWS enforces all other cases.

Section 9 of FESA as amended, prohibits the "take" of any fish or wildlife species listed under FESA as endangered. Under Federal regulation, "take" of fish or wildlife species listed as threatened is also prohibited unless otherwise specifically authorized by regulation. "Take," as defined by FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" includes not only the direct taking of a species itself, but the destruction or modification of the species' habitat resulting in the potential injury of the species. As such, "harm" is further defined to mean "an act which actually kills or injures wildlife; such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3).

Section 9 applies to any person, corporation, federal agency, or any local or State agency. If "take" of a listed species is necessary to complete an otherwise lawful activity, this triggers the need to obtain an incidental take permit either through a Section 7 Consultation as discussed further below (for federal actions or private actions that are permitted or funded by a federal agency), or requires preparation of a Habitat Conservation Plan (HCP) pursuant to Section 10 of FESA (for state and local agencies, or individuals, and projects without a federal "nexus").

Section 7(a)(2) of the Act requires that each federal agency consult with the USFWS to ensure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of critical habitat for listed species. The Section 7 consultation process applies only to actions taken by federal agencies, or actions by private parties that require federal agency permits, approval, or funding (for example, a private landowner applying to the Corps for a permit). Section 7's consultation process is triggered by a determination of the

"action agency" (i.e., the federal agency that is carrying out, funding, or approving a project) that the project "may affect" a listed species or critical habitat. If an action is likely to adversely affect a listed species or designated critical habitat, formal consultation with the USFWS is required.

2. Federal Migratory Bird Treaty Act (FMBTA)

The Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989) makes it unlawful to "take" (kill, harm, harass, shoot, etc.) any migratory bird listed in Title 50 of the Code of Federal Regulations, Section 10.13, including their nests, eggs, or young. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, wading birds, seabirds, and passerine birds (such as warblers, flycatchers, swallows, etc.).

3. Federal Clean Water Act

Section 404

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into "waters of the United States" (33 CFR Part 320 *et seq.*). This requires project applicants to obtain authorization from the USACE prior to discharging dredged or fill material into any water of the United States. The "waters of the United States" are defined in federal regulations at 33 CFR section 328.3, and may include wetlands, ponds, drainages, creeks, streams, and other types of waterbodies, depending on whether any such aquatic feature meets current jurisdictional standards.

To remain in compliance with Section 404 of the Clean Water Act, project proponents and property owners (applicants) are required to acquire authorization from the USACE prior to discharging or otherwise impacting "waters of the United States." This authorization is typically given by reference to compliance with an existing Nationwide Permit(s) or by issuance of a project-specific Individual Permit.

Section 401

Prior to issuance by a Section 404 authorization by the USACE, Section 401 of the federal Clean Water Act requires the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB) to certify, conditionally certify, or waive certification on the question of whether issuance of the USACE permit will violate water quality standards of the State. This certification (or waiver thereof) applies only to the proposed impacts to the "waters of the United States" that are at issue in the proposed Section 404 permit. Potential impacts to "waters of the State" that may not be jurisdictional for the USACE are addressed under the RWQCB's Porter-Cologne Water Quality Control Act statutory authority (see below).

B. State Framework

1. California Endangered Species Act

In 1984, the state legislated the California Endangered Species Act (CESA) (Fish and Game Code §2050). The basic policy of CESA is to conserve and enhance endangered species and their habitats.

If proposed projects would result in impacts to a State listed species, an "incidental take" permit pursuant to §2081 of CDFG Code would be necessary (versus a Federal incidental take permit for Federal listed species). No §2081 permit may authorize the take of a species for which the Legislature has imposed strict prohibitions on all forms of "take."

State and federal incidental take permits are typically only authorized if applicants are able to demonstrate that impacts on the listed species in question are unavoidable, and can be mitigated to an extent that the reviewing agency can conclude that the proposed impacts would not jeopardize the continued existence of the listed species under review.

2. California Fish and Game Code

Section 4700

In accordance with California Fish and Game Code, Section 4700, "fully protected" mammals or parts thereof may not be taken or possessed (held in captivity) at any time (a) (1), except as provided in Section 2081.7. No provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected mammal, and no permits or licenses heretofore issued shall have any force or effect for that purpose. However, subject to certain notice requirements, the department may authorize the taking of those species for necessary scientific research, including efforts to recover fully protected, threatened, or endangered species.

Sections 3503, 3503.5, 3511, and 3513

CDFG Code §§ 3503, 3503.5, 3511, and 3513 prohibit the take, possession, or destruction of the nest or eggs of any bird. Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered "take." Take of any migratory nongame bird is also prohibited, except in compliance with rules promulgated under the Migratory Bird Treaty Act.

All raptors (that is, hawks, eagles, owls) their nests, eggs, and young are protected under California Fish and Game Code (§3503.5). Additionally, "fully protected" birds, such as the white-tailed kite (*Elanus leucurus*) and golden eagle (*Aquila chrysaetos*), are protected under CDFG Code (§3511). "Fully protected" birds may not be taken or possessed (that is, kept in captivity) at any time.

Section 1602

Pursuant to Section 1602 of the Fish and Game Code, CDFG regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream. CDFG's jurisdiction includes the outer extent of any riparian vegetation associated with the stream. Any proposed activity in a natural stream channel that would substantially adversely affect an existing fish and/or wildlife resource, would require entering into a Streambed Alteration Agreement (SBAA) with CDFG prior to commencing work in the stream.

3. Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act, Water Code § 13260, requires that "any person discharging waste, or proposing to discharge waste, that could affect the waters of the State to file a report of discharge" with the RWQCB through an application for waste discharge (Water Code Section 13260(a)(1). The SWRCB and its several RWQCBs have interpreted this authority to extend to proposed fills of "waters of the State" that include all "waters of the United States" that are subject to the jurisdiction of the USACE, and any other "isolated" waters that are beyond the reach of the USACE claim of jurisdiction.

C. Applicable Local Regulations

1. City of Vacaville Tree Preservation Ordinance – Chapter 14.09.250.060

The City of Vacaville's Tree Preservation Ordinance controls the preservation and removal of trees on private and public property within the City. The ordinance prohibits cutting down, removing, or destroying any tree, or causing the cutting down, removal or destruction of any tree, on public or private property except in accordance with the conditions of a Tree Removal Permit Issued by the City. A "tree" as defined by the City is any live woody plant having one or more well defined perennial stems with an aggregate circumference of 31 inches or more, when measured 4.5- feet above ground level.

6. City of Vacaville General Plan – Policy COS-P1.12

The City of Vacaville's General Plan Policy COS-P1.12 requires the City to comply with all of the Avoidance, Minimization, and Mitigation Measures listed in the Draft Solano Multi-Species Habitat Conservation Plan (Solano HCP) until the HCP is fully adopted or a comparable program is prepared and commits the City to continue this process. Since the City will serve as the lead agency for the proposed project's CEQA review, the project must comply with the applicable HCP avoidance minimization, and mitigation measures.

The Solano HCP has been developed to support the issuance of a Section 10(a)1(B) incidental take permit under the federal Endangered Species Act of 1973 (as amended). The Solano HCP has expanded the scope of the Biological Opinion and includes additional voluntary applicants and additional species for incidental take coverage. These additional species include federally

listed fish species under the jurisdiction of the National Marine Fisheries Service (NMFS) and species listed as threatened or endangered under the State's Endangered Species Act.

D. Environmental Analysis

1. CEQA Thresholds of Significance

According to Appendix G of the CEQA Guidelines, the proposed project would have significant impacts on biological resources if it would:

1. 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 CDFG or U.S. Fish and Wildlife Service (USFWS).
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by CDFG or USFWS.
3. Have a substantial adverse effect on federally protected "wetlands" or "Waters of the U.S." as defined by Section 404 of the Clean Water Act or "Waters of the State" as defined by the Porter-Cologne Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
4. 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.
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

IV. SPECIAL-STATUS SPECIES AND HABITATS

A. Special-Status Species

1. Definitions

For the purposes of this assessment, "special-status" refers to those species that meet one or more of the following criteria: Plant and animal species listed by the USFWS or CDFW as Threatened or Endangered; species proposed for listing as Threatened or Endangered; or species that are candidates for listing as Threatened or Endangered. (Fish and Game Code §2050 et seq.; 14 CCR §670.1 et seq.) or the FESA (50 CFR 17.12 for plants; 50 CFR 17.11 for wildlife; various notices in the Federal Register [FR] for proposed species). For candidate species; FESA (50 CFR 17; FR Vol. 64, No. 205, pages 57533-57547, October 25, 1999); and under the CESA (California Fish and Game Code §2068).

Plant and animal species considered as "Endangered, Rare, or Threatened" are defined by Section 15380 of the CEQA Guidelines. Section 15380(b) states that a species of animal or plant is "Endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. A species is "rare" when either "(A) although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become Endangered if its environment worsens; or (B) the species is likely to become Endangered within the foreseeable future throughout all or a portion of its range and may be considered 'Threatened' as that term is used in the Federal Endangered Species Act" (ESA). Plants included on Ranks 1, 2, 3, or 4 of the California Native Plant Society (CNPS) or on lists maintained by local chapters of CNPS are also designated as special status species.

Animal species designated as "Fully Protected", "Species of Special Concern," or "Special Animals" by the CDFW have no legal status under the California Endangered Species Act (CESA), but CDFW recommends their protection as their populations are generally declining and they could be listed as Threatened or Endangered (under CESA) in the future or they are species considered by CDFW to the those of the "greatest conservation need" (CDFG 2009; Fish and Game Codes 3511, 4700, 5050, and 5515). "Special Animals" is a relatively recent and broad list developed by CDFW to encompass a number of other Federal, State, Local and Non-Governmental Organization (NGO) lists of special status species. It includes, for example, species listed by the US Bureau of Land Management (BLM), species listed by the Western Bat Working Group (WBWG) or the International Union for the Conservation of Nature (IUCN).

Birds designated by the USFWS as "Birds of Conservation Concern" also have no legal status under the ESA, but USFWS recommends their protection as their populations are generally declining, and they could be listed as Threatened or Endangered (under ESA) in the future. More information on special status species, including definitions and abbreviations, is provided in Appendix D.

The Migratory Bird Treaty Act (16 U.S.C. 703-711) makes it unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, kill, attempt to transport (import or export) any migratory bird including any part, nest, or egg of any such bird. Essentially, the law includes all

species of birds, not just those typically considered migratory. Rock doves, also known as "pigeons" (*Columba livia*) and European starlings (*Sturnus vulgaris*) are the only birds that are exceptions to this law.

2. Special Status Species Potentially Occurring within the Study Area

Figure 2 (Special Status Wildlife and Special Status Plant Species Occurrences) provides a graphical illustration of the known recorded special-status wildlife and plant species within five miles of the Study Area. According to CDFW's California Natural Diversity Database (CNDDB), a total of 12 special status wildlife species and 14 special status plant species are known to occur in the general region around the Study Area, that is, within a 5-mile buffer surrounding the Study Area, these are shown on Figure 2. The CNDDB species list is provided in **Appendix C** and the definitions for the special status species designations are provided in **Appendix D**.

a. Wildlife

The majority of the special status wildlife species that have recorded CNDDB observations in the region around the Study Area are unlikely to occur within the Study Area due to the absence of suitable habitat. **Table 1** provides the regulatory status, habitat requirements, and an evaluation of each of these species' potential to occur within the Study Area. Only the northwestern pond turtle (*Actinemys marmorata*), burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*) and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus)* have some potential to occur within the Study Area; these species are discussed below. No special status species have been observed on or within the Study Area.

The Study Area also has a potential to support nesting raptor species or other nesting migratory birds. Nesting birds and raptors are protected under the CDFW Code and the Migratory Bird Treaty Act and are also discussed below.

Northwestern Pond Turtle (*Actinemys marmorata*) (FPE, USFS:S, BLM:S, DFW:SSC, IUCN:VU)

The northwestern pond turtle is a small to medium species growing from 3.5 to 8.5 inches in length. Hatchlings are 1 inch in shell length. They are dark brown, olive brown, or blackish in color with a low, unkeeled carapace. A pattern of darker lines or spots radiate from the centers of the scutes. The head and legs of the turtle are dark with creamy white or yellow speckling. Males have a light throat with no markings and a low domed carapace, while females have a throat with dark markings and a high-domed carapace.

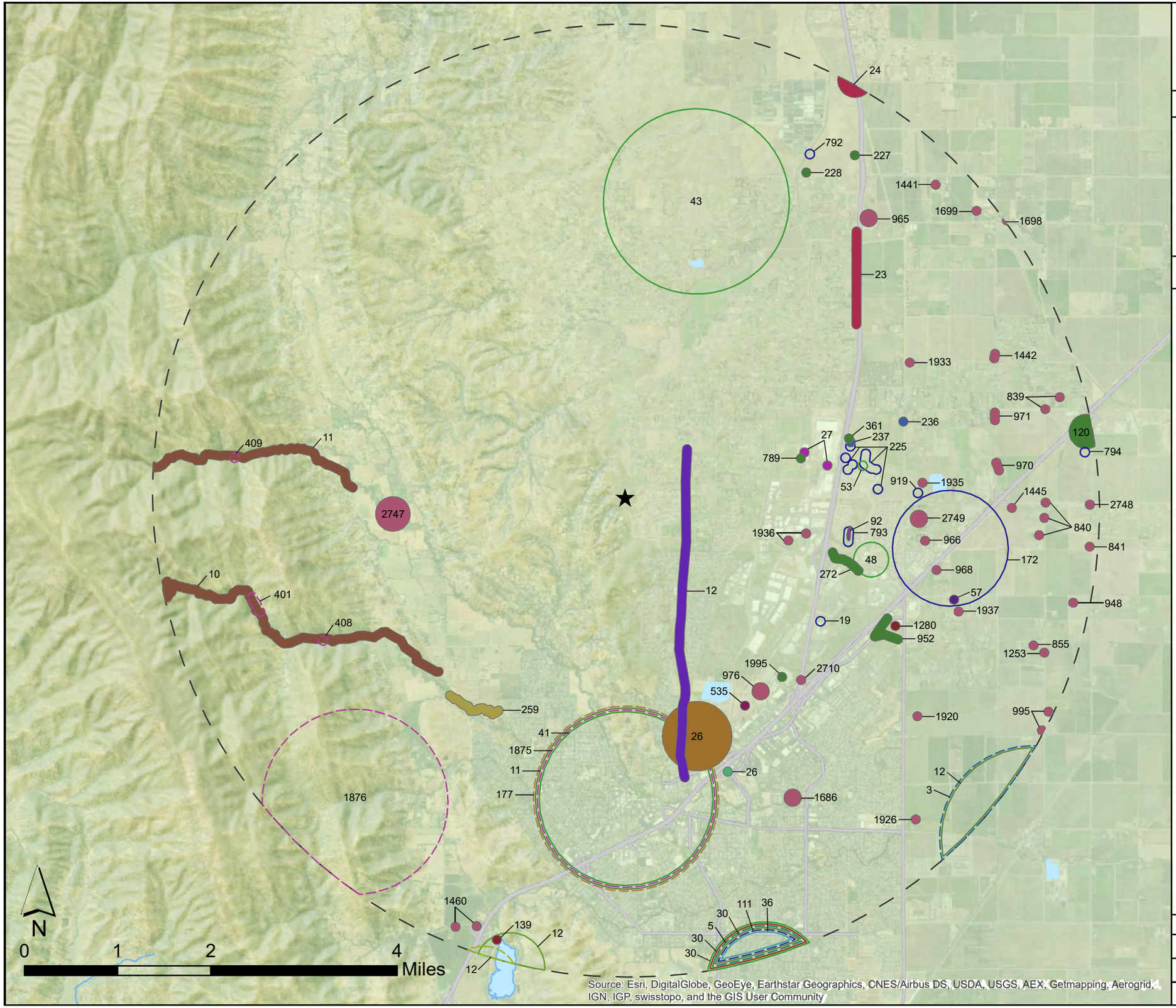
Once inhabiting an extensive portion of the west, the northwestern pond turtle is proposed as a federally threatened species due to a decline in its range and population numbers. It is found in Washington, Oregon, Nevada, and northern California, south along the Sierra Nevada Mountains and Coast Range down to Monterey and Kern Counties. They have been found at elevations from sea level to over 5,900 ft.

Table 1
Special Status Wildlife Species

Scientific name	Common name	Status	Habitat	Potential habitat on-site	Range	Known range/ Critical habitat	Potential for occurrence on-site
MAMMALS							
Taxidea taxus	American badger	CSC, IUCN:LC, SA	Broadleaved upland forest, Chaparral, Chenopod scrub, Cismontane woodland, Coastal prairie, Coastal scrub, Meadow & seep, Riparian forest, Riparian scrub, Riparian woodland, Ultramafic, Valley & foothill grassland.	Marginal	Throughout California and North American; from British Columbia to the Great Lake Region and south to Central Mexico.	Yes	Unlikely: Only marginal habitat on site. No signs of species observed on site and only one record of species passing through area in region.
AMPHIBIANS							
Rana boylii	foothill yellow-legged frog	ST, BLM:S, CSC, IUCN:NT,USFS:S	Partially-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats	None	Lower elevation streams draining the Pacific slope from west-central Oregon to northwestern Baja California.	Yes	None: No habitat
Ambystoma californiense	California tiger salamander	FT, ST, CDFW:WL, IUCN:VU	Cismontane woodland, meadow and seep, riparian woodland, valley and foothill grassland. Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding	Marginal	Central Valley DPS federally listed as threatened. Santa Barbara and Sonoma Counties DPS federally listed as endangered	Yes	None: Out of Range, Marginal habitat
REPTILES							
Actinemys marmorata	Northwestern pond turtle	FPE, BLM:S, CSC, IUCN:VU, USFS:S, SA	Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh & swamp, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland	Marginal	Isolated populations exist in the western half of California from the Sierra Nevada foothills to the Pacific coast, throughout the length of the state.	Yes	Moderate: Marginally suitable habitat present on site
BIRDS							
Athene cunicularia	burrowing owl	BLM:S, CSC, IUCN:LC, USFWS:BCC, SA	Coastal prairie, Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley & foothill grassland	Marginal	Permanent resident of southern California valleys, from the Bay Area to Los Vegas, Nevada. Breeding range extends through the northern Central Valley.	Yes	Moderate: Marginally suitable habitat present on site
Buteo swainsoni	Swainson's hawk	ST, BLM:S, IUCN:LC, USFWS:BCC, SA	Great Basin grassland, Riparian forest, Riparian woodland, Valley & foothill grassland	Marginal breeding habitat	Breeding range extends throughout California's interior counties inluding Contra Costa and Alameda.	Yes	Moderate: Marginal breeding habitat present on site, foraging habtiat present
Elanus leucurus	white-tailed kite	BLM:S, CDFW:FP, IUCN:LC	Rolling foothills and valley margins with scattered oaks and river bottomlands or marsh next to deciduous woodland.	Marginal	Central Valley and and Sourthern coastal areas. Humbolt and San Francisco Bay area.	Yes	Moderate: Marginal breeding habitat present on site.
INVERTEBRATES							
Bombus occidentalis	Western bumble bee	USFS:S, X:IM, SA	Once relatively widespread, but species has declined from central California to southern British Columbia	Marginal	Once realtively widespread, now in serious decline in central to southern California	Yes	Unlikely: Site conditions only marginally suitable and only historic (1950) record in the region.
Branchinecta conservatio	Conservancy fairy shrimp	FE, IUCN:EN, SA	Inhabit astatic pools located in swales formed by old, braided alluvium and filled by winter and spring rains, last until June.	No	Endemic to the grassland of the norther two-thirds of the Central Vally. Not known from Napa County	Yes	None: No habitat
Branchinecta lynchi	vernal pool fairy shrimp	FT, IUCN:VU, SA	Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump or basalt-flow depression pools (astatic rain-filled pools).	No	Central Valley, Central Coast mountains, and south coast mountains	Yes	None: No habitat
Bombus crotchii	crotch bumble bee	C3G4, S1S2	Grassland and scrub	Marginal	Mediterranean region, Pacific Coast, Western Destert, Great Valley, and adjacnet foothills throughout most of southwestern California	Yes	Unlikely: Only marginally suitable habitat present and only one record in region.

Table 1
Special Status Wildlife Species

Scientific name	Common name	Status	Habitat	Potential habitat on-site	Range	Known range/ Critical habitat	Potential for occurrence on-site
Danaus plexippus	Monarch Butterfly	FC, USFS:S	Roosts located in wind-protected tree groves (Eucalyptus, Monterey pine, cypress), with nectar and water sources nearby	No	Winter roost sites extend along the coast from northern mendocino to Baja California, Mexico	Yes	None: No roosting habitat present and no CNDDB reocrds within 5 miles of the Study Area.
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT	Occurs only in association with blue elderberry (Sambucuc mexicana), prefers to lay eggs in elderberries 2-8 inches in diameter.	Yes	California central valley	Yes	Moderate: Host plant present on site and species known from region. No exit holes observed.
Lepidurus packardi	Vernal pool tadpole shrimp	FE	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water.	No	Sacramento Valley	No	None: No habitat
Linderiella occidentalis	California linderiella	IUCN: NT	Large, clear vernal pools and lakes	No	Madera, Placer, Monterey, Sacramento, Merced, Sonoma Fresno, Stanislaus, Tehama, Sutter, Yuba, San Joaquin, Solano, Butte Counties	Yes	None: No habitat



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FIGURE 2

CNDDB Special Status Wildlife & Vegetation Occurrences

McMurty Creek
Solano, California

Legend

- ★ Project Location
- ◌ 5 Mile Radius
- Rana boylii, foothill yellow-legged frog (1876,1875,401,408,409)
- Bombus occidentalis, western bumble bee (177)
- Athene cunicularia, burrowing owl (120,952,272,1995,789,361,228,227)
- Bombus crotchii, Crotch bumble bee (12)
- Emys marmorata, western pond turtle (1280,139)
- Taxidea taxus, American badger (535)
- Branchinecta lynchi, vernal pool fairy shrimp (172,225,793,919,794,792,19)
- Linderiella occidentalis, California linderiella (237,236)
- Buteo swainsoni, Swainson's hawk (2747,976,1686,965,2749,840,970,971,1936,1460, 995,839,1442,2748,2710,968,855,966,841,948,1933, 1937,1926,1253,1920,1698,1699,1441,1445,1935)
- Desmocerus californicus dimorphus, elderberry longhorn beetle (259)
- Elanus leucurus, white-tailed kite (57)
- Lepidurus packardi, vernal pool tadpole shrimp (26)
- Lasthenia conjugens, Contra Costa goldfields (36)
- Astragalus tener var. tener, alkali milk-vetch (30)
- Hesperolinon breweri, Brewer's western flax (10,11)
- Plagiobothrys hystriculus, bearded popcornflower (27)
- Trifolium amoenum, two-fork clover (11,12,30)
- Extriplex joaquinana, San Joaquin spearscale (111)
- Trifolium hydrophilum, saline clover (12)
- Downingia pusilla, dwarf downingia (92)
- Atriplex cordulata var. cordulata,heartscale (5)
- Fritillaria pluriflora, adobe-lily (26)
- Delphinium recurvatum, recurved larkspur (12)
- Legenere limosa, legenere (3)
- Navarretia leucocephala ssp. bakeri, Baker's navarretia (43,41,30,48,53)
- Sidalcea keckii, Keck's checkerbloom (24,23)

Source: CNDDBshapefiles Jun. 2022	Revisions	By
Date: 7/20/2022		
Cartographer: XM		

File: D:\Graphic Designer\My Documents\PROJECTS\1100-1199\1146 McMurty Crk\Adobe\Fig2_1146 CNDDB_220720.ai

The species is aquatic and is found in ponds, lakes, rivers, marshes, and irrigation ditches with abundant vegetation within woodlands, grasslands, or forests. They require logs, rocks, or exposed vegetation one which they bask in the sun. In summer droughts or during colder winter months, the turtles bury themselves in soft soil or hibernate in the muddy bottoms of pools. They may also move along creek channels until they find an isolated pool.

Mating occurs in April and May when the turtles reach 8 to 10 years in age. Eggs are laid between April and August along stream or pond margins.

There are two CNDDB records of northwestern pond turtles within 5 miles of the Study Area. The closest record is approximately 3 miles southeast of the Study Area (occurrence 1280). This record describes an adult and a sub-adult/juvenile observed basking in 2016 within the Ulatis Creek flood control channel. The second record is located just under 5 miles south of the Study Area (occurrence 139). This record describes three adult observed in the northwest end of Lagoon Valley Reservoir in 1998.

Though the Study Area's stock pond/seasonal wetland does not hold water year-round, it ponds to sufficient depths and duration during the rainy season to provide moderately suitable habitat for the northwestern pond turtle. Because the wetland dries in the late spring and summer months it is not ideal habitat for the northwestern pond turtle, as it is generally drying or dried just as this species is mating. However, the species is known to occur in the region. Therefore, there is some potential for a northwestern pond turtle to occur within the seasonal wetland when it is inundated.

The Study Area is located within the Solano HCP's modeled habitat for the northwestern pond turtle. As well, the stockpond/seasonal wetland meets the Solano HCP's definition of a suitable aquatic feature and the HCP considers upland habitats within 325 feet of the stockpond/seasonal wetland as core habitat for the species. Therefore, the Solano HCP's recommended avoidance, minimization, and mitigation measures for the northwestern pond turtle will be implemented as described in Section V. Potential Impacts and Mitigation Measures below.

Burrowing Owl (*Athene cunicularia*) (BLM:S, CSC, IUCN:LC, USFWS:BCC, SA)

The burrowing owl (*Athene cunicularia hypugaea*) is a small ground-dwelling owl that lives in open, dry grasslands, agricultural and range lands, and desert habitats associated with burrowing mammals (Zeiner et. al. 1990). The owl typically nests in old ground squirrel (*Spermophilus beecheyi*) or similar burrows for breeding, wintering, foraging, and migration stopovers. They have been known to occupy artificially constructed burrows. Burrowing owls are commonly seen perching on fences or on mounds outside their burrows. The owl is a mostly opportunistic feeder and forages on level areas with short grass or bare ground. Grasshoppers, beetles, mice, ground squirrels, rats, and gophers comprise the majority of their diet, however, they may also feed on reptiles, young cottontails, amphibians, scorpions, bats, and birds. The owl tends to inhabit areas where food sources are stable and available year-round. They are migratory (leaving the breeding grounds in fall) but often return to the same nest sites in spring to lay eggs from late March to May.

Burrowing owls were once common throughout California but are now found mainly in the Central and Imperial Valleys (DeSante et al. 1997). Over 60% of the breeding pairs known to exist in the 1980's disappeared by the early 1990's. The population decline is due to predation by non-native species, small mammal controls in farmlands, and habitat loss. This species also has very low fledgling success rates (Trulio 1997).

There are eight CNDDB records of burrowing owls within 5 miles of the Study Area. One of the records is listed as possibly extirpated (occurrence 272). The closest record is located just over two miles east of the Study Area (occurrence 789). This record describes a burrow in a sink hole along the edge of the Eubanks Road observed in 2006. The record notes that the burrow was surrounded by a vacant lot that is moving towards development. The second closest record located approximately 2.5 miles southeast of the Study Area describes two adults and three juveniles observed in 2016 (occurrence 1995). The record describes a burrow in disturbed grasslands adjacent to a building and airplane hangars surrounded by urban sprawl. The other 5 records are located between 2.5 and 5 miles east of the Study Area. These records describe owls in ground squirrel burrows (occurrence 120), owls and burrows observed in low-growing annual grasslands (occurrences 227 and 228), within grazed non-native grasslands (occurrence 361), and a mowed area adjacent to a golf course (occurrence 952).

The Study Area's annual grasslands provide moderately suitable habitat for the western burrowing owl and the entire Study Area is considered Burrowing Owl habitat per the Solano HCP's definition. Though much of the vegetation within the Study Area is too dense and tall to provide optimal conditions for the species, the vegetation is varied and there are areas that would better suit the species. As well, few existing small mammal burrows were observed within the Study Area. Therefore, although no burrowing owls or evidence of burrowing owls were observed during the site survey, nor have they previously been observed, there is a moderate potential for them to occur on the site. Therefore, to ensure that the species is not impacted by the proposed project, a pre-construction survey for burrowing owls should be completed prior to initiating the proposed project as required by the Solano HCP. As well, the loss of potential habitat shall be mitigated per the Solano HCP's mitigation recommendations and as described in Section V. Potential Impacts and Mitigation Measures.

California Tiger Salamander (*Ambystoma californiense*) (USFWS:E/T, DFW:T, IUCN:VU)

The California tiger salamander (CTS) is a relatively large, mostly terrestrial salamander with small eyes and a rounded snout. Adult specimens are black to dark grey with oval to bar-shaped white to yellow spots covering the body. Juveniles are solid olive-green and generally do not have markings. Larval salamanders are also olive-green, but with external gills and dark stippling across the body. Adults may reach up to 7.5 inches in size. They have thick bodies and round heads with blunt noses.

This species once ranged throughout the Central Valley from the southern end of the San Joaquin Valley up to the Sacramento Valley. It was also found in the foothills of the Coast Range (Shaffer et al. 1993). This species is restricted to relatively deep vernal pools, stockponds, or similar habitats as, compared to other amphibians, its larvae take a significant amount of time

to transform into juvenile adults and require relatively lengthy hydroperiods. Currently the species is only found in the Central Valley from southern Colusa County to northern Kern County, coastal valleys and foothills in Sonoma and Santa Barbara County, and in the Coast Ranges from Suisun Bay south to the Temblor range (Jennings and Hayes 1994). The species has been eliminated from an estimated 55 to 58% of its breeding habitat and an estimated 75% of its habitat has been lost (Holland 1998).

This species is relatively secretive and they are rarely seen outside of their nocturnal breeding migrations, which begin with the first rains of the season in November or December. Sexually mature adults move at night from underground refugia, e.g. squirrel burrows, to breeding ponds from late November to early March and they may move significant distances, as much as 1.24 miles from a breeding pool (USFWS 2003). Vernal pools or seasonal ponds are required for breeding, which occurs from late winter into early spring. The species also breeds in man-made ponds including stock ponds, reservoirs, and small lakes but there they are often subject to introduced predatory fish species.

After breeding, the adults return to their underground burrows. The eggs then hatch and the resulting gilled aquatic larvae metamorphose into juveniles that also move at night into terrestrial habitats (Zeiner et al 1988). Beginning in late spring and early summer, juveniles migrate from the ponds into underground burrows created by ground squirrels (*Spermophilus* spp.) and other rodents or man-made structures where they estivate until the dry season ends. Juveniles can travel up to one mile from their breeding site to upland refuge site (Austin and Shaffer 1992). The distance is normally less when there are large numbers of refuge sites in close proximity to breeding sites. Barriers, including road berms, buildings, or walls, can impede migration and roads with high levels of traffic are both a major barrier to the species and a major source of mortality. At the end of the dry season, juveniles return to the breeding pond.

There are no records of the species within 5 miles of the Study Area, however, the California tiger salamander is included on the USFW's iPaC resource list of species that are known or expected to be on or near the project area and the Study Area's stock pond provides marginally suitable potential habitat for the species. However, the Study Area is located outside of the Solano HCP's known or potential range for the California tiger salamander and the closest occurrence is located approximately 6.5 miles to the southeast. The distance between the Study Area and the closest occurrence is significantly (over 5 times) greater than the longest distance the species is known to migrate. Additionally, there are significant obstacles including high traffic roads, freeways, and commercial and residential developments that separate the Study Area from known California tiger salamander occurrences. Though the stockpond provides marginally suitable habitat, the stockpond was recently constructed and if California tiger salamanders were to occur within this feature, they would have had to migrate to the stockpond in recent history through development and other significant obstacles. The California tiger salamander is unlikely to occur within the Study Area or be impacted by the proposed project because the Study Area is outside the Solano HCP's known or potential range for the California tiger salamander, because the potential habitat was recently constructed, and because there is a significant distance between the Study Area and the closest known California tiger salamander occurrence.

Swainson's Hawk (*Buteo swainsonii*) (DFW:T, BLM_S, IUCN:LC, USFWS:BCC)

The Swainson's hawk is a large, long-winged species that ranges from 18 to 22 inches in height. It is an even, brown color on its upper parts and white below with a light brown breast. Its tail is banded and brown. Its wings are longer and more pointed than most hawks and soars with wings in a shallow V-shape (Woodbridge 1998).

The hawk nests in western North America from March to July and migrates to southern South America for the winter starting in August. This hawk is similar in size to the red-tailed hawk (*Buteo jamaicencis*) and utilizes open habitats. Potential habitats include mixed and short grass grasslands with scattered trees, dry grasslands and meadows, agricultural fields, riparian areas, oak savannas, and juniper-sage flats (Woodbridge 1998).

The hawk forages for insects, small mammals including California voles (*Microtus californicus*), deer mice (*Peromyscus maniculatus*), and valley pocket gopher (*Thomomys bottae*), and birds by flying 100 to 300 feet above the habitat. The hawk is highly adapted to human disturbance, unlike most other raptors, and they actively seek fields where activities including discing, mowing, flooding, and harvesting force small mammals from their burrows. The raptor may forage up to 18 miles from a nest but usually tries to minimize flight distance to prey while fledglings normally forage within 0.5 miles of the nest. Fledgling mortality is an important factor in the decline in population levels. Mortality may reach 80% among fledglings and is often at least 60% (Woodbridge 1998).

The Central Valley and the Great Basin support the majority of the California's Swainson's hawk populations. Historically, the species was found throughout the state, in bioregions such as the Southern Transverse Ranges, Central Coast Ranges, Central Valley, Great Basin, and Mojave-Colorado Desert. Typically, the raptors nest in large native riparian trees in close proximity to agricultural land, which supports accessible prey. Swainson's hawk typically occurs in valley oak (*Quercus lobota*), Fremont cottonwood (*Populus fremontii*), black walnut (*Juglans hindsii*), and willows (*Salix ssp.*). Although the hawk will fly some distance from the nest tree to forage, most will seek foraging habitat near the nest. Consequently, the Central Valley population is clustered in areas where suitable nesting and foraging habitat occur together. The Swainson's hawk population has declined by 90% since the 1940's due primarily to loss of nesting habitat (Woodbridge 1998).

There are 30 CNDDB records of Swainson's hawks within 5 miles of the Study Area and an additional 80 records within 10 miles. None of the records within 10 miles of the Study Area have been active within the last 5 years; the most recent records are from 2016. The closest record to the Study Area is located approximately 2.5 miles east of the study area (occurrence 1936). This record describes a nest with young observed in 2001 and a nest under construction in 2016. The nest was within a 60' eucalyptus tree with commercial development to the north and grassland to the south. The 2016 nest was in a eucalyptus grove adjacent to a gas station.

The Study Area contains a number of relatively short stature trees and shrubs that provide low quality, and marginally suitable, potential nesting habitat for the Swainson's hawk, while much of the surrounding region contains trees that provide much higher quality nesting habitat. However, the Study Area does contain potentially suitable foraging habitat for the Swainson's hawk. Because the species is known to nest in the area around the Study Area, there is some

potential for a Swainson's hawk to forage on the site if there are nests that are currently being used in the vicinity of the Study Area. Therefore, to ensure that the species is not impacted by the proposed project a pre-construction nesting bird and raptor survey should be completed prior to beginning construction activities, as required by the Solano HCP protocols and as described in Section V Potential Impacts and Mitigation Measures. In addition,, the project shall mitigate for the loss of potential Swainson's hawk foraging habitat as required by the Solano HCP and as described in the above referenced Section.

White-Tailed Kite (*Elanus leucurus*) (CDFW:FP, BLM:S, IUCN:LC)

The white-tailed kite is a medium sized raptor found in open savannas and grasslands. The species has long, narrow grey wings with a black spot on the inner portions. The face and lower body are white and they have red eyes. White-tailed kites are most notable for their distinctive foraging habit in which they hover about 80 feet above the ground, flapping their wings or hovering, until they drop straight down onto their prey.

This species is found year-round in the western and southern United States and through Mexico, Central and South America. They forage for rodents and other prey in cultivated fields, open woodland, marshes, and grasslands. White-tailed kites nest in the upper third of trees within open space or in forested areas. They may utilize existent, old nests of other species.

There is one CNDDB record of a white-tailed kite within 5 miles of the Study Area. The record is located approximately 4 miles east of the Study Area (occurrence 57) and describes a nesting pair observed in 2000 and 2001. The nest was within willow tree in the semi-urban fringe of Vacaville between some buildings and an irrigation canal.

The Study Area contains and is adjacent to a number of trees that could support nesting white-tailed kites. As well, the Study Area contains potentially suitable foraging habitat for the species. However, no white-tailed kites were observed during recent surveys, nor were any nests of sufficient size seen. Furthermore, there is only one record of the species within 5 miles of the Study Area. However, because the species is known from the region and the Study Area contains potentially suitable habitat, a pre-construction nesting bird and raptor survey should be completed to ensure that the species is not adversely impacted by the proposed project.

Valley Elderberry Longhorn Beetle (VELB; *Desmocerus californicus dimorphus*) (USFWS:T)

The valley elderberry longhorn beetle (VELB) has been found through the length of the Central Valley, from near Redding in the north, to Caliente Creek in Kern County to the south, up to as high as 2000 feet in the Sierra Nevada foothills, and with western limits assumed to be in the foothills of the Coast Ranges (United States Fish and Wildlife Service [USFWS] draft status report 2001). The species has an elongated, shield-shaped body that is 0.5 to inch in length. The females are slightly larger, but with shorter antennaes. The elytra, or outer wings, of females are dark, metallic green with a bright red border, while the males are bright red with four oblong dark spots.

The VELB is entirely dependent on its host plant, blue elderberry (*Sambucus mexicana*), which is a common component of the remaining riparian forests and adjacent upland habitats of California's Central Valley. Elderberries are most abundant on riparian high terraces with recent alluvial substrates elevated slightly above cottonwood and willow-dominated floodplain forests (Barr 1991). Most of these terraces have long since been removed by agricultural development (Holstein 1984).

Elderberries can also be found in what is characterized as elderberry savanna. The concept of elderberry savannas was originated by Dr. Glen Holstein, one of this paper's authors, at the California Natural Diversity Data Base (CNDDB) natural community's office in 1979-1981. Elderberry savannas can be found locally in Sacramento County along the American River Parkway between Cal Expo and the river's north bank. Savannas are plant communities characterized by a low woody plant density which may have either a climatic, edaphic, or anthropogenic origin (Walter 1979). Elderberry savannas, however, are anthropogenic since they typically occur in abandoned historically disturbed areas, lack a regular spacing pattern, and often have abundant ground water at a relatively shallow depth. They are typically produced when high terrace riparian vegetation is removed by human activity and the area is subsequently abandoned.

The VELB life cycle takes one or two years to complete. The animal spends most of its life in the larval stage, living within the stems of an elderberry plant. Adult emergence is from late March through June, about the same time as the elderberry produces flowers. After mating, females lay their eggs in crevices in the elderberry bark. In about 10 days, when the eggs hatch, the larvae bore into the pith, where they feed and mature for 1 or 2 years by tunneling through the spongy pith of the large stems, trunks and roots of the elderberry. After pupation, they emerge as brightly colored adults, through distinctive, oval-shaped exit holes they chew through the bark. The adult stage is short-lived and adult beetles are rarely observed. VELB presence is usually noted by the exit holes created by larvae just prior to pupation and emergence as an adult.

There is one CNDDB record of VELB within 5 miles of the Study Area. This record is located approximately 3 miles southwest of the Study Area. The record describes numerous elderberry stems with exit holes observed during protocol level surveys in 2008. The elderberry plants were within the Alamo Creek riparian corridor.

Five, small elderberry shrubs were observed adjacent to the ephemeral drainage along the southern edge of the Study Area during the site survey. Though the shrubs were relatively young with thin stems and no exit holes were observed, there is some potential for VELB to utilize the elderberry shrubs. The observed shrubs are in close proximity to the site's drainage and they will be preserved within the easement area as part of the project. Therefore, though the elderberries and surrounding area will not be subject to any development, maintenance activities in the area have a possibility to impact the species, if the proper procedures are not followed. The proposed project shall, therefore, follow the Solano HCP's avoidance and minimization measures for all ground disturbing activities within 100 feet of elderberry plants.

Crotch's bumble bee (*Bombus crotchii*) (USFS:S, X:IM, SA)

The Crotch's bumble bee is found from Redding south to San Diego and it is nearly endemic to California with few records of the species in Nevada and Mexico. The species occurs in the Mediterranean region in habitats including open grasslands, shrubland, chaparral, desert, creosote scrub, and urban settings. Crotch's bumble bee was previously abundant and persistent within California's Central Valley, though over the last ten years the species has become absent from most of its historic range.

Crotch's bumble bees nest underground in abandoned rodent burrows. They may also occasionally nest in tufts of grass at ground level or in abandoned bird nest cavities. Their colonies are annual and are present throughout most of the flowering season. Crotch's bumble bees' nectar plants consist primarily of milkweeds, dustymaidens, lupines, medics, phacelias, and sages. Though the species also feeds on snapdragons, clarkia, poppies, and wild buckwheat.

There is one record of a Crotch's bumble bee within 5 miles of the Study Area. This record is located just under 5 miles southeast of the Study Area (occurrence #12). The record describes a collection in 2007 with location mapped as the general vicinity of Lagoon Valley Reservoir.

The Study Area's grasslands provide potentially suitable habitat for the crotch's bumble bee. However, the grasslands are dominated by annual grassland species with a limited number of flowering plants to provide nectar for the species and even fewer of the species' preferred nectar sources. As well, the Study Area contained few rodent burrows that could provide potential nest sites. For these reasons, though the Study Area's annual grasslands provide potentially suitable habitat for the Crotch's bumble bee, the habitat is low quality and unlikely to support the species. Furthermore, no bumble bees were observed on site during the site survey. The proposed project is unlikely to affect the Crotch's bumble bee because the Study Area contains only low-quality potential habitat, the site contains few of the species preferred nectar sources, and because no bumble bees were observed on site during the site survey.

Western Bumblebee (*Bombus occidentalis*) (USFS:S, X:IM, SA)

The western bumblebee has many different color variations. In general, bumblebees from northern California north to British Columbia and east to southwest Saskatchewan and Montana have the following coloring: yellow hairs on the front part of the thorax, then black hair on the first through half of the fourth abdominal segments and white hairs are on the edge of the fourth, fifth, and sixth segments. Black hair covers the bumblebee's head (Thorp et al. 2008).

The western bumblebee was widespread and common throughout the western United States and western Canada before 1998 inhabiting northern California, Oregon, Washington, Alaska, Idaho, Montana, western Nebraska, western North Dakota, western South Dakota, Wyoming, Utah, Colorado, northern Arizona, and New Mexico (Xerces Society 2009). Since 1998 bumblebee populations have declined drastically though it is difficult to assess the magnitude of the declines since most of the historic range has not been systematically sampled. Viable populations exist in Alaska and east of the Cascades in the Canadian and U.S. Rocky Mountains.

Populations in central California, Oregon, Washington, and southern British Columbia have mostly disappeared.

Bumblebee colonies are annual. In late winter or early spring, the queen emerges from hibernation and selects a nest site, typically a pre-existing hole such as an abandoned rodent hole (Goulsen 2003a). Bumblebees do not depend on a specific type of flower but visit a range of different plant species. They are important generalist pollinators of a wide variety of crops and flowering plants (Goulsen 2003b).

The Study Area's grasslands provide potentially suitable habitat for the western bumble bee though the grasslands are dominated by annual grassland species with a limited number of flowering plants to provide nectar for the species. As well, there were few rodent burrows present that could provide potential nest sites. For these reasons, though the Study Area's annual grasslands provide potentially suitable habitat for the western bumble bee, the habitat is low quality and unlikely to support the species. Furthermore, no bumble bees were observed on site during the site survey and there is only one record of a western bumble bee within 5 miles of the Study Area (occurrence # 177) and this record is from 1950. The record describes a collection in 1950 mapped in the general vicinity of Vacaville. The proposed project is unlikely to affect the western bumblebee because the Study Area contains only low-quality potential habitat, no bumble bees were observed on site during the site survey, and because the only local record is from 1950.

Nesting raptors (various species)

Nesting raptors of various species are generally protected under the CDFW Code and the Migratory Bird Treaty Act (MBTA). The Study Area contains potential foraging and nesting habitat for raptor species. Accordingly, a preconstruction survey should be completed to determine the presence/absence of nesting raptors on or in proximity to the proposed project, prior to the start of construction.

Migratory Nesting Birds; protected by the MBTA

The term "migratory birds" is a general category of birds that essentially includes all species of birds, not just those typically considered migratory. Rock doves, also known as "pigeons" (*Columba livia*) and European starlings (*Sturnus vulgaris*) are the only birds that are not included as part of the Migratory Bird Treaty Act. In general, migratory bird nesting is not tracked by any agency. The trees and shrubs within the Study Area provide potential habitat for nesting migratory birds. Accordingly, a pre-construction survey should be completed to ensure that no nests are harmed during project related work.

b. Plants

A total of 14 special status plant species have CNDDB recorded occurrences in the 5-mile radius around the Study Area. An additional 30 special status plant species have records in the CNPS online inventory for the USGS quadrangle that includes the Study Area and the six quadrangles

to the north, east, and south. The quadrangles to the west and northwest were excluded from this review because the topography and habitat conditions in these quadrangles vary significantly from the Study Area. These species are described in **Table 2** along with their regulatory status, habitat requirements, and an evaluation of their potential to occur in the Study Area.

There are 18 special status plant species with CNDDB records of in the CNPS online inventory that are unlikely to occur within the Study Area because there is no suitable habitat present. These species largely occur in vernal pools, marshes, swamps, woodland, or riparian scrub habitats that are not present within the Study Area. Information about these 18 species is provided in Table 2.

The remaining 26 special status plant species that have at least some potential to occur within the Study Area are discussed below.

Species Unlikely to Occur within the Study Area Because they were not Observed During July 2022 Bloom Season Survey

Heartscale (*Atriplex cordulata var. cordulata*) (CRPR 1B.2)

San Joaquin Spearscale (*Extriplex cordulata*) (CRPR 1B.2, BLM:S)

Brewer's western flax (*Hesperolinon brewerii*) (CRPR 1B.2)

There are three special status plant species that are unlikely to occur within the Study Area because they were not observed during a botanical survey that took place during their bloom season. This includes the following species: Heartscale (*Atriplex cordulata var. cordulata*), San Joaquin Spearscale (*Extriplex cordulata*), and Brewer's western flax (*Hesperolinon brewerii*).

A botanical survey was conducted of the Study Area in July 2022 with the goal of identifying vegetation species, habitat types, and identifying any special status plant species that may occur on the site. The survey was conducted by experienced biologists that have experience identifying rare and special status plant species. The survey occurred during the bloom season of heartscale, San Joaquin spearscale, and Brewer's western flax. These species were not identified within the Study Area. Per standard botanical survey protocols, these species can generally be considered absent from the Study Area. However, a survey earlier in these species bloom seasons shall be conducted to ensure that they are absent from the Study Area and that they will not be impacted by the proposed project.

Species Unlikely to Occur within the Study Area Because Only Marginally Suitable Habitat Present and due to the Absence of Records within 5 miles

Brittlescale (*Atriplex depressa*) (CRPR 1B.2)

California alkali grass (*Puccinellia simplex*) (CRPR 1B.2)

Carquinez goldenbush (Isocoma arguta) (CRPR 1B.1)

Crampton's tuctoria (*Tuctoria mucronate*) (CRPR 1B.1, CE, FE)

Ferris' milk-vetch (*Astragalus tener var. ferrisiae*) (CRPR 1B.1)

Table 2
Special Status Plant Species

Scientific name	Common name	Status	Habitat	Potential habitat on-site	Range	Known Range	Elevation	Life Form	Potential for Occurrence On-site	Flowering/ Survey Period
Astragalus tener var. ferrisiae	Ferris' milk-vetch	CRPR 1B.1	Meadows and seeps (vernally mesic), valley and foothill grassland (subalkaline flats)	Marginal	Butte, Colusa, Glenn, Solano, Yolo, Yuba	Yes	2 - 75 meters	annual herb	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	April - May
Astragalus tener var. tener	alkali milk-vetch	CRPR 1B.2	Playas, valley & foothill grassland, vernal pool, wetland	Marginal	Alameda, Contra Costa, Merced, Monterey, Napa, San Benito, Santa Clara, San Francisco, San Joaquin, Solano, Sonoma, Stanslaus, Yolo	Yes	1 - 60 meters	annual herb	Unlikely: Site contain potential habitat, but there is only one record of the species in the region and the record is from 1896 and is listed as possibly extirpated.	March - June
Atriplex cordulata var. cordulata	heartscale	CRPR 1B.2	Chenopod scrub, valley and foothill grasslands, meadows and seeps	Marginal	Akameda, Butte, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, San Joaquin, Solano, Stanislaus, Sutter, Tulare, Yolo	Yes	0-560 meters	annual herb	Unlikely: Only marginally suitable habitat present and species not observed during bloom season site survey (July 2022).	April - Oct.
Atriplex depressa	brittlescale	CRPR 1B.2	Associated with alkaline chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools	Marginal	Alameda, Contra Costa, Colusa, Fresno, Glenn, Kern, Merced, Solano, Stanislaus, Tulare, Yolo	Yes	1 - 320 meters	annual herb	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	April - Oct.
Atriplex persistens	vernal pool smallscale	CRPR 1B.2	Vernal pools (alkaline)	No	Colusa, Glenn, Madera, Merced Solano, Stanislaus, Tulare	Yes	10 - 115 meters	annual herb	None: No habitat	June - Oct.
Centromadia parryi spp. parryi	Pappose tarplant	CRPR 1B.2	Chaparral, coastal prarie, meadows and seeps, marshes and swamps (coastal salt), and valley and foothill grassland (vernally mesic)	Marginal	Butte, Colusa, Glenn, Lake, Napa, San Mateo, Solano, Sonoma	Yes	0 - 420 meters	annual herb	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	May - November
Centromadia parryi ssp. rudis	Parry's rough tarplant	CRPR 4.2	Valley and foothill grasslands, vernal pools	Marginal	Butte, Colusa, Glen, Lake, Merced, Modoc, Sacramento, San Joaquin, Solano, Stanislaus, Yolo	Yes	0 - 100 meters	annual herb	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	May - Oct.
Chloropyron molle ssp. hispidum	hispid salty bird's-beak	CRPR 1B.1	Meadows and seeps, playas, valley and foothill grasslands	Marginal	Alameda, Kern, Merced, Placer, Solano	Yes	1 - 155 meters	annual herb (hemiparasitic)	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	June - Sept.
Cicuta maculata var. bolanderi	Bolander's water hemlock	CRPR 2B.1,	Coastal marshes and swamps, fresh or brackish water	No	Contra Costa, Marin, Sacramento, Santa Barbara, Solano	Yes	0-200 meters	perennial herb	None: No habitat	June - Sept.
Delphinuum recurvatum	recurved larkspur	CRPR 1B.2	Shadscale scrub, foothill woodland, and valley grassland	Marginal	Alameda, Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Kings, Los Angeles, Madera, Merced, Monterey, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Solano, Tulare, Ventura, Yuba	Yes	10 - 1110 meters	perennial herb	Unlikely: Only marginally suitable habitat prseent and only one historic (1902 & 1940) record of the species in the region.	March - June
Downingia pusilla	dwarf downingia	CRPR 2B.2	Valley and foothill grassland (mesic sites), vernal pools	Marginal	Amador, Fresno, Merced, Napa, Placer, Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama, Yuba	Yes	1 - 445 meters	annual herb	Moderate: Only marginally suitable habitat present on site.	March - May
Extriplex (Atroplex) joaquinana	San Joaquin spearscale	CRPR 1B.2, BLM:S	Chenopod scrub, alkali meadows and seeps, playas, valley and foothill grassland	Marginal	Alameda, Contra Costa, Colusa, Fresno, Glenn, Merced, Monterey, Napa, San Benito, Santa Clara, San Joaquin, San Luis Obispo, Solano, Tulare, Yolo	Yes	1 - 835 meters	annual herb	Unlikely: Only marginally suitable habitat prsent and species not observed during bloom season site survey (July 2022).	April - October
Fritillaria agrestis	stinkbells	CRPR 4.2	Chaparral, cismontane woodland, pinyon and juniper woodlan, valley and foothill grasslands	Marginal	Alameda, Calaveras, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Los Angeles, Mendocino, Merced, Monterey, Mariposa, Placer, Sacramento, Santa Benito, San Luis Obispo, San Mateo, Santa Barbara, Solano, Stanislaus, Tulare, Tuolumne, Ventura, Yolo, Yuba.	Yes	10 - 1,555 meters	perennial bulbiferous herb	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	March - June
Fritillaria liliacea	Fragrant fritillary	CRPR 1B.2	Often serpentine, cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland	Marginal	Alameda, Contra Costa, Monterey, Marin, San Benito, Santa Clara, San Francisco, San Mateo, Solano, Sonoma	Yes	3-410 meters	perennial bulbiferous herb	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	Feb. - April
Fritillaria pluriflora	adobe-lily	CRPR 1B.2	Foothill woodland, chaparral, valley grassland	Marginal	Butte, Colusa, Glenn, Lake, Napa, Solano, Tehama, Yolo	Yes	190 - 680 meters	perennial herb (bulb)	None: Elevation at the Study Area would not support this species, potnetial habitat is marginal, and there is only one record of this species in the region and the record is based on a collection in 1913.	February - April

Table 2
Special Status Plant Species

Scientific name	Common name	Status	Habitat	Potential habitat on-site	Range	Known Range	Elevation	Life Form	Potential for Occurrence On-site	Flowering/ Survey Period
Gratiola heterosepala	Boggs Lake hedge-hyssop	CRPR 1N.2, BLM:S, CE	Marshes and swamps (lake margina), vernal pools	No	Freson, Lake, Lassen, Madera, Mendocino, Merced, Modoc, Placer, Sacrmanto, Shasta, Siskiyou, San Joaquin, Solano, Sonoma, Tehama	No	10 - 2,375 meters	annual herb	None: No habitat	April - August
Hesperevax caulescens	hogwallow starfish	CRPR 4.2	Valley and foothill grassland, vernal pools	Yes	Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Merced, Monterey, Mariposa, Sacramento, San Diego, San Joaquin, Sonoma, Stanislaus, Sutter, Tehama, Tuolumne, Yolo, Yuba	Yes	0 - 505 meters	annual herb	Moderate: Marginally suitable habitat present on site, though species known to occur within same USGS quadrangle there are no records within 5 miles.	March -June
Hesperolinon breweri	Brewer's western flax	CRPR 1B.2	Chaparral, cismontane woodland, valley and foothill grassland	Marginal	Alameda, Contra Costa, Napa, Solano	Yes	30 - 945 meters	annual herb	Unlikely: Only marginally suitable habitat prsent and species not observed during bloom season site survey (July 2022).	May - July
Hibiscus lasiocarpos var. occidentalis	Woolly rose-mallow	CRPR 1B.2	Freshwater marshes and swamps, moist freshwater-soaked river banks and low peat islands in sloughs, riprap and levees. In California known from Delta watershed.	No	Alameda, Butte, Colusa, Contra Costa, Glenn, Lake, Sacramento, San Joaquin, Solano, Sutter, Tehama, Yolo	Yes	0 - 140 meters	perennial herb	None: Non habitat	June - Sept.
Isocoma arguta	Carquinez goldenbush	CRPR 1B.1	Valley and foothill grassland (alkaline)	Marginal	Solano	Yes	1-20 meters	perennial herb	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	Aug. - Dec.
Lasthenia chrysantha	alkali-sink goldfields	CRPR 1B.1	Vernal pools	No	Fresno, King, Kern, Madera, Merced, Sacramento, Solano, Stanislaus, Tulare	Yes	0 - 120 meters	annual herb	None: No habitat	Feb. - April
Lasthenia conjugens	Contra Costa goldfields	FE, CRPR 1B.1	Alkali playa, cismontane woodland, valley and foothill grassland, vernal pool, wetland	Marginal	Alameda, Contra Costa, Mendocino, Monterey, Marin , Napa, Santa Barbara, Santa Clara, Solano, Sonoma	Yes	0 - 470 meters	annual herb	Unlikely: Only marginally suitable habitat present and only one historic (1918) record of the species in the region.	March - June
Lasthenia ferrisiae	Ferris' goldfields	CRPR 4.2	Vernal pools (alkaline, clay)	No	Alameda, Butte, Contra Costa, Colusa, Fresno, King, Kern, Merced, Monterey, Sacramento, San Joaquin, Solano, San Louis Obispo, Stanislaus, Tulare, Yolo	Yes	20 - 700 meters	annual herb	None: No habitat	Feb. - May
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	CRPR 1B.1, BLM:S	Vernal pools	No	Colusa, Kern, Los Angeles, Merced, Orange, Riverside, Santa Barbara, San Bernadino, San Diego, San Louis Obispo, Solano, Tehama, Tulare, Ventura, Yolo	Yes	1 - 1,220 meters	annual herb	None: No habitat	Feb. - June
Lathyrus jepsonii var. jepsonii	Delta tule pea	CRPR 1B.2	Marshes and swamps (freshwater and brackish)	No	Contra Costa, Napa, Sacramento, San Joaquin, Solano, Sonoma, Yolo	Yes	0 - 5 meters	perennial herb	None: No habitat and elevation at Study Area would not support this species.	May - September
Legenere limosa	Legenere	CRPR 1B.1, BLM:S	Vernal pools	No	Alameda, Lake, Monterey, Napa, Placer, Sacramento, Santa Clara, Shasta, San Joaquin, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Yuba	Yes	1 - 880 meters	annual herb	None: No habitat	April - June
Lepidium latipes var. heckardii	Heckard's pepper-grass	CRPR 1B.2	Valley and foothill grasslands (alkaline flats)	Marginal	Glen, Merced, Sacramento, Solano, Yolo	Yes	2 - 200 meters	annual herb	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	March - May
Lilaeopsis masonii	Mason's lilaeopsis	SR, CRPR 1B.1	Marshes and swamps (brackish or freshwater), riparian scrub	No	Alameda, Contra Costa, Marin, Napa, Sacramento, San Joaquin, Solano, Yolo	Yes	0 - 10 meters	perennial rhizomatous herb	None: No habitat	April - November
Limosella australis	Delta mudwort	CRPR 2B.1	Riparian scrub, marshes and swamps	No	Alameda, Contra Costa, Marin, Plumas, Sacramento, San Joaquin, Solano	Yes	0 - 3 meters	perennial stoloniferous herb	None: No habitat and elevation at Study Area would not support this species.	April
Malacothamnus helleri	Heller's bush-mallow	CRPR 3.3	Chaparral (sandstone), riparian woodland (gravel)	No	Colusa, Glen, Lake, Napa, Yolo	Yes	305 - 635 meters	perennial deciduous shrub	None: No habitat and elevation at Study Area would not support this species.	May - July
Myosurus minimus ssp. apus	little mousetail	CRPR 3.1	Valley and foothill grasslands, vernal pools (alkaline)	Marginal	Contra Costa, Colusa, Lake, Merced, Riverside, San Bernadino, San Diego, Solano, Tulare, Yolo	Yes	20 - 640 meters	annual herb	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	March - June

Table 2
Special Status Plant Species

Scientific name	Common name	Status	Habitat	Potential habitat on-site	Range	Known Range	Elevation	Life Form	Potential for Occurrence On-site	Flowering/ Survey Period
Navarretia leucocephala ssp. Bakeri	Baker's navarretia	CRPR 1B.1	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools	Yes	Colusa, Glenn, Lake, Lassen, Mendocino, Marin, Napa, Solano, Sonoma, Sutter, Tehama, Yolo	Yes	5-1,740 meters	annual herb	Moderate: Potentially suitable present on site	April - June
Neostapfia colusana	Colusa grass	CRPR 1B.1	Vernal pools (adobe clay)	No	Colusa, Glen, Merced, Solano, Stanislaus, Yolo	Yes	5 - 200 meters	annual herb	None: No habitat	May - August
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	CRPF 1B1, FT, CE	Vernal pools	No	Fresno, Madera, Merced, Solano, Stanislaus, Tulare	Yes	10-755 meters	annual herb	None: No habitat	April - Sept.
Perideridia gairdneri ssp. gairdneri	Gairdner's yampah	CRPR 4.2	Broadleafed upland forest, chaparral, coastal prairie, valley and foothill grasslands, vernal pools	Marginal	Del Norte, Kern, Mendocino, Contra Costa, Fresno, Humbolt, Lake, Lassen, Marin, Modoc, Monterey, Napa, San Benito, San Bernadino, San Diego, San Luis Obispo, San Mateo, Santa Cruz, Siskiyou, Solano, Sonoma, Trinkty Ventura	Yes	0 - 610 meters	perennial herb	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	June - Oct.
Plagiobothrys hystriculus	bearded popcornflower	CRPR 1B.1	Oftern vernal swales, valley and foothill grasslands (mesic), vernal pool margins	Yes	Napa, Solano, Yolo	Yes	0-274 meters	annual herb	Moderate: Only small amount of potentially suitable habitat present on site	April - May
Puccinellia simplex	California alkali grass	CRPR 1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools	Marginal	Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Los Angeles, Madera, Merced, Napa, San Bernardino, Santa Clara, Santa Cruz, San Luis Obispo, Solano,	Yes	2 - 930 meters	annual herb	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	Mar. - May
Sidalcea keckii	Keck's checkerbloom	CRPR 1B.1, FE	Foothill woodland, valley grassland	Yes	Yolo, Tulare, Solano, Napa, Merced, Lake, Glenn, Fresno, Colusa,	Yes	140 - 730 meters	annual herb	Moderate: Potentially suitable present on site	April - May
Stuckenia filiformis ssp. alpina	northern slender pondweed	BRPR 2B.2	Marshes and swamps (assorted shallow freshwater)	No	Alameda, Butte,Contra Costa, El Dorado, Lassen, Merced, Mono, Modoc, Mariposa, Nevada, Placer, Santa Clara, Shasta , Sierra , San Mateo, Solano, Sonoma	Yes	300 - 2150 meters	Perennial rhizomatous herb	None: No habitat and elevation at Study Area would not support this species.	May - July
Symphyotrichum lentum	Suisun Marsh aster	CRPR 1B.2	Marshes and swamps brackish and freshwater	No	Contra Costa, Napa, Sacramento, San Joaquin, Solano, Yolo	Yes	0 - 3 meters	perennial rhizomatous herb	None: No habitat and elevation at Study Area would not support this species.	April - November
Trifolium amoenum	two-fork clover	FE, CRPR 1B.1	Coastal bluff scrub, valley and foothill grassland	Marginal	Marin, Napa, Santa Clara, San Mateo, Solano, Sonoma	Yes	5 - 415 meters	annual herb	Unlikely: Only marginally suitable habitat present and the three records of the species in the region are historic and based on collections in 1892, 1903, and 1909	April - June
Trifolium hydrophilum	saline clover	CRPR 1B.2	Marsh & swamp, valley & foothill grassland, vernal pool, wetland	Marginal	Alameda, Contra Costa, Colusa, Lake, Monterey, Napa, Sacramento, San Benito, Santa Clara, Santa Cruz, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Yolo	Yes	0 - 300 meters	annual herb	Unlikely: Only marginally suitable habitat present and only one record of the species in the region which states that the species was most recently seen in 1960.	April - June
Tuctoria mucronata	Crampton's tuctoria or Solano grass	CRPR 1B.1, CE, FE	Valley and foothill grasslands (mesic), vernal pools	Marginal	Solano, Yolo	Yes	5 - 10 meters	annual herb	Unlikely: Only marginally suitable habitat present and no CNDDB records within 5 miles of Study Area.	April - Aug.
Viburnum ellipticum	oval-leaved viburnum	CRPR 2B.3	Chaparral, cismontane woodland, lower montane coniferous forest	No	Alameda, Contra Costa, El Dorado, Fresno, Glenn, Humboldt, Lake, Mendocino, Mariposa, Napa, Placer, Shasta, Solano, Sonoma, Tehama	Yes	215 - 1400 meters	perennial deciduous shrub	None: No habitat and elevation at Study Area would not support this species.	May - June

Fragrant fritillary (*Fritillaria liliacea*) (CRPR 1B.2)

Gairdner's yampah (*Perideridia gairdneri ssp. gairdneri*) (CRPR 4.2)

Heckard's pepper-grass (*Lepidium latipes var. heckardii*) (CRPR 1B.2)

Hespid salty bird's-beak (*Chloropyron mole ssp. hispidum*) (CRPR1B.1)

Little mousetail (*Myosurus minimus ssp. apus*) (CRPR 3.1)

Pappose tarplant (*Centromadia parryi spp. Parryi*) (CRPR 1B.2)

Parry's rough tarplant (*Centromadia parryi ssp. rubis*) (CRPR 4.2)

Stinkbells (*Fritillaria agrestis*) (CRPR 4.2)

There are thirteen special status plant species with records in the CNPS online inventory for the USGS quadrangle that includes the Study Area and the surrounding six quadrangles. None of these thirteen species have CNDDB records within 5 miles of the Study Area. The Study Area's annual grasslands provides potentially suitable habitat for each of these species, the dominance of non-native, annual grassland species makes the habitat low quality and only marginally suitable for these species.

It is unlikely that any of these thirteen species would occur within the Study Area because there is only marginally suitable habitat and because there are no records of these species within 5 miles of the Study Area. However, to ensure that none of these species are impacted by the proposed project, bloom season surveys shall be conducted to ensure that they are absent from the Study Area and that they will not be impacted by the proposed project.

Species Unlikely to Occur within the Study Area Because Only Marginally Suitable Habitat Present and due to the Absence of Recent Local Records

Alkali milk-vetch (*Astragalus tener var. tener*) (CRPR 1B.2)

Contra Costa goldfields (*Lasthenia conjugens*) (USFWS:E, CNPS 1B.1)

Recurved larkspur (*Delphinuum recurvatum*) (CRPR 1B.2)

Saline clover (*Trifolium hydrophilum*) (CRPR 1B.2)

Two-for clover (*Trifolium amoenum*) (FE, CRPR 1B.1)

There are five special status plant species with CNDDB records within 5 miles of the project site that are unlikely to occur within the Study Area because there is only marginally suitable habitat present and the only local records are historic. This includes alkali milk-vetch (*Astragalus tener var. tener*), Contra Costa goldfields (*Lasthenia conjugens*), recurved larkspur (*Delphinuum recurvatum*), two-for clover (*Trifolium amoenum*), and saline clover (*Trifolium hydrophilum*). Though the Study Area's grasslands provide marginally suitable habitat for all of these species the predominance of non-native, annual grassland species makes it unlikely that these species would occur within the Study Area. As well, alkali milk-vetch only has one CNDDB record within 5 miles of the Study Area and this record is listed as possibly extirpated and is from 1896. Contra Costa goldfields typically occur within vernal pools, which is a habitat type

not found on the Study Area. As well, there is only one record of Contra Costa goldfields within 5 miles of the Study Area and this record is just under five miles away and is based on a 1918 Jepson collection. Recurved larkspur has only one CNDDB record from the region and this record describes observations in 1902 and 1940. Two-fork clover has three records within 5 miles of the Study Area though these records are based on collections in 1892, 1903, and 1909. Saline clover also only has one CNDDB record within five miles of the Study Area and this record states the species was most recently seen in 1960. Though the site contains marginally suitable habitat for these species, there are no recent records of these species within 5 miles of the Study Area. Therefore, these species are unlikely to occur within the Study Area. However, to ensure that these species are not impacted by the proposed project, bloom season surveys for these species shall be conducted to determine their presence/absence on the site.

Species with a Moderate Potential to Occur within the Study Area Because Potentially Suitable Habitat Present and Local Occurrences

There are five special status plant species with CNDDB records within 5 miles of the Study Area or with a CNPS online inventory record for the USGS quadrangle that includes the Study Area. These five species are discussed below.

Baker's navarretia (Navarretia leucocephala ssp. bakeri) (CNPS 1B.1)

Baker's navarretia is an annual herb that is native and endemic to California. It is found in a variety of habitats including cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools. It almost always occurs under wetland conditions in elevations between 5 and 1740 meters.

The plant is often stout with a large inflorescence of numerous white, five-petaled flowers and spiky bracts. It has a blooming period from April to July.

There are five CNDDB records of Baker's navarretia within 5 miles of the Study Area; all are located between 2.5 and 5 miles from the Study Area. Three of these records are based on historic collections one from 1884 (occurrence 30), one from 1916 (occurrence 41), and one from 1940 (occurrence 43). The other two records describe a collection from 2010 that was described as "scarce" (occurrence #48), and 800 plants observed in 2011 on mitigation lands.

Though Baker's navarretia has not been observed within the Study Area, the site contains potentially suitable habitat for the species. As well, the species is known to occur in the region. Therefore, to ensure that the species is not impacted by the proposed project, a bloom season survey for this species shall be conducted to determine its presence/absence on the site.

Bearded popcorn-flower (Plagiobothrys hystriculus) (CNPS 1B.1)

Bearded popcorn-flower is an annual herb native to California. The species was previously believed to be extinct, but was rediscovered in 2005. It is known only from the Montezuma Hills

along the Sacramento Delta in Solano County. It was historically found in vernal pools, freshwater wetlands, and valley grassland.

Bearded popcorn flower is erect with stems from 10 to 45 cm. The stems, leaves, and calyx are all covered in sparse to dense hairs. The flowers are composed of five, white sepals fused at the base. The species is difficult to distinguish from *P. acanthocarpus* (adobe popcorn flower), *P. greenei*, and *P. trachycarpus* (rough-fruited popcorn flower). It flowers from April to May.

There is one CNDDB record of bearded popcorn flower within five miles of the Study Area. This record is located just over two miles east of the Study Area (occurrence 27). This record describes two polygons containing the plant with 175 in the eastern polygon in 2011 and 7 plants in the western polygon in 2016. The plants occurred in vernal pool habitat near a PG&E right-of-way.

Though the Study Area contains potentially suitable habitat for bearded popcorn-flower, the species has not been observed within the Study Area. However, the species is known to occur in the region. Therefore, to ensure that the species is not impacted by the proposed project, a bloom season survey for this species shall be conducted to determine its presence/absence on the site.

Dwarf downingia (Downingia pusilla) (CNPS 2B.2)

Dwarf downingia is an annual herb that is native to California and also found elsewhere in North America and down to South America. It is known in the northern central valley and north San Francisco Bay, from Merced and Mariposa counties in the south to Tehama County in the north (CNPS 2003).

Dwarf downingia grows in vernal pools, playa pools, and on margins of vernal lakes other mesic areas within valley and foothill grassland, both in alkaline (saline) and nonalkaline soils. It occurs with other rare wetland and vernal pool species such as alkali milk-vetch (*Astragalus tener* var. *tener*), legenere (*Legenere limosa*), Bogg's Lake hedge-hyssop (*Gratiola heterosepala*), Heckard's peppergrass (*Lepidium latipes* var. *heckardii*) and little mouse-tail (*Myosurus minimus* ssp. *apus*). The species is threatened by urbanization, development, agriculture, grazing, vehicles, and industrial forestry.

Dwarf downingia are 3 to 8 cm tall with small linear leaves. Its tubular, radially symmetric flowers are less than 1 cm across, in contrast to all other *Downingia* species, which have larger, showy, asymmetric flowers. The flowers, borne at the ends of branches, are white or blue with two small yellow spots near the throat (Hickman 1993). It flowers March through May (Hickman 1993, CNDDB 2003, CNPS 2003).

There is one CNDDB record of dwarf downingia withing five miles of the Study Area. This record is located just over two miles east of the Study Area (occurrence #92). The record describes approximately 250,000 plants observed in 1998 among dense *Eleocharis macrostachya*, *Callitriche marginata*, and *Lasthenia glaberrima*.

Though dwarf downingia is typically found in vernal pools, there is a small potential for the species to occur within mesic annual grasslands. The Study Area's annual grasslands, therefore,

provide marginally suitable, potential habitat for the species. To ensure that the species is not impacted by the proposed project, a bloom season survey for this species shall be conducted to determine its presence/absence on the site.

Hogwallow starfish (Hesperevax caulescens) (CNPS 4.2)

Hogwallow starfish is an annual herb in the daisy family that is native to California. It is moderately flat and star-shaped and typically grows in mud in vernal pools, wetlands, foothill woodlands, valley grasslands, and wetland-riparian habitats. The species blooms from March to June with a small, less than two-millimeter wide, green flower. The leaves are pale green, spoon-shaped, and in a basal rosette.

There are no CNDDB records of Hogwallow starfish within 5 miles of the project site. However, the species is known from the region and there are CNPS Native Plant records of the species within the same USGS quadrangle as the project site. As well, the Study Area's stockpond/season wetland provides marginal, but potentially suitable habitat for this species. Therefore, to ensure that hogwallow starfish is not impacted by the proposed project, a bloom season survey for this species shall be conducted to determine its presence/absence on the site.

Keck's checkerbloom (Sidalcea keckii) (CNPS:1B.1, FE)

Keck's checkerbloom is a federally endangered annual herb that is native and endemic to California. It is known from Colusa, Solano, Fresno, Merced, Tulare, and Yolo counties. The species was previously known from the southern Sierra, though it is now thought extirpated from this area.

Keck's checkerbloom ranges in height from 0.49 to 1.2 feet tall with an occasionally branched stem. The leaves have shallowly edged blades or they have been deeply divided into lobes.

It blooms in April and May with few flowers, generally do not overlap. The inflorescence is a dense cluster of a few flower. The petals are 1 to 2 centimeters long and are deep pink in color with a purple spot at the base of each petal. Each flower has a calyx of pointed green sepals that may be streaked with pink.

There are two CNDDB records of Keck's checkerbloom within five miles of the Study Area. Both records are located to the northeast with one record approximately 3 miles away (occurrence 23) and the other 5 miles (occurrence 24). The closer occurrence is based on collections in 1980 and 1983 and the other is from a 1996 collection.

Though Keck's checkerbloom has not been observed within the Study Area, the site contains potentially suitable habitat. Because the species is known to occur in the region there is some potential for the species to occur within the Study Area. Therefore, to ensure that the species is not impacted by the proposed project, a bloom season survey for this species shall be conducted to determine its presence/absence on the site.

3. Conclusion

No special status wildlife or plant species were observed on or are known to occur within the Study Area. However, the Study Area contains potentially suitable habitat for the northwestern pond turtle and valley elderberry longhorn beetle, as well as potential nesting/foraging habitat for the burrowing owl, Swainson's hawk, and the white-tailed kite. As well, there is some potential for five special status plants to occur within the project area while twenty-one others are unlikely to occur within the Study Area. Therefore, surveys as detailed in the Potential Impacts and Mitigation section below shall be completed for these species to ensure that they are not adversely impacted by the proposed project.

B. Special-Status Habitats

1. Wetlands and Waters

a. Jurisdictions

As defined by the Army Corps of Engineers (Corps), "wetlands" are areas periodically or permanently saturated by surface or groundwater and typically support vegetation adapted to life in saturated (hydric) soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and floodwaters, promotion of groundwater recharge, and their water filtration and purification functions. "Other waters" include tributaries or drainage ditches which exhibit perennial or ephemeral flow to a navigable waterway, wetland, or other significant water feature. Other waters may not necessarily be wetlands.

b. Delineation Methods

Boundaries between jurisdictional areas and uplands were investigated using the routine on-site assessment procedure, Section D, Subsection 2, page 57 of the 1987 "Corps of Engineers Wetlands Delineation Manual" (Environmental Laboratory 1987; hereafter the "Delineation Manual") as modified by the new Interim Arid West Supplement to the Delineation Manual (Environmental Laboratory 2008; hereafter the AWS). Dominant plant species, soil characteristics, and hydrology indicators were noted within a 10-foot by 10-foot plot at each sample point. Data point(s) were mapped onto a 1-inch to 200-foot scale map (**Figure 3**). Wetlands were distinguished from uplands on this site by the presence of: 1) hydrophytic vegetation, 2) wetland hydrology, and 3) hydric soils (defined below. **Appendix E** contains delineation data sheets and Figure 3 contains draft jurisdictional delineation map.

Hydrophytic Vegetation

Hydrophytic vegetation is dominated by plant species that can tolerate prolonged inundation or soil saturation during the growing season. More than 50% of the dominant species must be wetland indicators of FAC, FACW and OBL or outweigh them using a prevalence index for the vegetation to be considered hydrophytic. These wetland indicators, or hydrophytes, are listed



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N

Scale: 1 inch = 125 feet

0 62.5' 125' 250'

FIGURE 3

Section 404 Jurisdictional Wetland Delineation

McMurty Creek
Solano, California

Legend

- Data Point
- Site Boundary
- Seasonal Wetland (Stockpond)
- Creek channel
- Existing Elderberry Bushes

Jurisdictional Areas

Habitat Type	Acres	Lin. Ft.
Seasonal Wetland (Stockpond)	0.311	
Creek channel	0.050	620.30

Disclaimer

This map exhibits conditions on the site at the time of completion of the delineation. For various reasons, conditions on a site may change, which may affect site wetland boundaries. Delineation maps generally expire five years after approval by the U.S. Army Corps of Engineers (Corps). Because regulations governing delineations are subject to change, this map should be reviewed by a qualified wetland consultant to ensure accuracy if not submitted to the Corps within six (6) months of preparation.

Field Work By: Zentner and Zentner, 07.19.22.

Topo Source: Google Earth (2022)	Revisions	By
Date: 7/26/2022		
Cartographer: XM		

File: D:\Graphic Designer\My Documents\PROJECTS\1100-1199\1146 McMurty Crk\Auto CAD\1146 Fig3_Delineation_072522.dwg

in the Delineation Manual as OBL, FACW, and FAC. Other plants are listed as FACU or NI, and unlisted plants are considered as UPL. These abbreviations are defined as follows:

OBL	Obligate Wetland Plants	Plants that occur over 99% of the time in wetlands
FACW	Facultative Wetland Plants	Plants that occur 67% to 99% of the time in wetlands
FAC	Facultative Plants	Plants likely to occur 33% to 67% of the time in wetlands
FACU	Facultative Upland Plants	Plants that occur 1% to 33% of the time in wetlands, but which occur more frequently in uplands
NI	Non-indicator plants	These must be checked against the National Indicator List and could be changed to a wetter or drier status
UPL	Upland Plants	Plants that occur less than 1% of the time in wetlands

Note: The 3 facultative categories are subdivided by (+) and (-) modifiers. FAC+ species are considered to be wetter (have a greater estimated probability of occurring in wetlands) than FAC species. FAC- species are considered to be drier (have a lesser estimated probability of occurring in wetlands) than FAC species.

Hydric Soils

Hydric soils develop under the low oxygen conditions typical of prolonged inundation or saturation, and generally show visible indications of chemical reduction. The hydric nature of a soil is most often indicated by low matrix chromas of 0 to 1, or 2 with mottles, and is determined by comparing the wetted soil with Munsell Soil Color Charts. The hydric nature of a soil may also be indicated by the presence of manganese or iron nodules, or other more subtle characteristics.

Wetland Hydrology

Common wetland hydrology indicators demonstrate inundation or saturation and include observations of standing water, saturated soils, algal mats, water-matted detritus, and water stains on rocks or other objects. In evaluating these hydrology indicators some attention must be given to the frequency and duration of inundation, and the effects of recent weather,

unusual flooding and climatic fluctuations. According to the AWS, an area must have "14 or more days of flooding or ponding or a water table 12 inches (30 centimeters) or less below the soil surface, during the growing season at a minimum frequency of 5 years in 10 (50 percent or higher probability)" to satisfy the hydrology standard. The old standard (US Army Corps 1987 Manual) was that an area must have ponding for 5% of the growing season (18 days in California) or a water table at a depth equal to 80% of the root mass.

c. Results

The Study Area contains one stock pond/seasonal wetland and two drainage channels that are within the Corps jurisdiction (**Figure 3**). The remaining parts of the Study Area are upland habitats and do not fall within the Corps jurisdiction.

Jurisdictional Areas

Stock Pond/Seasonal Wetland

Total Area: 0.311 acre

Data Points: 4, 5

The Study Area contains one 0.311-acre stock pond/seasonal wetland (Figure 3). The stock pond/ seasonal wetland was constructed by excavating a basin and creating a large berm on the downslope side of the basin. Though the basin is constructed, it is within and receives flows from the site's natural drainages. Two sample points were examined within the stock pond/seasonal wetland, one in the low center and the other on the upper limit. Both sample points met the Corps three technical criteria for seasonal wetlands.

Hydrophytic vegetation was dominant at both sample points with the majority of the species either FAC or FACW. Vegetation at the lower sample point was dominated by swamp grass (*Crypsis schoenoides*), rabbit's foot grass, and cocklebur (*xanthium strumarium*), while the sample point on the upper edge was dominated by rabbit's foot grass, Italian rye grass, and bracted allocarya (*Plagiobothrys bracteatus*).

The soils within the wetland are silty clay loam with a color of 10 YR 4/2. Redox with a color 7.5 YR 5/8 was abundant within the soil samples. The sample points contained numerous wetland hydrology indicators including water marks, sediment deposits, surface soil cracks, water-stained leaves, biotic crus, and the presence of reduce iron. As well, there was a visible drainage pattern and inundation is visible on aerial imagery during the rainy season.

Ephemeral Drainages

Total Area: 0.050 acre (620.3 linear feet)

The Study Area contains two ephemeral drainages, both in the southern part of the site. One drainage runs from the west to the east passing below McMurtry Lane via a culvert then flowing approximately 200 feet to its terminus. At its terminus previous grading around the stock

pond/seasonal wetland has modified the topography such that a channel and its bed and bank disappear and water from the drainage either seeps into the ground or sheet flows into the stock pond.

The second drainage flows north to south beginning just south of the stock pond/seasonal wetland and continuing 209 linear feet south and off the Study Area. This drainage is deeply incised and has significant areas of erosion. Prior to construction of the stock pond/ seasonal wetland this drainage likely extended up slope and connected to the ephemeral drainage to the west.

Both ephemeral drainages convey flows from upslope and likely only flow until shortly after the rainy season. Wetland vegetation including toad rush (*Juncus bufonius*) and common rush (*Juncus effuses*) are occasionally present within the drainages though vegetation is generally either absent of similar to the adjacent annual grasslands; wild oats, Italian ryegrass, and soft chess are common within the drainages. There are also several walnut trees (*Juglans californica*) growing adjacent to and over the drainages.

Non-Jurisdictional Areas

Data Points: 1, 2, 3, 6, and 7

The remaining part of the Study Area are upland habitat types: annual grasslands or developed. The vegetation in the uplands is dominated by non-hydric species; the majority of the species are UPL or FACU and there are few FAC species present. Vegetation in the uplands is dominated by wild oats, Italian rye grass, medusa head, soft chess, big heron bill, bur clover, and yellow star thistle.

The soils in sample point 1 had light redox features and are therefore considered hydric soils. However, the sample point did not have any other soil indicators or any wetland hydrology indicators. As well, the vegetation was dominated by upland species. The sample point, therefore, was not considered a wetland. No other sample points had hydric soils or wetland hydrology.

2. Other Special Status Habitats

There are no special status habitats with CNDDB records within 5 miles of the Study Area. As well, there are no other special status habitats on the site.

3. Wildlife Movement Corridors

Wildlife corridors are generally described as pathways or habitat linkages that connect discrete areas of natural open space otherwise separated or fragmented by topography, changes in vegetation, and other natural or human induced factors such as urbanization. The fragmentation of natural habitat creates isolated "islands" of vegetation that may not provide sufficient area or resources to accommodate sustainable populations for a number of species and thus, adversely affecting both genetic and species diversity. Corridors often partially or

largely eliminate the adverse effects of fragmentation by 1) allowing animals to move between remaining habitats to replenish depleted populations and increase the gene pool available; 2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fire or disease) will result in population or species extinction; and 3) serving as travel paths for individual animals moving throughout their home range in search of food, water, mates, and other needs, or for dispersing juveniles in search of new home ranges.

The Study Area does not provide a high-quality wildlife movement corridor. Though the Study Area connects to open space areas to the north and west it is bounded to the south and east by residential development. As well, the Study Area contains few trees and shrubs that would provide shade, structure, and potential hiding spots for predators and prey. Wildlife moving through the area likely prefers areas with less human presence with greater tree cover. Though wildlife may periodically pass through or otherwise use the Study Area it does not serve as a movement corridor.

V. POTENTIAL IMPACTS AND MITIGATION MEASURES

A. Potentially Significant Impacts Before Mitigation

1.0 Development of the project could have a potentially significant impact on the northwestern pond turtle.

Impact Analysis

Though no western pond turtles have been observed within the Study Area, the stockpond/seasonal wetland meet the Solano HCP's definition of suitable aquatic features and the area within 325 feet of the stockpond is considered core habitat. The Study Area is also within the HCP's modeled habitat for the northwestern pond turtle.

Therefore, the Solano HCP's mitigation measures, outlined below, shall be implemented to reduce potential impacts to a level considered less than significant. Note that the language provided by the City of Vacaville and listed below has not yet been adopted and minor revisions to this language may occur. The project, when implemented, will comply with the final, adopted avoidance and mitigation measures.

Mitigation Measures

1.0-1 The applicant shall conduct pre-activity surveys and relocation for the northwestern pond turtle as detailed below:

- An Approved Biologist shall conduct at least two surveys of the work site no more than 2 weeks prior to the onset of Covered Activities in modeled habitat.
- All surveyors shall implement decontamination protocols as outlined by the Solano HCP.
- Presence/absence surveys of aquatic habitats for pond turtles shall be conducted under all the following conditions:
    - On sunny days between 9:00 am and 4:00 pm.
    - When air temperatures are a minimum of 55°F.
    - When winds are <12 miles per hour (3 on the Beaufort scale).
- Survey forms shall be submitted to SCWA and shall document, at a minimum, the name(s) of the waterbody, the type(s) of waterbody, the project site(s) name, surveyor name(s), date, start and end times, and weather conditions (temperature, wind, and cloud cover) of each survey; the numbers, age class, behaviors, and locations [UTMs]) of pond turtles observed; and any invasive species observations.
- Upland habitat survey forms shall include the above information, plus locations of nests or individuals observed (UTMs) and distance to water.

1.0-2 An Approved Biologist shall be present during all initial ground disturbing activities to monitor compliance with all avoidance and minimization measures. The Approved

Biologist will submit a report detailing results of the activities to SCWA within 7 days of the completion of initial ground habitat disturbance.

1.0-3 The Approved Biologist shall be present during all in-water work activities to monitor compliance with all avoidance and minimization measures.

1.0-4 The Approved Biologist shall have the authority to halt any action that might result in effects at greater than anticipated levels under HCP take coverage.

1.0-5 The Approved Biologist shall capture and relocate northwestern pond turtles or their nests out of Covered Activity work areas, or salvage injured or killed pond turtles, in accordance HCP requirements.

1.0-6 The applicant shall mitigate effects to Northwestern pond turtle habitat as required by the Solano HCP. The applicant shall pay into the Northwestern Pond Turtle Habitat Enhancement Fee prior to start of Covered Activities. This Fee will be managed by SCWA and will help habitat preservation including enhancing modeled species habitat (e.g., improve basking sites and nesting habitat). This Fee will be $1,000 per acre of northwestern pond turtle designated Core Habitat impacted.

In lieu of paying the Fee, applicant's avoiding, restoring, and conserving on-site riparian, stream, and marsh habitats shall incorporate northwestern pond turtle essential habitat elements (e.g., basking sites, upland nesting and overwintering habitat). Applicants shall submit a restoration plan to the SWCA for review and approval. The plan shall identify the location(s) of habitat restoration, northwestern pond turtle essential habitat elements, the number of acres to be restored and or preserved, the methods and materials to be used, success criteria, monitoring timing and methods, and maintenance plans. Restoration shall be in-kind based on habitat impacted (e.g., aquatic habitat restored for aquatic habitat impacted, upland habitat restored for upland habitat impacted). Restoration shall be implemented and completed prior to or concurrent with approved covered activities. All areas shall be protected perpetuity.

1.0-7 The applicant shall conduct a baseline survey and document baseline conditions on the Project Site. The baseline conditions report shall document the following:

- Presence of suitable habitat features that may support nesting, including, but not limited to, bare dirt, low/sparse vegetation, slopes 25 percent or less, slopes facing southeast, and loamy soils.
- Presence of suitable overwintering/aestivation habitat features including, but not limited to, leaf litter/duff under closed or mostly closed canopy.
- Presence of suitable basking habitat, including, but not limited to, a description of potential basking sites including substrate and number of basking sites.

*A baseline survey report for northwestern pond turtle habitat was conducted on February 22, 2024. The survey found that, though potential habitat is present, the habitat is low-quality for the northwestern pond turtle because the habitat is dry for much of the year and lacks basking habitat. As well, the surrounding uplands are densely vegetated making it low quality nesting habitat.

Level of Significance After Mitigation: Less Than Significant

2.0 Development of the project could have a potentially significant impact on the western burrowing owl.

Impact Analysis

Though no western burrowing owls or signs of burrowing owls have been observed within or within 1 mile of the Study Area, the species is known from the region and the site contains potentially suitable habitat. Though it is unlikely that the species would occur on the site, there is a small potential. Therefore, the following mitigation measures should be implemented to reduce potential impacts to a level considered less than significant.

Mitigation Measures

2.0-1 For a project start date between February 1 and August 31 a qualified biologist shall conduct a pre-construction survey for the western burrowing owls within 15 days of the start of ground disturbing activities. The survey shall follow the standard Solano HCP protocols. If a lapse in construction work of 15 days or more occurs during the nesting season, additional pre-construction surveys shall be conducted before work is reinitiated. If active burrows are identified during this survey, the Solano HCP's avoidance and minimization measures shall be implemented with consultation for the Solano HCP.

2.0-2 Mitigation for the permanent loss of potential burrowing owl habitat shall be provided at a minimum of 1:1 ratio. If an active nest is identified on the site, the mitigation ratio shall increase according to the Solano HCP's mitigation measures. Per the Solano HCP's definition of burrowing owl habitat, the entire Study Area meets the definition of potential burrowing owl habitat.

Mitigation for the loss of potential habitat may be completed by either (1) paying the City's mitigation fee for impacts to avian foraging habitat; or (2) purchasing mitigation credits from a CDFW approved mitigation bank within Solano County for equivalent land.

Level of Significance After Mitigation: Less Than Significant

3.0 Development of the project could have a potentially significant impact on nesting raptors and other migratory nesting birds.

Impact Analysis

The Project Site contains potential nesting habitat for the white-tailed kite, and other raptors, as well as migratory nesting birds. These birds are protected under the Migratory Bird Treaty Act (50 CFR 10.13) and their nest, eggs, and young are protected under California CDFG Code §§3503, 3503.5, 3800, and 3513. Any project-related impacts on the nesting success of these

species would be considered a significant adverse impact. These impacts could be mitigated to a level considered less than significant by Mitigation Measure 3.0-1.

Mitigation Measures

3.0-1 If construction related work would commence anytime during the nesting/breeding season of raptors or other bird species listed in the Migratory Bird Treaty Act (typically February 1 through September 15), a pre-construction survey of the Project Site for nesting birds should be conducted. This survey should be conducted by a qualified biologist (experienced with the nesting behavior of bird species of the region) within 7 days prior to the commencement of construction activities that would occur during the nesting/breeding season. The intent of the survey should be to determine if active nests are present within or adjacent to the construction zone, that is within approximately 250 feet of the work areas. If ground disturbance activities are delayed following a survey, then an additional pre-construction survey should be conducted such that no more than one week will have elapsed between the last survey and the commencement of ground disturbance activities.

If active nests are found in areas that could be directly or indirectly affected by the project, a no-disturbance buffer zone should be created around active nests during the breeding season or until a qualified biologist determines that all young have fledged. The buffer size should be a minimum of 50 feet wide for passerines and 250 feet wide for raptor species. The size of the buffer zone may be modified through consultation with the CDFW and the Solano HCP taking into account factors such as the following:

- Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity;
- The types of construction activities to occur near the nest,
- Distance and amount of vegetation or other screening between the construction site and the nest; and
- Sensitivity of individual nesting species and behaviors of the nesting birds.

The buffer zone around an active nest should be established in the field with orange construction fencing or another appropriate barrier and construction personnel should be instructed on the sensitivity of nest areas. The qualified biologist should serve as a construction monitor during those periods when construction activities would occur near active nest areas of special status bird species to ensure that no impacts on these nests occur.

Level of Significance After Mitigation: Less Than Significant

4.0 Development of the project could have a potentially significant impact on nesting Swainson's hawks.

Impact Analysis

The Project Site contains potential nesting habitat for Swainson's hawk. Swainson's hawks are protected under the California Endangered Species Act and the Migratory Bird Treaty Act (50 CFR 10.13) and their nest, eggs, and young are protected under California CDFG Code §§3503, 3503.5, 3800, and 3513. Any project-related impacts on the nesting success of the Swainson's hawk would be considered a significant adverse impact. These impacts could be mitigated to a level considered less than significant by Mitigation Measure 3.0-1.

Mitigation Measures

4.0-1 Between March 1 and August 31 a Biologist approved by the Solao HCP shall conduct a pre-construction survey to identify and subsequently avoid Swainson's hawk nesting areas. The survey shall be conducted within 15 days of the start of construction and shall document nesting within 0.25 miles of planned work activities. If a lapse in construction work of 15 days or longer occurs, additional surveys shall be required before the work is reinitiated.

No work (grading, earthmoving, or operation of construction equipment) shall occur within a 0.25-mile buffer around active Swainson's hawk nests except when: a qualified biologist confirms that the nesting activity is complete. The size of the nest buffer may be reduced only as approved by CDFW and the Solano HCP.

Level of Significance After Mitigation: Less Than Significant

5.0 Development of the project could have a potentially significant impact on Swainson's hawk foraging habitat.

Impact Analysis

The project's existing annual grasslands contain suitable potential foraging habitat for Swainson's hawk, which is known from the region. Therefore, the mitigation measures outlined below and as required by the Solano HCP shall be implemented to reduce potential impacts to a level considered less than significant.

Mitigation Measures

5.0-1 Long-term impacts to annual grassland habitats shall be mitigated through the preservation and management of foraging habitat at a 1:1 mitigation-to-impact ratio. Mitigation shall occur within the same Conservation Area as the impacted habitat as identified in the Solano Habitat Conservation Plan.

Mitigation for the loss of potential foraging habitat may be completed by either (1) paying the City's mitigation fee for impacts to avian foraging habitat; or (2) purchasing mitigation credits from a CDFW approved mitigation bank within Solano County for equivalent land.

Level of Significance After Mitigation: Less Than Significant

6.0 Development of the project could have a potentially significant impact on the valley elderberry longhorn beetle.

Impact Analysis

The Study Area contains five elderberry shrubs that have the potential to support the valley elderberry longhorn beetle. Though no signs of valley elderberry longhorn beetles were observed on the shrubs the species is known from the region. Therefore, there is some potential for the species to occur within the Study Area. The five elderberry shrubs and adjacent habitat will be preserved within the creek easement area. However, maintenance and other ground disturbing activities within 20 feet of the elderberry shrubs have the potential to impact the species if they begin to utilize the shrubs and the proper maintenance procedures are not followed. Therefore, all maintenance and other ground disturbing activities within 20 feet of the elderberry shrubs should follow the mitigation measures below from the USFWS 1996 guidelines for valley elderberry longhorn beetle mitigation. With implementation of these measures impacts to the valley elderberry longhorn beetle can be mitigated to a less than significant level.

Mitigation Measure

6.0-1 The following measures apply to all ground-disturbing activities within 100 ft of elderberry plants:

- A minimum setback of 20 ft from the drip line of each elderberry plant shall be established between the development and all elderberry plants containing stems measuring 1 inch in diameter or greater at ground level, except where elderberry plants are established immediately along existing roads or other paved or graveled surfaces (e.g., sidewalks, bike/pedestrian paths, facility access roads). The setback shall be fenced and flagged consistent with the general construction avoidance and minimization measures for exclusion fencing to prevent encroachment of equipment and materials.
- Where elderberry plants are established adjacent to existing roads and facilities, construction avoidance fencing shall be provided to protect the trunk and main stems of the plant.
- All contractors shall be briefed on the need to avoid damaging the elderberry plants and the possible penalties for not complying with these requirements. Work crews shall be instructed on the status of the valley elderberry longhorn beetle and the need to protect its elderberry host plant.
- Signs shall be placed every 50 ft along the edge of the buffer zone with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Federal Endangered Species Act. Violators are subject to prosecution, fines, and imprisonment." The signs

shall be clearly readable from a distance of 20 ft and must be maintained for the duration of construction.

- Routine trimming of overgrown and overhanging elderberry shrubs that may pose a human safety threat along pathways, trails, bike paths, roadways shall adhere to the following restrictions:
    - Only branches and stems less than 1 inch in diameter may be trimmed or cut.
    - Trimming may only occur between September 1 and March 14. Trimming is recommended from November through the first 2 weeks in February, when plants are dormant and have lost their leaves.
    - Trimming shall not occur after the shrubs have leafed out (when adult valley elderberry longhorn beetles are likely to be active).
    - Vegetation clearing within 5 ft of elderberry shrub stems shall be done by hand (pulling, clipping, etc.).
- Following completion of construction work affecting the buffer zone, any damage done to the buffer zone shall be restored using native erosion control seed mixes and native riparian plant species, as appropriate.
- Any elderberry plants that cannot be avoided during construction shall be transplanted to other appropriate locations in the buffer zone, and other mitigation as specified in Section 6.4.5.2 shall be implemented.
- After construction, buffer zones must continue to be protected from adverse effects of the development project. Protection measures such as fencing and signage shall be included in the project plans and are subject to the approval of SCWA in consultation with the HCP Technical Review Committee. 9. No insecticides, herbicides, fertilizers, or other chemicals that might harm the valley elderberry longhorn beetle or its host plant shall be used in the buffer areas or within 100 ft of any elderberry plant with one or more stems measuring 1 inch in diameter or greater at ground level. 10.
- Fire fuel breaks (disked land) may not be included within the 100 ft setback; however, vegetation in the setback may be cleared by mowing (e.g., mower, mechanical trimmers, hand tools) to less than 2 inches in height. The mowing of grasses/ground cover in the buffer zone may occur from July through April to reduce fire hazards. No mowing shall occur within 5 ft of elderberry plant stems. Mowing must be done in a manner that avoids damaging plants (e.g., stripping away bark through careless use of mowing/trimming equipment). 11.
- A biologist approved by the Solano HCP shall be retained to monitor implementation and compliance of all the above measures.

7.0 The proposed project could have a potentially significant adverse impact on special status plant species.

Impact Analysis

The Study Area contains potentially suitable habitat for five special status plant species while twenty-one others are unlikely to occur. These species include: Heartscale (*Atriplex cordulata var. cordulata*), San Joaquin Spearscale (*Extriplex cordulata*), Brewer's western flax (*Hesperolinon brewerii*), Brittlescale (*Atriplex depressa*), California alkali grass (*Puccinellia simplex*), Carquinez goldenbush (Isocoma arguta), Crampton's tuctoria (*Tuctoria mucronate*), Ferris' milk-vetch (*Astragalus tener var. ferrisiae*), fragrant fritillary (*Fritillaria liliacea*), Gairdner's yampah (*Perideridia gairdneri ssp. gairdneri*), Heckard's pepper-grass (*Lepidium latipes var. heckardii*), hespid salty bird's-beak (*Chloropyron mole ssp. hispidum*), little mousetail (*Myosurus minimus ssp. apus*), pappose tarplant (*Centromadia parryi spp. Parryi*), Parry's rough tarplant (*Centromadia parryi ssp. rubis*), Stinkbells (*Fritillaria agrestis*), alkali milk-vetch (*Astragalus tener var. tener*), Contra Costa goldfields (*Lasthenia conjugens*), recurved larkspur (*Delphinuum recurvatum*), saline clover (*Trifolium hydrophilum*), two-for clover (*Trifolium amoenum*), Baker's navarretia (*Navarretia leucocephala ssp. bakeri*), bearded popcorn-flower (*Plagiobothrys hystriculus*), Dwarf downingia (*Downingia pusilla)*, Hogwallow starfish (*Hesperevax caulescens*), and Keck's checkerbloom (*Sidalcea keckii*).

Though none of these species have been observed within the Study Area a late spring/early summer survey is necessary to determine the presence/absence of these species. The project, therefore, could result in the loss of plants of these species if this bloom period survey is not completed. Therefore, the following measures shall be implemented to reduce potential impacts to these special status species.

Mitigation Measure

7.0-1 A qualified biologist shall complete two additional blooming/identification season surveys one between April and May and the second between June and September for special-status plant species prior to initiation of project activities. The survey shall be completed during the appropriate blooming period for the species likely to occur on site. These surveys shall be in compliance with all CDFW (2009), USFWS (1996), and CNPS (2001) published survey guidelines.

If the survey finds that there are no special-status plants on the Project Site that would be impacted or within the proposed project site, then there would be no further mitigation and the project may proceed, provided all other applicable permits and authorizations are obtained for the project.

If special-status plant species are found, populations will be mapped and enumerated. If any populations are found within the proposed work area, they shall be flagged and project development plans shall consider avoidance to the extent practicable. If avoidance is not practicable while otherwise obtaining the project's objectives, then other suitable measures shall be implemented as detailed below.

A qualified biologist shall complete an inventory and analysis of the on-site population(s) of the species within and outside of the work area to determine the extent

and significance of the potential impacts that will occur as a result of the project. This analysis shall be presented to the County as part of their review of the project. If a significant impact will occur as a result of the project work then a mitigation plan shall be developed and approved by the County for implementation of the following measures prior to site disturbance. The mitigation plan shall include the following elements:

1. Prior to construction within the project area, a qualified botanist shall collect the seeds, propagules, and topsoils, or other part of the plant that would ensure successful replanting of the population elsewhere. The seeds, propagules, or other plantable portion of all plants shall be collected at the appropriate time of the year.
2. At least 2/3 of the seeds, propagules, or other plantable portion of all plants shall be planted at the appropriate time of year (late-fall months). Half of the seeds and topsoils collected shall be appropriately stored and propagated at a native plant nursery to ensure germination. This material will be planted at an approved and protected area during the appropriate season. Planting location, timing, collection methods etc… will be detailed in a mitigation plan.
3. The applicant shall hire a qualified biologist to conduct annual monitoring surveys of the transplanted plant population for a five-year period and shall prepare annual monitoring reports reporting the success or failure of the transplanting efforts. These reports shall be submitted to the County no later than December 31st each monitoring year.
4. A CNDDB form shall be filled out and submitted to CDFW for any special-status plant species identified within the project site.

In lieu of the above prescribed mitigation, as allowed in writing by the County, mitigation requirements may be satisfied via the purchase of qualified mitigation credits or the preservation of offsite habitat.

Level of Significance After Mitigation: Less Than Significant

8.0 The proposed project could have a potentially significant adverse impact on special-status wetland habitats.

Impact Analysis

The proposed project will result in the loss of one 0.311-acre stock pond/seasonal wetland. As well, the construction of one new culvert and the replacement and extension of another will result in the loss of ephemeral tributary habitat (**Figure 4).** Wetlands and Waters are specially protected under CEQA and loss of or impacts to these habitats must be mitigated to ensure that the project does not result in a substantial adverse effect.

The stock pond/seasonal wetlands that would be filled was constructed by blocking and redirecting flows within the Study Area. As a result of these modifications, the wetland contains a good amount of cover by weedy species. As well, the ephemeral drainage has high non-native vegetation cover and it has been modified and no longer connects to its downstream



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N

Scale: 1 inch = 125 feet

0 62.5' 125' 250'

FIGURE 4
Section 404
Jurisdictional Impacts

McMurty Creek
Solano, California

Legend

- Proposed Impacts (0.317 Acres)
- Created Channel (0.011 Acres)
- Created Seasonal Wetland (0.312 Acres)
- Site Boundary
- Seasonal Wetland (Stockpond)
- Creek channel

Jurisdictional Areas

Habitat Type	Impacted	Not Impacted
Seasonal Wetland (Stockpond)	0.311	--
Creek channel	0.006	0.044
Length:	88.7'	531.6'

Habitat Type	Acres	Lin. Ft.
Created Channel	0.011	164.3'

Disclaimer

This map exhibits conditions on the site at the time of completion of the delineation. For various reasons, conditions on a site may change, which may affect site wetland boundaries. Delineation maps generally expire five years after approval by the U.S. Army Corps of Engineers (Corps). Because regulations governing delineations are subject to change, this map should be reviewed by a qualified wetland consultant to ensure accuracy if not submitted to the Corps within six (6) months of preparation.

Field Work By: Zentner and Zentner, 07.19.22.

Topo Source: Google Earth (2022)	Revisions	By
Date: 9/21/2022		
Cartographer: XM		

File: D:\Graphic Designer\My Documents\PROJECTS\1100-1199\1146 McMurty Crk\Auto CAD\1146 Fig4_Impacts_092122.dwg

tributary. Both the stock pond/seasonal wetland and the ephemeral tributary have relatively low habitat value.

Mitigation Measure

8.0-1 The applicant will consult with the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and the Regional Water Quality Control Board (RWQCB) and regarding the loss of 0.311 acres of wetlands and the loss of 88.7 linear feet (0.006 acres) of ephemeral tributary and the appropriate mitigation measures. At a minimum, the mitigation will include:

- Onsite ephemeral tributary creation at a minimum 1:1 ratio of created to lost ephemeral tributary and/or a mix of creation and enhancement measure acceptable to agency staff.
- Wetland mitigation either on-site at a 1:1 ratio of created to lost habitat or offsite at a 2:1 ratio of created to lost habitat.
- A mitigation plan describing the created/enhanced ephemeral tributary and wetland locations, construction methods, and monitoring and success criteria will be submitted to the permitting agencies for review and approval, prior to the start of the project or any earth moving work.

When implemented, these measures would reduce potentially significant adverse impacts on special status habitats to a less than significant level.

Level of Significance After Mitigation: Less Than Significant

9.0 The proposed project could have a potentially significant adverse impact on trees.

Impact Analysis

The Study Area contains a number of mature trees. The removal or destruction of any tree over 31 inches in circumference (10-inch dbh), excluding fruit and nut trees, requires a City permit. The proposed project may result in the removal of several trees. As well, grading and other construction activities could indirectly impact trees through limb removal, root damage, etc. If not mitigated, the loss of these native trees could result in a potentially significant adverse impact.

Mitigation Measures

9.0-1 Mature trees that will not be removed during project construction shall be protected with construction fence installed at the dripline. No equipment shall enter the fence line. When encroachment into the fenced area is necessary, protective measures such as application of mulch shall be implementation.

9.0-2 The removal of trees should be minimized to the greatest extent practicable. Trees, as noted above, that are removed shall be replaced on-site at suitable locations and mitigated with replacement tree plantings at a mitigation ratio greater than or equal to as required by the City of Vacaville's Tree Preservation Ordinance.

Level of Significance After Mitigation: Less Than Significant

VI. REFERENCES

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APPENDIX A

Tentative Subdivision Map

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SCALE: 0' 25' 50'
1"=50'

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DESIGNED BY: TAP
DRAFTED BY: MTP
CHECKED BY: TAP

PROJECT NAME/LOCATION:
MCMURTRY CREEK ESTATES
NORTH OF THE RESERVES SUBD.
VACAVILLE CALIFORNIA

DRAWING TITLE:
SUBDIVISION MAP

REVISIONS:

NO.	DESCRIPTION	DATE

DRAWING FILE: 230840TM

ISSUE DATE: 9/20/2022
PROJECT NO.: 230840

SHEET NO.: C-2 OF 15

RESERVES SUBDIVISION
SEE SHEET C-3

MAINTENANCE PATH
SEE SHEET C-4

APPENDIX B

Plant Species Observed

Vegetation Observed

Common Name	***Botanical Name***	**Native**
fiddleneck	*Amsinckia menziesii*	Y
blue dicks	*Dichelostemma*	Y
hayfield tarweed	*Hemizonia congesta*	Y
soap root	*Chlorogalum pomeridianum*	Y
spring vetch	*Vicia villosa*	
harvest brodiaea	*Brodiaea elegans*	Y
Johnson grass	*Sorghum halepense*	
swamp timothy	*Crypsis schoenoides*	
blue wildrye	*Elymus glaucus*	Y
Bermuda grass	*Cynodon dactylin*	
summer mustard	*Hirschfeldia incana*	
broad leaf pepperweed	*Lepidium latifolium*	
stinkwort	*Ditchrichia graveolens*	
smilo grass	*Stipa miliacea*	
annual ragweed	*Ambrosia artemisifolia*	Y
Italian ryegrass	*Festuca perennis*	
rattail fescue	*Festuca myuros*	
dock	*Rumex pulcher*	
wild oats	*Avena fatua*	
stinging nettle	*Urtica dioica*	Y
cocklebur	*Xanthium strumarium*	
mugwort	*Artemisia douglasiana*	Y
common rush	*Juncus effuses*	Y
sky lupine	*Lupinous nanus*	Y
rose clover	*Trifolim hirtum*	
vinegar weed	*Trychostemma lanceolatum*	Y
6 weeks fescue	*Festuca microstachys*	Y
marsh cudweed	*Gnaphalium palustre*	Y
yellow starthistle	*Centaurea solstitialis*	
Italian thistle	*Carduus pycnocephalus*	
prickly lettuce	*lactuca serriola*	
medusahead grass	*Elymus caput-medusae*	
Himalyan blackberry	*Rubus armeniacus*	
Mediterranean barley	*Hordeum marinum*	
ripgut brome	*Bromus diandrus*	
soft chess	*Bromus hordeaceus*	
sock destroyer	*Torilis nodosa*	
spikeweed	*Centromadia pungens*	Y
bindweed	*Convulvulus arvensis*	
storks bill	*Erodium botrys*	
white goosefoot	*Chenopodium album*	

hyssop loosestrife	*Lythrum hyssopifolia*	
blue oak	*Quercus douglassii*	Y
interior live oak	*Quercus wislizeni*	Y
walnut	*Juglans californica*	Y
elderberry	*Sambucus cerulea*	Y
coyote bush	*Baccharis pilularis*	Y
bur clover	*Medicago polymorpha*	
rabbitsfoot grass	*Polypogon monspeliensis*	
knotweed	*Polygonum aviculare*	
popcorn flower	*Plagiobothrys bracteatus*	Y
toad rush	*Juncus bufonius*	Y
cut-leaf geranium	*Geranium dissectum*	

APPENDIX C

Special Status Species Lists

Query Criteria: BIOS selection

Rana boylii **Element Code:** AAABH01050

foothill yellow-legged frog

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	Endangered		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened, USFS_S-Sensitive			
Habitat:	**General:**	PARTLY-SHADED, SHALLOW STREAMS AND RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.			
	Micro:	NEEDS AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEEDS AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.			

Occurrence No.	401	**Map Index:** 54623	**EO Index:** 54623	**Element Last Seen:**	2003-08-07
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	2003-08-07
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2004-03-09

Quad Summary: Mt. Vaca (3812241)

County Summary: Solano

Lat/Long:	38.38658 / -122.06170	**Accuracy:**	non-specific area
UTM:	Zone-10 N4249126 E581946	**Elevation (ft):**	600
PLSS:	T06N, R02W, Sec. 10, NE (M)	**Acres:**	16.6

Location: ALAMO CREEK, IN GATES CANYON, 3 MILES NW OF VACAVILLE.

Detailed Location:

Ecological: HABITAT CONSISTS OF A POOL ALONG GATES CANYON ROAD; SURROUNDED BY GRAZED MIXED OAK WOODLAND, SCRUB ALONG HILL SLOPES, AND OAKS AND WILLOWS ALONG CREEK. CREEK SUBSTRATE IS SAND, WITH SMALL GRAVEL IN POOL.

General: 6 LARVAE AND 2 METAMORPHS OBSERVED ON 7 AUG 2003.

Owner/Manager: PVT

Occurrence No.	408	**Map Index:** 57059	**EO Index:** 57075	**Element Last Seen:**	2004-06-05
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	2004-06-05
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2004-09-28

Quad Summary: Mt. Vaca (3812241)

County Summary: Solano

Lat/Long:	38.38100 / -122.04857	**Accuracy:**	80 meters
UTM:	Zone-10 N4248517 E583099	**Elevation (ft):**	425
PLSS:	T06N, R02W, Sec. 11, NE (M)	**Acres:**	0.0

Location: ALAMO CREEK, 1.1 MILES WEST OF THE JUNCTION OF LAGOON VALLEY ROAD AND PLEASANTS VALLEY ROAD, NW OF VACAVILLE.

Detailed Location: SITE IS LOCATED 2 MILES UP GATES CANYON ROAD, WHERE THE STREAM COMES CLOSEST TO THE ROAD.

Ecological: HABITAT CONSISTS OF A ROCKY STREAMCOURSE WITH AN OPEN/PARTIAL CANOPY OF NATIVE VEGETATION, INCLUDING SALIX SP AND SAMBUCUS MEXICANA.

General: ON 5 JUN 2004, 2 ADULTS WERE OBSERVED BASKING ON MOIST ROCKS ADJACENT TO A CLEAR POOL.

Owner/Manager: PVT

Occurrence No.	409	**Map Index:**	57061	**EO Index:**	57077	**Element Last Seen:**	2004-05-30
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2004-05-30
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2004-09-28

Quad Summary: Mt. Vaca (3812241)

County Summary: Solano

Lat/Long:	38.40943 / -122.06610	**Accuracy:**	80 meters
UTM:	Zone-10 N4251657 E581536	**Elevation (ft):**	700
PLSS:	T07N, R02W, Sec. 34, SE (M)	**Acres:**	0.0

Location: ULATIS CREEK, ALONG MIX CANYON ROAD, 1.5 MILES WEST OF LAGOON VALLEY ROAD, NW OF VACAVILLE.

Detailed Location: SITE IS LOCATED UPSTREAM OF MILE MARKER 2.4.

Ecological: HABITAT CONSISTS OF MOIST ROCKS WITHIN THE CREEK, COBBLE AND BOULDER SUBSTRATE, AND CLEAR, DEEP POOLS. ULATIS CREEK IS A FLOWING, ROCKY STREAM WITH AN OPEN / PARTIAL CANOPY OF NATIVE VEGETATION.

General: 13 ADULTS AND 10 TADPOLES OBSERVED ON 30 MAY 2004.

Owner/Manager: PVT

Occurrence No.	1875	**Map Index:**	24739	**EO Index:**	111008	**Element Last Seen:**	1912-07-05
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1912-07-05
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2018-10-03

Quad Summary: Elmira (3812138), Fairfield North (3812231)

County Summary: Solano

Lat/Long:	38.35642 / -121.98869	**Accuracy:**	1 mile
UTM:	Zone-10 N4245845 E588359	**Elevation (ft):**	
PLSS:	T06N, R01W, Sec. 20 (M)	**Acres:**	0.0

Location: VICINITY OF VACAVILLE.

Detailed Location: ACCORDING TO STORER'S MVZ FIELD NOTES, HE WAS COLLECTING ALONG ULATIS CREEK IN VACAVILLE.

Ecological:

General: 1 COLLECTED ON 5 JUL 1912. ACCORDING TO JENNINGS AND LIND, RANA BOYLII IS EXTIRPATED FROM THIS VICINITY.

Owner/Manager: UNKNOWN

Occurrence No.	1876	**Map Index:**	A9174	**EO Index:**	111015	**Element Last Seen:**	1912-07-07
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1912-07-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2018-10-03

Quad Summary: Fairfield North (3812231)

County Summary: Solano

Lat/Long:	38.35594 / -122.04221	**Accuracy:**	1 mile
UTM:	Zone-10 N4245742 E583684	**Elevation (ft):**	382
PLSS:	T06N, R02W, Sec. 24 (M)	**Acres:**	1987.0

Location: VICINITY OF ENCINOSA CREEK, 3 MILES WEST OF VACAVILLE.

Detailed Location: ACCORDING TO WALTER TAYLOR'S (COLLECTING WITH TRACY STORER) PROVIDED MAP IN HIS MVZ FIELD NOTES, THEY WERE CAMPING ALONG ENCINOSA CREEK. BOTH TAYLOR AND STORER REFERED TO THE CAMP AS BEING WITHIN ALAMO CREEK CANYON.

Ecological:

General: 7 COLLECTED IN JUL 1912. ACCORDING TO JENNINGS AND LIND, RANA BOYLII IS EXTIRPATED FROM THIS VICINITY.

Owner/Manager: PVT

Elanus leucurus

Element Code: ABNKC06010

white-tailed kite

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3S4
	Other:	BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern			
Habitat:	**General:**	ROLLING FOOTHILLS AND VALLEY MARGINS WITH SCATTERED OAKS AND RIVER BOTTOMLANDS OR MARSHES NEXT TO DECIDUOUS WOODLAND.			
	Micro:	OPEN GRASSLANDS, MEADOWS, OR MARSHES FOR FORAGING CLOSE TO ISOLATED, DENSE-TOPPED TREES FOR NESTING AND PERCHING.			

Occurrence No.	57	**Map Index:** 46097	**EO Index:** 46097	**Element Last Seen:**	2001-06-14
Occ. Rank:	Fair		**Presence:** Presumed Extant	**Site Last Seen:**	2001-06-14
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2001-10-10

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.38734 / -121.92388	**Accuracy:**	80 meters
UTM:	Zone-10 N4249341 E593982	**Elevation (ft):**	80
PLSS:	T06N, R01W, Sec. 12, NE (M)	**Acres:**	0.0

Location: 0.1 MILE NORTH OF WALNUT ROAD AND 0.1 MILE EAST OF WILLOW ROAD, ALONG THE NORTH EDGE OF VACAVILLE.

Detailed Location: 2000 NEST TREE WAS THE FOURTH TREE EAST OF THE DRIVE TO #5165. 2001 NEST TREE WAS A WILLOW NORTH OF THE BUILDINGS AND SOUTH OF THE IRRIGATION CANAL.

Ecological: HABITAT CONSISTS OF THE SEMI-URBAN FRINGE OF VACAVILLE. SURROUNDING AREA CONSISTS OF SOME PASTURE SOUTH AND WEST; RUDERAL TO THE NORTH WITH NEW DIRT FILL.

General: PAIR NESTED IN 2000. NEST SITE WAS MONITORED FROM 2 MAY-14 JUN 2001 (3 VISITS); 2 CHICKS OBSERVED ON 27 MAY 2001, 2 YOUNG FLEDGED.

Owner/Manager: PVT

Buteo swainsoni

Element Code: ABNKC19070

Swainson's hawk

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	Threatened		**State:**	S3
	Other:	BLM_S-Sensitive, IUCN_LC-Least Concern			
Habitat:	**General:**	BREEDS IN GRASSLANDS WITH SCATTERED TREES, JUNIPER-SAGE FLATS, RIPARIAN AREAS, SAVANNAHS, AND AGRICULTURAL OR RANCH LANDS WITH GROVES OR LINES OF TREES.			
	Micro:	REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.			

Occurrence No.	839	**Map Index:**	43588	**EO Index:**	43588	**Element Last Seen:**	2005-07-20
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-07-20
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-01-07

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.41876 / -121.90301	**Accuracy:**	specific area
UTM:	Zone-10 N4252849 E595763	**Elevation (ft):**	80
PLSS:	T07N, R01E, Sec. 30, SE (M)	**Acres:**	10.0

Location: ALONG MIDWAY ROAD, BETWEEN DEMELLO LANE AND GENTILE LANE, 6 MILES NE OF VACAVILLE.

Detailed Location: RESSEGUIE SITES ALLENDALE 23 & 50, MAPPED TO PROVIDED COORDINATES. SW-MOST SITE (ALLENDALE 50) NEVER CONFIRMED, ADULTS OBSERVED DEFENDING TREE WITH POTENTIAL NEST IN JUN 2001 ONLY; TREE WAS INACTIVE IN 2002, 2004, & 2005.

Ecological: 2000-2005: NEST TREE (ALLENDALE 23) WAS A BLUE GUM EUCALYPTUS WITHIN AN E-W ROW; 2000 & 2002 NEST WAS TALLEST IN THE ROW. SURROUNDED BY A MIX OF PASTURE, CORRALS, AND LOW-DENSITY SEMI-URBAN HOUSING.

General: NEST MONITORED 28 JUN-19 JUL 2000; 3 FLEDGED. ACTIVE NEST OBSERVED ON 11 APR; 2 ADULTS PERCHED NEAR NEST ON 5 JUL 2001. NEST MONITORED 2 APR-24 JUL 2002; 1 FLEDGED. NO ACTIVITY OBSERVED IN 2004. NEST MONITORED 30 APR-20 JUL 2005; 3 FLEDGED.

Owner/Manager: PVT

Occurrence No.	840	**Map Index:**	43589	**EO Index:**	43589	**Element Last Seen:**	2005-09-09
Occ. Rank:	Poor			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-09-09
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-01-07

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.40242 / -121.90576	**Accuracy:**	specific area
UTM:	Zone-10 N4251032 E595544	**Elevation (ft):**	70
PLSS:	T06N, R01E, Sec. 06, N (M)	**Acres:**	15.0

Location: ALONG BYRNES RD FROM WEBER RD INTERSECTION S ABOUT 0.4 MI, ON EITHER SIDE OF GIBSON CYN CREEK; 4.5 MI NE OF VACAVILLE.

Detailed Location: 3 NEST SITES MAPPED TO PROVIDED COORDINATES. NORTH NEST, MIDDLE NEST, & SOUTH NEST: RESSEGUIE SITES ALLENDALE 20, 70, & 15, RESPECTIVELY.

Ecological: NORTH NEST: AT 95% HEIGHT OF BLACK WALNUT. MIDDLE NEST IN OAK. SOUTH NEST IN 100' EUCALYPTUS IN A LARGE GROVE OF TREES. SITE SURROUNDED BY CULTIVATED LAND, PASTURE, & RUDERAL LAND.

General: 2 ACTIVE NESTS, 1 FLEDGED IN 2000. 1 ACTIVE NEST, 0 FLEDGED IN 2001. 2 ACTIVE NESTS, 1 FLEDGED IN 2002. 1 ACTIVE NEST, FLEDGED 1 IN 2004. 2 ACTIVE NESTS, EACH FLEDGED 1 IN 2005.

Owner/Manager: UNKNOWN, PVT, SOL COUNTY

Occurrence No.	841	**Map Index:**	43590	**EO Index:**	43590	**Element Last Seen:**	2013-07-XX
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2013-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2018-02-16

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.39556 / -121.89709	**Accuracy:**	80 meters
UTM:	Zone-10 N4250280 E596311	**Elevation (ft):**	70
PLSS:	T06N, R01E, Sec. 06, NE (M)	**Acres:**	0.0

Location:	WEST SIDE OF LEWIS ROAD, 0.5 MILE SOUTH OF WEBER ROAD, 5.5 MILES NE OF VACAVILLE.
Detailed Location:	MAPPED TO COORDINATES FROM FIELD SURVEY FORMS (RESSEGUIE SITE ALLENDALE 18) AND CDFW NEST RECORDS 2000-2004; NEST TREE WAS LOCATED IN THE NE CORNER OF A FARMSTEAD.
Ecological:	2000-2004 NEST AT 75% HEIGHT OF 75-85' BLUE GUM EUCALYPTUS; SURROUNDED BY ALFALFA TO THE NORTH, RUDERAL TO THE EAST, AND CULTIVATED LAND TO THE SOUTH.
General:	NEST SITE OCCUPIED IN 2000 & 2001, BUT NO YOUNG OBSERVED. NEST SITE UNOCCUPIED 2002-2004. NEST MONITORED 2 MAY-22 AUG 2005; INCUBATION OBSERVED ON 30 JUN 2005, BUT NO CHICKS DETECTED. 2 FLEDGLINGS IN 2012. 2 FLEDLINGS IN 2013.
Owner/Manager:	PVT

Occurrence No.	855	**Map Index:**	43623	**EO Index:**	43623	**Element Last Seen:**	2000-08-20
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-08-03
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-09-27

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.38022 / -121.90819	**Accuracy:**	80 meters
UTM:	Zone-10 N4248566 E595362	**Elevation (ft):**	70
PLSS:	T06N, R01E, Sec. 07, SW (M)	**Acres:**	0.0

Location:	WEST SIDE OF BYRNES ROAD, 1 MILE SOUTH OF KILKENNY ROAD, 5 MILES SW OF DIXON.
Detailed Location:	NEST TREE WAS LOCATED ABOUT 0.1 MILE WEST OF THE ROAD, AT THE REAR OF THE FARMSTEAD. ALTHOUGH NEST WAS NOT VISIBLE, ADULT BEHAVIOR SUGGESTED THAT IT WAS BURIED IN FOLIAGE AT THE 80% HEIGHT OF THE NEST TREE.
Ecological:	NEST TREE WAS A TALL EUCALYPTUS; SURROUNDED BY MIXED AGRICULTURE.
General:	1 FLEDGED IN 2000. SITE WAS POORLY OBSERVED IN 2001; UNOCCUPIED IN 2002, 2004, AND 2005.
Owner/Manager:	PVT

Occurrence No.	948	**Map Index:** 45959	**EO Index:**	45959	**Element Last Seen:**	2001-08-15
Occ. Rank:	Fair		**Presence:**	Presumed Extant	**Site Last Seen:**	2005-07-22
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2013-01-07

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.38685 / -121.90035	**Accuracy:**	80 meters
UTM:	Zone-10 N4249310 E596038	**Elevation (ft):**	70
PLSS:	T06N, R01E, Sec. 07, NE (M)	**Acres:**	0.0

Location:	AT FARMSTEAD ON E SIDE OF LEWIS RD ABOUT 1 MILE SSW OF WEBER RD AT LEWIS RD, 6 MILES SW OF DIXON.
Detailed Location:	NEST WAS LOCATED AT THE 90% HEIGHT OF THE LARGEST TREE (A 14-METER BLACK WALNUT), JUST WEST OF THE HOUSE AT 6751 LEWIS ROAD. SITE JUST SOUTH OF A CANAL. RESSEGUIE SITE ALLENDALE 44.
Ecological:	NEST TREE WAS A LARGE BLACK WALNUT SURROUNDED BY MANY SMALLER TREES; SURROUNDED BY ALFALFA TO THE WEST, EAST, AND SOUTH OF THE FARMSTEAD AND NORTH TO THE CANAL, WITH CORN NORTH OF THE CANAL.
General:	NEST MONITORED 25 APR-15 AUG 2001; 1 FLEDGED. NO NESTING ACTIVITY OBSERVED IN 2002, 2004, AND 2005.
Owner/Manager:	PVT

Occurrence No.	965	**Map Index:** 46179	**EO Index:**	46179	**Element Last Seen:**	2005-08-12
Occ. Rank:	Fair		**Presence:**	Presumed Extant	**Site Last Seen:**	2005-08-12
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2013-01-04

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.44669 / -121.94070	**Accuracy:**	1/10 mile
UTM:	Zone-10 N4255910 E592437	**Elevation (ft):**	110
PLSS:	T07N, R01W, Sec. 14, SE (M)	**Acres:**	0.0

Location:	WEST SIDE OF SWEANY CREEK, JUST EAST OF I-505 AND 0.5 MILE SOUTH OF ALLENDALE ROAD, 6 MILES WEST OF DIXON.
Detailed Location:	1-2 NEST SITES, BUT PROBABLY JUST 1 TERRITORY AT THIS SITE. MAPPED PER FIELD SURVEY FORMS (RESSEGUIE SITE ALLENDALE 29) & DFG DATABASE OF NEST RECORDS, 2000-2004. ADJACENT TO A PRIVATE WILDLIFE SANCTUARY.
Ecological:	2001 NEST AT 90% HEIGHT OF 75' COTTONWOOD (WILLOW?); POSSIBLE 2ND PAIR NESTING 100 YDS S IN WILLOW? AREA BURNED 2X IN SUMMER 2001, DAMAGING NEST & KILLING TREE. 2005 NEST IN TALL COTTONWOOD. ADJACENT HABITAT RUDERAL, RIPARIAN W/RESIDENTIAL.
General:	NEST MONITORED 31 MAR - 22 JUL 2001; 2 YOUNG SURVIVED FIRE TO FLEDGE. INACTIVE IN 2002 AND 2004. NEST MONITORED 29 APR - 12 AUG 2005; APPARENT INCUBATION, BUT NO CHICK DETECTED.
Owner/Manager:	PVT

Occurrence No.	966	**Map Index:**	46190	**EO Index:**	46190	**Element Last Seen:**	2001-03-31
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	2005-07-26
Occ. Type:	Natural/Native occurrence			**Trend:**	Decreasing	**Record Last Updated:**	2011-09-27

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.39649 / -121.92959	**Accuracy:**	80 meters
UTM:	Zone-10 N4250350 E593472	**Elevation (ft):**	85
PLSS:	T06N, R01W, Sec. 01, NW (M)	**Acres:**	0.0

Location: WEST SIDE OF MILLS LANE, 0.1 MILE NORTH OF ELLSWORTH ROAD, NE OF VACAVILLE.

Detailed Location: NEST TREE WAS LOCATED WITHIN A EUCALYPTUS GROVE 149 METERS WEST OF MILLS LANE; NEST WAS FOUND NEAR THE TOP OF THE THIRD TALLEST EUCALYPTUS FROM THE SOUTH, ALONG THE EASTERN EDGE.

Ecological: NEST TREE WAS A BLUE GUM EUCALYPTUS; SURROUNDED BY THE EUCALYPTUS GROVE TO THE WEST, PASTURE/RUDERAL TO THE EAST, AND A RESIDENCE TO THE SOUTH.

General: NEST SITE WAS MONITORED FROM 31 MAR-2 AUG 2001; BIRDS WERE SEEN AT THE NEST ON 31 MAR 2001, BUT THE NEST SUBSEQUENTLY DISAPPEARED. INACTIVE IN 2002, 2004, AND 2005.

Owner/Manager: PVT

Occurrence No.	968	**Map Index:**	46197	**EO Index:**	46197	**Element Last Seen:**	2005-08-07
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-08-22
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-09-28

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.39195 / -121.92734	**Accuracy:**	80 meters
UTM:	Zone-10 N4249848 E593674	**Elevation (ft):**	85
PLSS:	T06N, R01W, Sec. 01, SW (M)	**Acres:**	0.0

Location: SE OF I-80, 0.3 MILE EAST OF LEISURE TOWN ROAD, 6.5 MILES SW OF DIXON.

Detailed Location:

Ecological: NEST TREE WAS A BLUE GUM EUCALYPTUS; SURROUNDED BY TREES AND A RESIDENCE TO THE EAST AND RUDERAL IN ALL OTHER DIRECTIONS.

General: NEST MONITORED 26 MAY-1 AUG 2001; 1 FLEDGED. INADEQUATE OBSERVATION IN 2002 AND 2004, BUT PRESUMED INACTIVE. NEST SITE MONITORED 10 JUN-22 AUG; ADULTS OBSERVED 10 JUL, 26 JUL, AND 7 AUG 2005.

Owner/Manager: PVT

Occurrence No.	970	**Map Index:**	46200	**EO Index:**	46200	**Element Last Seen:**	2013-XX-XX
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2013-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2018-02-16

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.40806 / -121.91521	**Accuracy:**	specific area
UTM:	Zone-10 N4251648 E594712	**Elevation (ft):**	80
PLSS:	T07N, R01E, Sec. 31, SW (M)	**Acres:**	10.7

Location: EAST SIDE OF MERIDIAN ROAD, ABOUT 0.5 MILE SOUTH OF MIDWAY ROAD AND 5 MILES SW OF DIXON.

Detailed Location: FEATURE REPRESENTS TWO NEST SITES, NOT CONCURRENTLY ACTIVE. MAPPED TO COORDINATES FROM FIELD SURVEY FORMS (FOR RESSEGUIE'S ALLENDALE 49 & 56), DFG DATABASE OF NEST RECORDS 2000-2004, AND 2012 SURVEY DATA TABLE.

Ecological: 2001-2002: NEST IN 75' EUCALYPTUS ON E SHOULDER OF ROAD, SURROUNDED BY ALFALFA. 2004-2005 (& 2012 SUSPECTED NEST): NEST IN E-W ROW OF BLUE GUMS ON N SIDE OF FARMSTEAD E OF ROAD, WITH ALFALFA TO THE N AND RUDERAL TO THE S & W.

General: NEST MONITORED 14 JUN-20 JUL 2001; 1 FLEDGED. NEST MONITORED 28 APR-24 JUL 2002; 1 FLEDGED. NEST MONITORED 22 MAR-29 JUL 2004; 3 YOUNG FLEDGED. NEST MONITORED 13 MAR-14 AUG 2005; NO CHICK SEEN. PAIR DEFENDING TERRITORY IN 2012 & 2013.

Owner/Manager: PVT

Occurrence No.	971	**Map Index:**	46204	**EO Index:**	46204	**Element Last Seen:**	2013-XX-XX
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2013-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2018-02-16

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.41529 / -121.91576	**Accuracy:**	specific area
UTM:	Zone-10 N4252451 E594655	**Elevation (ft):**	85
PLSS:	T07N, R01W, Sec. 36, NE (M)	**Acres:**	10.0

Location: WEST SIDE OF MERIDIAN ROAD, JUST SOUTH OF MIDWAY RD AND ABOUT 0.8 MILE NORTH OF I-80; 5.3 MILES SOUTHWEST OF DIXON.

Detailed Location: 2001 NEST IN 1ST LARGE EUCALYPTUS S OF WINDING WAY. 2005 NEST 65' SOUTH, AT 7273 MERIDIAN RD. 2012 NEST JUST N OF WINDING WAY. MAPPED PER FIELD SURVEY FORMS (RESSEGUIE SITE ALLENDALE 51), CDFW NEST RECORDS 2000-04, & 2012 SURVEY DATA TABLE.

Ecological: 2001: NEST AT 90% HEIGHT OF BLUE GUM EUCALYPTUS; SURROUNDED BY CULTIVATED LAND TO THE EAST AND LARGE RESIDENTIAL LOT TO THE WEST. 2005: NEST AT 75% HEIGHT OF TALL BLUE GUM. 2012: NEST IN EUCALYPTUS.

General: MONITORED 18 JUN-1 AUG 2001; 1 CHICK ON 20 JUL, & 2 ON 13 AUG; 1 FLEDGED. NO ACTIVITY OBS IN 2002 & 2004 (INADEQUATE SURVEYS). MONITORED 17 APR-2 AUG 2005; 1 FLEDGED. 2 FLEDGLINGS SEEN MAY-JUL 2012. PAIR SEEN 2013, POSSIBLE FAILED NEST.

Owner/Manager: PVT

Occurrence No.	976	**Map Index:**	46286	**EO Index:**	46286	**Element Last Seen:**	2001-07-05
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-07-05
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-01-03

Quad Summary:	Elmira (3812138)
County Summary:	Solano

Lat/Long:	38.37311 / -121.96210	**Accuracy:**	1/10 mile
UTM:	Zone-10 N4247723 E590662	**Elevation (ft):**	105
PLSS:	T06N, R01W, Sec. 15, NW (M)	**Acres:**	0.0

Location:	SOUTH SIDE OF THE NUT TREE/SOLANO COUNTY AIRPORT ALONG CREEK, 0.8 MILE NNE OF ALLISON DR AT I-80, VACAVILLE.
Detailed Location:	NEST TREE WAS LOCATED WITHIN A LINE OF EUCALYPTUS TREES BORDERING THE AIRPORT AND PINE TREE CREEK. MAPPED TO COORDINATES FROM FIELD SURVEY FORMS AND CDFW DATABASE OF NEST RECORDS, 2000-2004.
Ecological:	2000-2001: NEST TREE IS A 75' EUCALYPTUS; SURROUNDED BY OPEN GRASSLAND/RUDERAL AREAS USED FOR FORAGING, & COMMERCIAL TO THE EAST AND SOUTHWEST. LINE OF TREES STILL VISIBLE IN 2012 AERIALS, BUT THE AREA HAS BEEN EXTENSIVELY DEVELOPED.
General:	THIS PAIR HAS REPORTEDLY NESTED AT THE NUT TREE SINCE 1996. NEST SITE WAS MONITORED FROM MAY-AUG 2000; 1 JUVENILE SUCCESSFULLY FLEDGED IN AUG 2000. NESTING PAIR OBS 16 MAY BUT NEST VACANT 5 JUL 2001, NO YOUNG SEEN.
Owner/Manager:	PVT

Occurrence No.	995	**Map Index:**	47402	**EO Index:**	47402	**Element Last Seen:**	2005-07-11
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-07-11
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-06-10

Quad Summary:	Elmira (3812138)
County Summary:	Solano

Lat/Long:	38.36981 / -121.90546	**Accuracy:**	specific area
UTM:	Zone-10 N4247414 E595613	**Elevation (ft):**	70
PLSS:	T06N, R01E, Sec. 18, N (M)	**Acres:**	10.0

Location:	ALONG BYRNES ROAD, BETWEEN THE TWO FORKS OF ULATIS CREEK, ABOUT1.3 MILES NORTH OF ELMIRA.
Detailed Location:	2 NEST SITES; NORTH SITE (RESSEGUIE SITE ELMIRA 17) ACTIVE IN 2001 AND SOUTH SITE (ELMIRA 23) ACTIVE 2004 & 2005. MAPPED TO COORDINATES FROM FIELD SURVEY FORMS.
Ecological:	2001: NEST AT 80% HEIGHT IN 16' ENGLISH WALNUT; SURROUNDED BY ROW CROPS TO THE N, FARMSTEAD & RAGGED WALNUT ORCHARD TO THE S. 2004-05: NEST IN 75% HEIGHT OF EUCALYPTUS NORTH OF BARN; ALFALFA W/N & ABANDONDED ORCHARD/RUDERAL/RESIDENCES TO E.
General:	2001: NORTH NEST MONITORED 4 MAY-23 JUL 2001; 2 FLEDGED. N NEST APPARENTLY INACTIVE '02, '04, & '05. 2004: S NEST INCUBATION OBSERVED. 2005: S NEST MONITORED MAY-AUG; DEFENSIVE ADULT & 1 FLEDGLING OBSERVED.
Owner/Manager:	PVT

Occurrence No.	1253	**Map Index:**	52077	**EO Index:**	52077	**Element Last Seen:**	2005-08-03
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-08-03
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-09-27

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.37909 / -121.90606	**Accuracy:**	80 meters
UTM:	Zone-10 N4248444 E595549	**Elevation (ft):**	72
PLSS:	T06N, R01E, Sec. 07, SW (M)	**Acres:**	0.0

Location: WEST SIDE OF BYRNES ROAD, 1.1 MILES SOUTH OF KILKENNY ROAD, 4.5 MILES ENE OF VACAVILLE.

Detailed Location: NEST IS LOCATED AT THE 85% HEIGHT OF THE NEST TREE, VISIBLE FROM THE SOUTH. NEST TREE IS THE THIRD FROM THE NORTH, ALONG THE WEST SHOULDER.

Ecological: NEST TREE WAS A TALL EUCALYPTUS; SURROUNDED BY CULTIVATED LAND TO THE EAST, PASTURE TO THE NW, AND RUDERAL TO THE SW.

General: RED-TAILED HAWK NEST IN 2001. NEST MONITORED 13 APR-24 JUL 2002; 1 FLEDGED. NEST MONITORED 18 APR-12 AUG 2004; 1 FLEDGED. NEST MONITORED 12 MAR-3 AUG 2005; 1 FLEDGED.

Owner/Manager: UNKNOWN

Occurrence No.	1441	**Map Index:**	62297	**EO Index:**	62334	**Element Last Seen:**	2005-07-20
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-07-20
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2005-08-15

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.45188 / -121.92745	**Accuracy:**	80 meters
UTM:	Zone-10 N4256499 E593587	**Elevation (ft):**	110
PLSS:	T07N, R01W, Sec. 13, NW (M)	**Acres:**	0.0

Location: 0.1 MILE SOUTH OF ALLENDALE ROAD, 0.7 MILE EAST OF LEISURE TOWN ROAD, 5 MILES WEST OF DIXON.

Detailed Location: RESSEGUIE'S ALLENDALE 62. NEST TREE WAS LOCATED IN A RAGGED LOCUST, SOMEWHAT SOUTH OF A NORTH ROW OF TALL TREES.

Ecological: NEST TREE IS A LOCUST; SURROUNDED BY ALFALFA TO THE EAST AND NE, ORCHARD TO THE WEST, FIRST-YEAR ORCHARD TO THE NORTH, AND PENS TO THE SOUTH.

General: SITE SUSPECTED, BUT NOT CONFIRMED AS A NEST SITE IN 2004. NEST MONITORED 29 APR-20 JUL 2005; 1 FLEDGED.

Owner/Manager: PVT

Occurrence No.	1442	**Map Index:**	62298	**EO Index:**	62335	**Element Last Seen:**	2005-07-20
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-07-20
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-01-04

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.42562 / -121.91572	**Accuracy:**	specific area
UTM:	Zone-10 N4253597 E594645	**Elevation (ft):**	90
PLSS:	T07N, R01W, Sec. 25, NE (M)	**Acres:**	8.0

Location:	WEST SIDE OF MERIDIAN ROAD, 0.25 MILE NORTH OF GRIFFEN LANE, 4.7 MILES WSW OF DIXON.
Detailed Location:	2 NEST TREES INDICATED: 2001 NEST TREE NEAR S END OF ROW OF TREES; 2005 NEST TREE ABOUT 85 M TO N, OPPOSITE #7486 MERIDIAN RD. MAPPED PER FIELD SURVEY FORMS FOR RESSEGUIE'S SITE ALLENDALE 67 AND DFG DATABASE OF SWHA NEST RECORDS, 2000-2004.
Ecological:	2001: NEST IN 50' EUCALYPTUS, WITH RESIDENTIAL TO EAST AND CROPLAND TO WEST. 2005: NEST AT 80% HEIGHT OF TALLEST TREE NEAR N END OF ROW OF BLUE GUM EUCALYPTUS.
General:	NEST BUILDING OBSERVED ON 1 MAY 2001; NO ACTIVITY OBSERVED DURING REVISIT ON 12 JUL. NEST MONITORED 30 APR-20 JUL 2005; 3 FLEDGED.
Owner/Manager:	PVT

Occurrence No.	1445	**Map Index:**	62301	**EO Index:**	62338	**Element Last Seen:**	2006-07-27
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-07-27
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-05-17

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.40160 / -121.91244	**Accuracy:**	80 meters
UTM:	Zone-10 N4250935 E594962	**Elevation (ft):**	80
PLSS:	T06N, R01E, Sec. 06, NW (M)	**Acres:**	0.0

Location:	SOUTH SIDE OF WEBER ROAD, 0.35 MILE WEST OF BYRNES AVENUE NEAR MERIDIAN & I-80, 4 MILES WEST OF DIXON.
Detailed Location:	MAPPED TO COORDINATES FROM FIELD SURVEY FORMS (RESSEGUIE SITE ALLENDALE 74) AND DFG DATABASE OF SWAINSON'S HAWK NEST RECORDS 2000-2004. NEST WAS LOCATED IN THE SECOND TREE FROM THE SOUTH.
Ecological:	2001: NEST IN LONE 30' EUCALYPTUS WITH CROPLAND TO E, GRASSLAND SW, COMMERCIAL (FREEWAY) NW. 2005: NEST IN BLUE GUM EUCALYPTUS SURROUNDED BY RUDERAL VEGETATION BETWEEN AND AROUND TREES.
General:	NEST-BUILDING OBSERVED ON 10 MAY 2001, NO ACTIVITY ON RETURN VISIT 3 JUL. NEST MONITORED 10 JUL-2 AUG 2005; 1 FLEDGED. ACTIVE NEST FLEDGED 1 IN 2006. TREES CUT DOWN IN BETWEEN MAY AND AUG 2012; SITE VISIT NEEDED.
Owner/Manager:	PVT

Occurrence No.	1460	**Map Index:**	62356	**EO Index:**	62393	**Element Last Seen:**	2010-06-21
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2010-06-21
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-01-04

Quad Summary: Fairfield North (3812231)

County Summary: Solano

Lat/Long:	38.33650 / -122.02245	**Accuracy:**	specific area
UTM:	Zone-10 N4243603 E585432	**Elevation (ft):**	235
PLSS:	T06N, R01W, Sec. 30, SW (M)	**Acres:**	10.0

Location: NORTH SIDE OF CHERRY GLEN ROAD, BETWEEN PLEASANT VALLEY ROAD AND THE I-80/PENA ADOBE INTERCHANGE, NORTH OF FAIRFIELD.

Detailed Location: MAPPED TO COORDINATES FROM FIELD SURVEY FORMS. RESSEGUIE SITE FAIRFIELD NORTH 1. 2004-05 NEST TREE WITHIN A ROW OF TREES ALONG A DITCH (LAGUNA CREEK) ON THE NORTH SIDE OF THE ROAD. 2010 NEST TREE JUST EAST OF PLEASANTS VALLEY RD.

Ecological: 2004-05: NEST AT 90% HEIGHT OF LARGE BLUE GUM EUCALYPTUS, ON N SIDE OF TREE; SURROUNDED BY LARGE CULTIVATED FIELDS. 2010: NEST ON PROPERTY WITH ANNUAL GRASSLAND & MANY MATURE TREES. PARK ON EAST SIDE OF I-80 USED FOR FORAGING (1999).

General: ADULT AND FLEDGLINGS OBSERVED AT THIS SITE TOO LATE IN 2003 TO INFER NESTING. NEST MONITORED 5 APR-1 AUG 2004; 1 FLEDGED. NEST MONITORED 19 APR-4 AUG 2005; 2 FLEDGED. 1 FLEDGED IN 2006. NEST WITH 2 YOUNG OBSERVED 21 JUN 2010.

Owner/Manager: PVT

Occurrence No.	1686	**Map Index:**	69243	**EO Index:**	70023	**Element Last Seen:**	2007-05-11
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-05-11
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2007-05-14

Quad Summary: Elmira (3812138)

County Summary: Solano

Lat/Long:	38.35657 / -121.95578	**Accuracy:**	1/10 mile
UTM:	Zone-10 N4245894 E591234	**Elevation (ft):**	115
PLSS:	T06N, R01W, Sec. 22 (M)	**Acres:**	0.0

Location: ALONG ULATIS CREEK, JUST SW OF ULATIS DRIVE, VACAVILLE.

Detailed Location:

Ecological: NEST TREE IS A TALL EUCALYPTUS (THE SECOND ONE WEST OF ULATIS DRIVE); NEST IS LOCATED NEAR THE TOP. NEST TREE IS LOCATED WITHIN A NARROW RIPARIAN STRIP, DOMINATED BY VALLEY OAK, FREMONT COTTONWOOD, BLUE ELDERBERRY, AND EUCALYPTUS.

General: 2 ADULTS OBSERVED NESTING ON 11 MAY 2007.

Owner/Manager: CITY OF VACAVILLE

Occurrence No.	1698	**Map Index:**	70109	**EO Index:**	70975	**Element Last Seen:**	2001-04-05
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-04-05
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-01-04

Quad Summary: Allendale (3812148)
County Summary: Solano

Lat/Long:	38.44629 / -121.91337	**Accuracy:**	80 meters
UTM:	Zone-10 N4255893 E594822	**Elevation (ft):**	101
PLSS:	T07N, R01E, Sec. 18, SW (M)	**Acres:**	0.0

Location: BETWEEN SWEANY SLOUGH AND DIXON AVENUE WEST, 0.1 MILE EAST OF MERIDIAN ROAD, 4.5 MILES WEST OF DIXON.
Detailed Location: MAPPED TO COORDINATES FROM CDFW DATABASE OF NEST RECORDS 2000-2004.
Ecological: NEST TREE WAS A 50' WILLOW, SURROUNDED BY ROW CROPS WITH RESIDENTIAL LAND USE TO THE SE.
General: NEST-BUILDING OBSERVED ON 5 APR 2001; NO ACTIVITY OBSERVED WHEN THIS SITE WAS REVISITED ON 5 JUL 2001.
Owner/Manager: UNKNOWN

Occurrence No.	1699	**Map Index:**	70110	**EO Index:**	70976	**Element Last Seen:**	2001-04-05
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-07-05
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-01-04

Quad Summary: Allendale (3812148)
County Summary: Solano

Lat/Long:	38.44781 / -121.91937	**Accuracy:**	80 meters
UTM:	Zone-10 N4256056 E594297	**Elevation (ft):**	101
PLSS:	T07N, R01W, Sec. 13, SE (M)	**Acres:**	0.0

Location: NORTH SIDE OF SWEANY SLOUGH, 0.2 MILE WEST OF THE JUNCTION OF DIXON AVENUE WEST & MERIDIAN ROAD, 5 MILES WEST OF DIXON.
Detailed Location: MAPPED TO COORDINATES FROM CDFW DATABASE OF NEST RECORDS 2000-2004.
Ecological: NEST TREE WAS A 70' COTTONWOOD; SURROUNDED BY ROW CROPS IN ALL DIRECTIONS WITH RESIDENTIAL TO NW.
General: NEST-BUILDING OBSERVED ON 5 APR 2001; NO ACTIVITY OBSERVED WHEN THIS SITE WAS REVISITED ON 5 JUL 2001.
Owner/Manager: UNKNOWN

Occurrence No.	1920	**Map Index:**	87785	**EO Index:**	88748	**Element Last Seen:**	2001-08-13
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-08-13
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-01-02

Quad Summary: Elmira (3812138)
County Summary: Solano

Lat/Long:	38.36922 / -121.93114	**Accuracy:**	80 meters
UTM:	Zone-10 N4247323 E593371	**Elevation (ft):**	80
PLSS:	T06N, R01W, Sec. 13, NW (M)	**Acres:**	0.0

Location: ALONG ULATIS CREEK, ABOUT 0.4 MILE SSE OF LEISURE TOWN RD AT SEQUOIA DR AND 1.4 MILES E OF I-80 AT NUT TREE RD.
Detailed Location: MAPPED TO COORDINATES FROM FIELD SURVEY FORMS AND CDFW DATABASE OF SWAINSON'S HAWK NEST RECORDS FROM 2000-2004.
Ecological: NEST IN 50' COTTONWOOD IN RIPARIAN STRIP, SURROUNDED BY CROPS AND FALLOW LAND.
General: 2001: ACTIVE NEST OBSERVED APR-AUG ON MULTIPLE OCCASIONS; FLEDGED 1.
Owner/Manager: UNKNOWN

Occurrence No.	1926	**Map Index:**	87788	**EO Index:**	88750	**Element Last Seen:**	2001-05-01
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-07-03
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-02-25

Quad Summary:	Elmira (3812138)
County Summary:	Solano

Lat/Long:	38.35318 / -121.93147	**Accuracy:**	80 meters
UTM:	Zone-10 N4245543 E593363	**Elevation (ft):**	80
PLSS:	T06N, R01W, Sec. 24, NW (M)	**Acres:**	0.0

Location:	ABOUT 0.2 MILE NE OF LEISURE TOWN ROAD AT ELMIRA RD, 1.1 MILES WNW OF ELMIRA, E OF VACAVILLE.
Detailed Location:	MAPPED TO COORDINATES FROM FIELD SURVEY FORM AND CDFW DATABASE OF NEST RECORDS FOR 2000-2004.
Ecological:	NEST IN 100' EUCALYPTUS WITH CROPLAND TO EAST AND RESIDENTIAL TO WEST. AREA WEST OF LEISURE TOWN HAS BEEN COMPLETELY DEVELOPED, LAND TO EAST STILL AGRICULTURAL PER 2012 AERIAL PHOTOS BUT ZONED FOR RESIDENTIAL/COMMERCIAL.
General:	INCUBATION OBSERVED ON 1 MAY 2001; NO ACTIVITY OBS ON RETURN VISIT 3 JUL 2001.
Owner/Manager:	UNKNOWN

Occurrence No.	1933	**Map Index:**	87815	**EO Index:**	88782	**Element Last Seen:**	2001-04-25
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-07-05
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-02-25

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.42423 / -121.93259	**Accuracy:**	80 meters
UTM:	Zone-10 N4253425 E593173	**Elevation (ft):**	100
PLSS:	T07N, R01W, Sec. 25, W (M)	**Acres:**	0.0

Location:	ALONG MELISSA LN JUST E OF LEISURE TOWN RD & 1.5 MI SSE OF ALLENDALE.
Detailed Location:	MAPPED TO COORDINATES FROM FIELD SURVEY FORM AND CDFW DATABASE OF 2000-2004 SWAINSON'S HAWK NEST RECORDS.
Ecological:	NEST IN 75' EUCALYPTUS SUROUNDED BY CROPLAND WITH (EUCALYPTUS DOMINATED) RIPARIAN TO SW.
General:	COPULATION AND NEST-BUILDING OBSERVED 25 APR, NO ACTIVITY OBS ON RETURN VISIT 5 JUL 2001.
Owner/Manager:	UNKNOWN

Occurrence No.	1935	**Map Index:**	87827	**EO Index:**	88801	**Element Last Seen:**	2002-07-23
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2002-07-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-01-07

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.40553 / -121.93010	**Accuracy:**	80 meters
UTM:	Zone-10 N4251352 E593415	**Elevation (ft):**	90
PLSS:	T07N, R01W, Sec. 36, SW (M)	**Acres:**	0.0

Location:	ALONG GIBSON CANYON CREEK, ABOUT 0.5 MI SSE OF LEISURE TOWN RD AT VICTOR LN & 0.8 MI WNW OF I-80 AT N MERIDIAN RD.
Detailed Location:	FEATURE REPRESENTS 1-2 NEST SITES, NOT ACTIVE CONCURRENTLY (POSSIBLY A SINGLE TERRITORY). MAPPED TO COORDINATES FROM CDFW DATABASE OF 2000-2004 SWAINSON'S HAWK NEST RECORDS AT "LEISURE TOWN RD SEWAGE TREATMENT PLANT."
Ecological:	2001-2002: NEST IN COTTONWOOD SURROUNDED BY PASTURE/GRASSLAND. TRACT HOUSING BEING DEVELOPED ABOUT 0.3 MILE TO SW, ACROSS LEISURE TOWN RD (2006-2012).
General:	2001: PAIR SEEN REPEATEDLY VISITING NEST TREE, BUT COULD NOT CONFIRM NEST OR YOUNG DUE TO ACCESS ISSUES. 2002: NESTING PAIR OBSERVED 23 JUL.
Owner/Manager:	UNKNOWN

Occurrence No.	1936	**Map Index:**	87828	**EO Index:**	88802	**Element Last Seen:**	2016-06-15
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-06-15
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2016-10-21

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.39657 / -121.95647	**Accuracy:**	specific area
UTM:	Zone-10 N4250332 E591125	**Elevation (ft):**	109
PLSS:	T06N, R01W, Sec. 3, NE (M)	**Acres:**	10.0

Location:	ALONG BOTH SIDES OF COTTING LN AND WEST OF CROKER DR, ABOUT 0.3 MILES WNW OF VACA VALLEY PKWY AT I-505, VACAVILLE.
Detailed Location:	SW POLYGON MAPPED TO COORDINATES FROM CDFW DATABASE OF 2000-2004 SWAINSON'S HAWK NEST RECORDS. NE POLYGON MAPPED TO COORDINATES GIVEN FOR 2016 NEST SITE.
Ecological:	2001: NEST IN 60' EUCALYPTUS, WITH COMMERCIAL DEVELOPMENT TO NORTH AND GRASSLAND TO SOUTH. 2016: NEST IN SMALL EUCALYPTUS GROVE IN EMPTY LOT ADJACENT TO GAS STATION.
General:	NEST WITH 1 PARTIALLY-FEATHERED YOUNG OBSERVED 5 JUL 2001. TWO ADULTS OBSERVED CARRYING NESTING MATERIAL BACK TO EUCALYPTUS GROVE ON 15 JUN 2016.
Owner/Manager:	UNKNOWN, PVT

Occurrence No.	1937	**Map Index:**	87830	**EO Index:**	88804	**Element Last Seen:**	2001-05-30
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-07-03
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-02-26

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.38549 / -121.92299	**Accuracy:**	80 meters
UTM:	Zone-10 N4249137 E594062	**Elevation (ft):**	80
PLSS:	T06N, R01W, Sec. 12, NE (M)	**Acres:**	0.0

Location:	S SIDE OF WALNUT RD ABOUT 0.1 MI E OF WILLOW RD INTERSECTION, 0.6 MI ESE OF I-80 AT LEISURE TOWN RD; NE OF VACAVILLE.
Detailed Location:	MAPPED TO COORDINATES GIVEN ON FIELD SURVEY FORM AND IN CDFW DATABASE OF 2000-2004 SWAINSON'S HAWK NEST RECORDS.
Ecological:	NEST IN 50' EUCALYPTUS SUROUNDED BY RESIDENTIAL WITH CROPS TO THE EAST.
General:	NEST WITH 2 PARTIALLY-FEATHERED YOUNG OBSERVED ON 30 MAY 2001; NO ACTIVITY WHEN REVISITED ON 3 JUL.
Owner/Manager:	UNKNOWN

Occurrence No.	2710	**Map Index:**	A3542	**EO Index:**	105175	**Element Last Seen:**	2016-07-26
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-07-26
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-01-30

Quad Summary:	Elmira (3812138), Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.37487 / -121.95413	**Accuracy:**	80 meters
UTM:	Zone-10 N4247927 E591356	**Elevation (ft):**	102
PLSS:	T06N, R01W, Sec. 10, SE (M)	**Acres:**	5.0

Location:	MEDIAN ISLAND IN I-80/I-505 INTERCHANGE, 0.4 MILES NE OF E MONTE VISTA AVE AT NUT TREE RD IN VACAVILLE.
Detailed Location:	MAPPED TO PROVIDED COORDINATES.
Ecological:	SMALL SEGMENT OF DISTURBED GRASSLAND AND SCATTERED EUCALYPTUS SURROUNDED BY URBAN SPRAWL AMONG OPEN PARCELS AND AGRICULTURE. DISTURBANCE FROM VEHICLE TRAFFIC NOTED.
General:	NESTING PAIR OBSERVED APR-JUL 2016; NEST-BUILDING ON 20 APR AND PRESUMED INCUBATING ON 17 JUN, BUT NO CHICKS OR FEEDING OBSERVED.
Owner/Manager:	UNKNOWN

Occurrence No.	2747	**Map Index:**	A8505	**EO Index:**	110295	**Element Last Seen:**	2013-07-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2013-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2018-02-16

Quad Summary: Mt. Vaca (3812241)

County Summary: Solano

Lat/Long:	38.40071 / -122.03475	**Accuracy:**	1/5 mile
UTM:	Zone-10 N4250717 E584284	**Elevation (ft):**	333
PLSS:	T06N, R02W, Sec. 1, N (M)	**Acres:**	70.0

Location: ULATIS CREEK, 0.4 MILE EAST OF INTERSECTION OF CHESTER WAY AND PLEASANTS VALLEY ROAD, ABOUT 3 MILES NW OF VACAVILLE.

Detailed Location:

Ecological: VALLEY OAK RIPARIAN AREA.

General: ADULT OBSERVED DISPLAYING ON 9 APR 2013. ADULT OBSERVED CARRYING PREY INTO RIPARIAN AREA LATER IN 2013; A PAIR WAS LIKELY NESTING THERE.

Owner/Manager: PVT

Occurrence No.	2748	**Map Index:**	A8507	**EO Index:**	110297	**Element Last Seen:**	2013-07-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2013-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2018-02-16

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.40211 / -121.89702	**Accuracy:**	80 meters
UTM:	Zone-10 N4251007 E596309	**Elevation (ft):**	73
PLSS:	T06N, R01E, Sec. 6, NE (M)	**Acres:**	5.0

Location: JUST SW OF THE INTERSECTION OF WEBER ROAD AND LEWIS ROAD, EAST OF I-80, BETWEEN VACAVILLE AND DIXON.

Detailed Location:

Ecological: NEST TREE WAS A EUCALYPTUS.

General: 2 FLEDGLINGS SEEN IN 2013.

Owner/Manager: PVT

Occurrence No.	2749	**Map Index:**	A8508	**EO Index:**	110298	**Element Last Seen:**	2013-06-21
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2013-06-21
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2018-02-16

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.39993 / -121.93083	**Accuracy:**	1/10 mile
UTM:	Zone-10 N4250731 E593359	**Elevation (ft):**	91
PLSS:	T06N, R01W, Sec. 1, NW (M)	**Acres:**	18.0

Location: 0.4 MILE NNW OF THE INTERSECTION OF MILLS LANE AND ELLSWORTH ROAD, NORTHEASTERN VACAVILLE.

Detailed Location:

Ecological:

General: PAIR OBSERVED COURTING AND COPULATING ON 1 AND 2 APR, AND THEN OCCUPYING TERRITORY ON 10 APR 2013. 4 INDIVIDUALS OBSERVED HUNTING ON 21 JUN 2013, POSSIBLY A PAIR WITH 2 FLEDGLINGS, BUT OBSERVER WAS TOO FAR AWAY TO ACCURATELY AGE.

Owner/Manager: PVT

Athene cunicularia **Element Code:** ABNSB10010

burrowing owl

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	OPEN, DRY ANNUAL OR PERENNIAL GRASSLANDS, DESERTS, AND SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.			
	Micro:	SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.			

Occurrence No.	120	**Map Index:** 17337	**EO Index:**	11953	**Element Last Seen:** 1989-03-12
Occ. Rank:	Good		**Presence:**	Presumed Extant	**Site Last Seen:** 1989-03-12
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 1991-01-23

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.41347 / -121.89770	**Accuracy:**	1/5 mile
UTM:	Zone-10 N4252267 E596234	**Elevation (ft):**	75
PLSS:	T07N, R01E, Sec. 31, NE (M)	**Acres:**	0.0

Location: OLD VACA VALLEY RACEWAY, SW OF THE INTERSECTION LEWIS AND MIDWAY RDS, JUST EAST OF I-80, NE OF VACAVILLE.

Detailed Location: OWLS FOUND IN BURROWS MADE BY GROUND SQUIRRELS.

Ecological: HABITAT IS MADE UP OF MOUNDS OF DIRT THAT IS HEAVILY SODDED.

General:

Owner/Manager: UNKNOWN

Occurrence No.	227	**Map Index:** 32019	**EO Index:**	3789	**Element Last Seen:** 1994-07-12
Occ. Rank:	Good		**Presence:**	Presumed Extant	**Site Last Seen:** 2004-07-29
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 2004-11-10

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.45646 / -121.94343	**Accuracy:**	80 meters
UTM:	Zone-10 N4256990 E592187	**Elevation (ft):**	115
PLSS:	T07N, R01W, Sec. 14, NW (M)	**Acres:**	0.0

Location: WEST SIDE OF WINTERS ROAD, ABOUT 5.5 MILES SOUTH OF WINTERS.

Detailed Location: OWLS WERE OBSERVED PERCHED ON STEEL FENCE POSTS ON THE WEST SIDE OF WINTERS ROAD; BURROWS WERE LOCATED ON TOP OF THE EAST BANK OF A CANAL PARALLELING THE FENCE LINE.

Ecological: HABITAT CONSISTS OF LOW-GROWING ANNUAL GRASSLAND, WHICH TURNS BROWN DURING THE SUMMER; SURROUNDING AREA IS MADE UP OF IRRIGATED PASTURE AND ROW CROPS AND RANCHETTES.

General: 4 BURROWING OWLS OBSERVED ON 12 JULY 1994. ALTHOUGH HABITAT APPEARED EXTANT, OWLS WERE NOT OBSERVED ON 5 MAY 2003 OR 29 JUL 2004.

Owner/Manager: UNKNOWN

Occurrence No.	228	**Map Index:**	32020	**EO Index:**	4406	**Element Last Seen:**	2005-09-03
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-09-03
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2005-10-18

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.45378 / -121.95303	**Accuracy:**	80 meters
UTM:	Zone-10 N4256684 E591352	**Elevation (ft):**	115
PLSS:	T07N, R01W, Sec. 15, NE (M)	**Acres:**	0.0

Location: NORTH SIDE OF ALLENDALE ROAD, JUST EAST OF THE PUTAH SOUTH CANAL INTERSECTION, WEST OF I-505, 6 MILES SOUTH OF WINTERS.

Detailed Location: 1 OWL OBSERVED PERCHED ON A STEEL FENCE LINE ON THE NORTH SIDE OF A CEMENT-LINED CANAL WHICH PARALLELS ALLENDALE ROAD, ABOUT 0.15 EAST OF PUTAH SOUTH CANAL. BURROW IS LOCATED WITHIN THE FENCED CANAL AREA.

Ecological: HABITAT CONSISTS OF LOW-GROWING ANNUAL GRASSLAND, WHICH DRIES OUT DURING THE SUMMER; SURROUNDING AREA IS DEVELOPED WITH VARIOUS-SIZED RANCHETTES (1-20 ACRES) TO THE SOUTH AND GRAZING LANDS (SHEEP) TO THE NORTH.

General: 1 OWL OBSERVED ON 12 JULY 1994. NO OWLS OBSERVED ON 5 MAY 2003 - SITE VISIT LIKELY TOO EARLY. 1 OWL OBSERVED AT THE BURROW ENTRANCE ON 4 JUL 2004. 2 OBSERVED AT BURROW ON 29 JUL 2004. 4 OWLS (1 AD, 3 JUV) OBSERVED ON 3 SEP 2005.

Owner/Manager: UNKNOWN

Occurrence No.	272	**Map Index:**	39425	**EO Index:**	34427	**Element Last Seen:**	2002-06-08
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	2004-07-29
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2004-11-09

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.39343 / -121.94531	**Accuracy:**	non-specific area
UTM:	Zone-10 N4249994 E592103	**Elevation (ft):**	95
PLSS:	T06N, R01W, Sec. 02 (M)	**Acres:**	27.9

Location: NORTH SIDE OF VACA VALLEY PARKWAY, APPROXIMATELY 100 YDS WEST OF INTERSECTION WITH ACKERLY DRIVE, NORTH OF VACAVILLE.

Detailed Location: BURROWS ARE LOCATED BENEATH ROWS OF PLANTED TREES ADJACENT TO THE ROADWAYS.

Ecological: HABITAT SURROUNDING BURROWS CONSISTS OF DISTURBED, NON-NATIVE GRASSLAND. GROUND HAS BEEN PLOWED TO WITHIN FEET OF TREES. AREA IS FUTURE SITE OF DEVELOPMENT.

General: 2 ADULTS AND 4 JUVENILES OBSERVED ON 22 JUNE 1998. 2 ADULTS OBSERVED ABOUT 400 FT NORTH OF VACA VALLEY PARKWAY ON 8 JUN 2002. SPECIES NOT OBSERVED ON 29 JUL 2004.

Owner/Manager: UNKNOWN

Occurrence No.	361	**Map Index:**	43203	**EO Index:**	43203	**Element Last Seen:**	2000-06-18
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	2000-06-18
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2000-07-12

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.41243 / -121.94462	**Accuracy:**	80 meters
UTM:	Zone-10 N4252104 E592139	**Elevation (ft):**	110
PLSS:	T07N, R01W, Sec. 35, NW (M)	**Acres:**	0.0

Location:	NE OF THE INTERSECTION OF I-505 AND GIBSON CANYON CREEK (NORTH FORK), 2 MILES WEST OF VACA VALLEY RACEWAY.
Detailed Location:	BURROWS ARE LOCATED AT THE TOP OF THE BANK OF AN INCISED CHANNEL.
Ecological:	BURROWS ARE SURROUNDED BY GRAZED NON-NATIVE GRASSLAND, WITH NUMEROUS GROUND SQUIRRELS IN THE VICINITY.
General:	SITE HAS BEEN ACTIVE SINCE AT LEAST 1997, WITH 1-2 PAIRS PRESENT. 2 PAIRS OBSERVED, ONE WITH 2 YOUNG, ON 18 JUN 2000.
Owner/Manager:	PVT

Occurrence No.	789	**Map Index:**	64581	**EO Index:**	64660	**Element Last Seen:**	2006-04-27
Occ. Rank:	Poor			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-04-27
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2006-05-01

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.40934 / -121.95412	**Accuracy:**	80 meters
UTM:	Zone-10 N4251752 E591313	**Elevation (ft):**	115
PLSS:	T07N, R01W, Sec. 34 (M)	**Acres:**	0.0

Location:	ALONG THE EAST EDGE OF EUBANKS ROAD, 0.55 MILE SOUTH OF MIDWAY ROAD, VACAVILLE.
Detailed Location:	BURROW WAS LOCATED IN THE INTERCHANGE BUSINESS PARK.
Ecological:	BURROW WAS LOCATED IN A SINK HOLE ALONG THE ROAD EDGE; SURROUNDED BY A VACANT LOT THAT IS RAPIDLY MOVING TOWARD DEVELOPMENT (MOST LOTS HAVE BEEN GRADED AND FILLED).
General:	2 ADULTS PRESENT, 19-23 APR 2006; 1 ADULT (PRESUMABLY, THE MALE) WAS GUARDING THE BURROW ENTRANCE, 24-27 APR 2006.
Owner/Manager:	CITY OF VACAVILLE

Occurrence No.	952	**Map Index:**	69412	**EO Index:**	70188	**Element Last Seen:**	2005-07-08
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-07-08
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2007-06-13

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.38257 / -121.93842	**Accuracy:**	non-specific area
UTM:	Zone-10 N4248797 E592718	**Elevation (ft):**	87
PLSS:	T06N, R01W, Sec. 11, SE (M)	**Acres:**	34.0

Location:	NORTH AND SOUTH OF GILLEY WAY, BETWEEN LEISURE TOWN ROAD AND ORANGE DRIVE, VACAVILLE.
Detailed Location:	ACTIVE BURROWS FOUND IN FIVE LOCATIONS IN 2005; TWO BURROWS CONTAINED ACTIVE JUVENILES.
Ecological:	HABITAT CONSISTS OF A MOWED AREA ADJACENT TO A GOLF COURSE, DOMINATED BY BERMUDA GRASS AND YELLOW STAR THISTLE. BURROWS WERE LOCATED QUITE CLOSE TOGETHER, AND SOME WERE LOCATED ADJACENT TO ROADWAYS.
General:	ON 8 JUL 2005, 5 ADULTS/3+ JUVENILES OBSERVED AT ONE LOCATION, 2 ADULTS/2 JUVENILES OBSERVED AT A SECOND LOCATION, AND SINGLE ADULTS OBSERVED AT BURROWS AT THE OTHER THREE SITES.
Owner/Manager:	UNKNOWN

Occurrence No.	1995	**Map Index:**	A3545	**EO Index:**	105177	**Element Last Seen:**	2016-07-12
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-07-12
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-01-30

Quad Summary:	Elmira (3812138), Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.37535 / -121.95788	**Accuracy:**	80 meters
UTM:	Zone-10 N4247976 E591028	**Elevation (ft):**	105
PLSS:	T06N, R01W, Sec. 10, SE (M)	**Acres:**	5.0

Location:	ABOUT 0.2 MILES NW OF NUT TREE RD AT E MONTE VISTA AVE, W OF THE I-505/I-80 INTERCHANGE, VACAVILLE.
Detailed Location:	MAPPED TO PROVIDED COORDINATES.
Ecological:	SMALL PATCH OF DISTURBED GRASSLAND ADJACENT TO BUILDING AND NEARBY AIRPLANE HANGARS. SURROUNDED BY URBAN SPRAWL AMONG OPEN PARCELS AND AGRICULTURE. DISTURBANCE FROM VEHICLE TRAFFIC AND AIRPLANE ACTIVITY.
General:	2 ADULTS AND 3 JUVENILES OBSERVED AT BURROW ON 17 JUN & 2 ADULTS OBSERVED ON 12 JUL 2016.
Owner/Manager:	SOL COUNTY

Taxidea taxus **Element Code:** AMAJF04010

American badger

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	MOST ABUNDANT IN DRIER OPEN STAGES OF MOST SHRUB, FOREST, AND HERBACEOUS HABITATS, WITH FRIABLE SOILS.			
	Micro:	NEEDS SUFFICIENT FOOD, FRIABLE SOILS AND OPEN, UNCULTIVATED GROUND. PREYS ON BURROWING RODENTS. DIGS BURROWS.			

Occurrence No.	535 **Map Index:** A3890	**EO Index:**	105545	**Element Last Seen:**	2016-09-13
Occ. Rank:	Poor	**Presence:**	Presumed Extant	**Site Last Seen:**	2016-09-13
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2017-03-15

Quad Summary: Elmira (3812138)

County Summary: Solano

Lat/Long:	38.37089 / -121.96519	**Accuracy:**	80 meters
UTM:	Zone-10 N4247474 E590395	**Elevation (ft):**	115
PLSS:	T06N, R01W, Sec. 15, NW (M)	**Acres:**	5.0

Location: ABOUT 0.3 MILES WNW OF NUT TREE RD AT E MONTE VISTA AVE AND 0.7 MILES NNE OF I-80 AT ALLISON DR, VACAVILLE.

Detailed Location: MAPPED TO PROVIDED COORDINATES.

Ecological: FORAGING HOLES OBSERVED IN STRIP OF EUCALYPTUS TREES IN RUDERAL/NON-NATIVE GRASSLAND AREA AT EDGE OF AIRPORT. RELATIVELY OPEN AIRPORT AREA SURROUNDED ON ALL SIDES BY DEVELOPMENT; AREA LIKELY TOO SMALL FOR VIABLE POPULATION.

General: RELATIVELY FRESH DIGGINGS (LESS THAN 1.5 MONTHS OLD) WITH BADGER SIGN (TRACKS, HAIR) OBSERVED ON 13 SEP 2016. NO OCCUPIED DEN FOUND WITHIN 50M OF DIGGINGS; THE SIGN WAS PRESUMED TO BE FROM A SOLITARY ANIMAL MOVING THROUGH THE AREA.

Owner/Manager: PVT

Emys marmorata

Element Code: ARAAD02030

western pond turtle

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3G4
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive			
Habitat:	**General:**	A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS AND IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BELOW 6000 FT ELEVATION.			
	Micro:	NEEDS BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYING.			

Occurrence No.	139	**Map Index:** 39692	**EO Index:** 34694	**Element Last Seen:**	1998-08-14
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	1998-08-14
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1998-09-10

Quad Summary: Fairfield North (3812231)

County Summary: Solano

Lat/Long:	38.33447 / -122.01421	**Accuracy:**	80 meters
UTM:	Zone-10 N4243386 E586155	**Elevation (ft):**	210
PLSS:	T06N, R01W, Sec. 30 (M)	**Acres:**	0.0

Location: NW END OF LAGOON VALLEY RESERVOIR, SW OF VACAVILLE.

Detailed Location: SITE CONSISTS OF A CHANNEL NEAR THE OUTLET OF LAGOON VALLEY RESERVOIR.

Ecological: CHANNEL HAS MODERATE RIPARIAN COVER OF WILLOW, WITH SPARSE STANDS OF SCIRPUS AND TYPHA ALONG THE MARGINS. RORIPPA AND ALGAL MATS COVER ~30% OF THE WATER SURFACE. BASKING SITES CONSISTS OF LARGE, DOWNED WILLOW LIMBS.

General: 3 ADULTS OBSERVED BASKING ON WOODY DEBRIS. BULLFROGS AND RIVERS OTTERS ARE ALSO PRESENT AT THIS SITE.

Owner/Manager: UNKNOWN

Occurrence No.	1280	**Map Index:** A0216	**EO Index:** 101779	**Element Last Seen:**	2016-03-23
Occ. Rank:	Fair		**Presence:** Presumed Extant	**Site Last Seen:**	2016-03-23
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2016-07-25

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.38328 / -121.93548	**Accuracy:**	80 meters
UTM:	Zone-10 N4248878 E592975	**Elevation (ft):**	82
PLSS:	T06N, R01W, Sec. 11, NE (M)	**Acres:**	5.0

Location: ABOUT 0.2 MILES NE OF ORANGE DR AT GILLEY WAY & 0.3 MILES SSW OF I-80 AT THE LEISURE TOWN RD OVERPASS, NE OF VACAVILLE.

Detailed Location: MAPPED TO PROVIDED COORDINATES.

Ecological: ULATIS CREEK FLOOD CONTROL CHANNEL. STEP-POOL BENEATH MANMADE BARRIER IN CHANNELIZED CREEK. PART CONCRETE & RIPRAP-LINED, PART GRASS-LINED WITH INTERMITTENT CATTAILS. "SUBJECT TO AGGRESSIVE CHANGES IN HYDROGRAPH." SURROUNDED BY DEVELOPMENT.

General: 1 ADULT AND 1 SUBADULT/JUVENILE OBSERVED BASKING ON 23 MAR 2016.

Owner/Manager: DFG, DOD-COE, SOL COUNTY

Branchinecta lynchi

Element Code: ICBRA03030

vernal pool fairy shrimp

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3
	Other:	IUCN_VU-Vulnerable			

Habitat:	**General:**	ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MOUNTAINS, AND SOUTH COAST MOUNTAINS, IN ASTATIC RAIN-FILLED POOLS.
	Micro:	INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Occurrence No.	19	**Map Index:**	33218	**EO Index:**	2649	**Element Last Seen:**	1995-02-17
Occ. Rank:	Poor			**Presence:**	Presumed Extant	**Site Last Seen:**	1995-02-17
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2014-12-26

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.38399 / -121.95028	**Accuracy:**	80 meters
UTM:	Zone-10 N4248942 E591681	**Elevation (ft):**	90
PLSS:	T06N, R01W, Sec. 11 (M)	**Acres:**	0.0

Location:	0.75 MILE NORTH OF THE INTERSECTION OF I-80 AND I-505, NORTH OF VACAVILLE.
Detailed Location:	POOL #33.
Ecological:	HABITAT CONSISTS OF A VERNAL POOL SURROUNDED BY ANNUAL GRASSLAND. AREA WAS DISKED ABOUT 1990.
General:	1S OBSERVED ON 20 JAN, 3 FEB, & 17 FEB 1995; ESTIMATED TOTAL POPULATION SIZE LESS THAN 50; 2 MALES AND 1 FEMALE COLLECTED AND DEPOSITED AT CAS (CASIZ #103094).
Owner/Manager:	PVT-CHEVRON

Occurrence No.	172	**Map Index:**	33702	**EO Index:**	30612	**Element Last Seen:**	1993-02-04
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1993-02-04
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1997-03-20

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.39534 / -121.92462	**Accuracy:**	3/5 mile
UTM:	Zone-10 N4250227 E593907	**Elevation (ft):**	80
PLSS:	T06N, R01W, Sec. 01 (M)	**Acres:**	0.0

Location:	NORTHEAST OF THE INTERSECTION OF LEISURE TOWN ROAD AND I-80, NORTHEAST OF VACAVILLE.
Detailed Location:	SEASONAL WETLANDS LOCATED SOMEWHERE IN SECTION 1.
Ecological:	NATURAL SEASONAL WETLANDS.
General:	B. LYNCHI OBSERVED IN THE ONE FEATURE INSPECTED. SUGNET RECORD #55. NO LEPIDURUS PACKARDI OBSERVED.
Owner/Manager:	UNKNOWN

Occurrence No.	225	**Map Index:**	41972	**EO Index:**	41972	**Element Last Seen:**	2017-01-29
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2017-01-29
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2019-06-14

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.40841 / -121.94219	**Accuracy:**	specific area
UTM:	Zone-10 N4251660 E592356	**Elevation (ft):**	99
PLSS:	T07N, R01W, Sec. 35, SE (M)	**Acres:**	45.0

Location:	EAST SIDE OF I-505, 0.3 TO 0.6 MILE WEST OF LEISURE TOWN ROAD & 0.4 TO 0.9 MILE SOUTH OF MIDWAY ROAD, VACAVILLE.
Detailed Location:	1997: NORTH VILLAGE PROJECT SITE, N & E PORTIONS, EXACT DETECTION LOCATIONS UNKNOWN. 2011-2017: REMY NORTH (N021) PRESERVE, MAPPED TO LOCATIONS GIVEN FOR OCCUPIED POOLS. 2016: DETECTED HERE & IN POOLS VP-2 (EO #793) & VP-17 (EO #919).
Ecological:	1997: ANNUAL GRASSLAND WITH SEASONALLY PONDED WETLANDS GRAZED BY CATTLE; LINDERIELLA OCCIDENTALIS CO-OCCURRED IN 2 BASINS. 2011-2012: NEW WETLANDS CONSTRUCTED, AREA PROTECTED AS PRESERVE. 2017:17.86 AC OF SEASONAL WETLAND HABITAT.
General:	FOUND IN 26 OF 649 POOLS SAMPLED, 1997. 100S IN 3 POOLS, 19 JAN 2011. 100S IN 4 POOLS, 30 MAR 2012. 1000 IN 3 POOLS, 20 DEC 2012. 5 IN 2 OF 10 POOLS, 9 JAN 2015. 243 IN 9 OF 45 POOLS (7 MAPPED HERE), 2016. 50 IN 4 OF 5 POOLS, 29 JAN 2017.
Owner/Manager:	PVT, CNLM

Occurrence No.	792	**Map Index:**	93951	**EO Index:**	95079	**Element Last Seen:**	2001-03-13
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-03-13
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2014-09-25

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.45665 / -121.95232	**Accuracy:**	80 meters
UTM:	Zone-10 N4257004 E591410	**Elevation (ft):**	130
PLSS:	T07N, R01W, Sec. 15, NE (M)	**Acres:**	0.0

Location:	0.3 MILE NE OF THE POINT WHERE ALLENDALE ROAD CROSSES THE PUTAH SOUTH CANAL, 0.6 MILE WEST OF I-505, NORTH OF VACAVILLE.
Detailed Location:	MAPPED TO PROVIDED COORDINATES.
Ecological:	20 CM DEEP POOL.
General:	2 COLLECTED ON 13 MAR 2001 (CASIZ #152483).
Owner/Manager:	UNKNOWN

Occurrence No.	793	**Map Index:**	93956	**EO Index:**	95083	**Element Last Seen:**	2016-02-08
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-02-08
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2019-06-14

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.39762 / -121.94477	**Accuracy:**	specific area
UTM:	Zone-10 N4250460 E592144	**Elevation (ft):**	100
PLSS:	T06N, R01W, Sec. 02, NW (M)	**Acres:**	12.0

Location: 0.4 MILE NE OF VACA VALLEY PARKWAY OVERPASS ON I-505, WEST OF NORTH VILLAGE PARKWAY, VACAVILLE.

Detailed Location: 1997: NORTH VILLAGE PROJECT SITE, SOUTHERN PORTION. 2011-2012: REMY NORTH (N021) PRESERVE. 2016: VP-2; ALSO DETECTED IN 8 OTHER POOLS (EOS #225, 919).

Ecological: 1997: ANNUAL GRASSLAND WITH SEASONALLY PONDED WETLANDS GRAZED BY CATTLE. 2011-2012: NEW WETLANDS CONSTRUCTED, AREA PROTECTED AS PRESERVE.

General: FEWER THAN 100 DETECTED IN WETLAND #16 ON 7 JAN 1997. NONE FOUND IN 2011 OR 2012. 243 IN 9 OF 45 POOLS (1 MAPPED HERE), 2016.

Owner/Manager: PVT

Occurrence No.	794	**Map Index:**	93961	**EO Index:**	95088	**Element Last Seen:**	2011-01-12
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2011-01-12
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2014-10-27

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.41026 / -121.89800	**Accuracy:**	80 meters
UTM:	Zone-10 N4251911 E596212	**Elevation (ft):**	70
PLSS:	T07N, R01E, Sec. 31, NE (M)	**Acres:**	0.0

Location: WEST SIDE OF LEWIS ROAD, ABOUT 0.4 MILE SOUTH OF I-80 AT MIDWAY ROAD, NW OF VACAVILLE.

Detailed Location: MAPPED TO PROVIDED LOCATION.

Ecological: POOL IN OLD FIRE BREAK. SURVEYOR NOTED TIRE RUTS FROM OFF-ROAD VEHICLES AT EDGES OF POOL. VISIBLE DISTURBANCE FROM PLOWING.

General: 100 ADULTS OBSERVED ON 12 JAN 2011.

Owner/Manager: PVT

Occurrence No.	919 **Map Index:** B3265	**EO Index:**	115180	**Element Last Seen:**	2016-02-08
Occ. Rank:	Good	**Presence:**	Presumed Extant	**Site Last Seen:**	2016-02-08
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2019-06-14

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.40396 / -121.93101	**Accuracy:**	80 meters
UTM:	Zone-10 N4251178 E593339	**Elevation (ft):**	92
PLSS:	T07N, R01W, Sec. 36, SW (M)	**Acres:**	5.0

Location:	REMY NORTH PRESERVE, 0.5 MI SSE OF LEISURE TOWN RD AT VICTOR LN & 1.2 MI NE OF I-505 AT VACA VALLEY PKWY, VACAVILLE.
Detailed Location:	POOL VP-17, ALSO DETECTED IN 8 OTHER POOLS (EOS #225 & #793).
Ecological:	PRESERVE DOMINATED BY NON-NATIVE ANNUAL GRASSLAND WITH NATURAL AND CONSTRUCTED VERNAL POOLS AND WETLANDS. THE PRESERVE IS BORDERED BY I-505, A BUSINESS PARK, RESIDENCES, AND AGRICULTURAL LAND.
General:	243 DETECTED AT 9 OUT OF 45 POOLS SAMPLED IN 2016 (1 MAPPED HERE).
Owner/Manager:	PVT, CNLM

Linderiella occidentalis **Element Code:** ICBRA06010

California linderiella

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2G3
	State:	None		**State:**	S2S3
	Other:	IUCN_NT-Near Threatened			
Habitat:	**General:**	SEASONAL POOLS IN UNPLOWED GRASSLANDS WITH OLD ALLUVIAL SOILS UNDERLAIN BY HARDPAN OR IN SANDSTONE DEPRESSIONS.			
	Micro:	WATER IN THE POOLS HAS VERY LOW ALKALINITY, CONDUCTIVITY, AND TOTAL DISSOLVED SOLIDS.			

Occurrence No.	236	**Map Index:**	59073	**EO Index:**	59109	**Element Last Seen:**	1997-02-11
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1997-02-11
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2005-01-03

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.41505 / -121.93386	**Accuracy:**	80 meters
UTM:	Zone-10 N4252406 E593074	**Elevation (ft):**	95
PLSS:	T07N, R01W, Sec. 36 (M)	**Acres:**	0.0

Location:	ABOUT 0.1 MILE SOUTH OF INTERSECTION OF LEISURE TOWN ROAD AND MIDWAY ROAD, NE OF VACAVILLE.
Detailed Location:	IN POOLS #2 AND #3, NORTH VILLAGE PROJECT SITE.
Ecological:	ANNUAL GRASSLAND WITH SEASONALLY PONDED WETLANDS GRAZED BY CATTLE.
General:	UNKNOWN NUMBER OBSERVED BETWEEN 7 JAN & 11 FEB 1997.
Owner/Manager:	PVT

Occurrence No.	237	**Map Index:**	59074	**EO Index:**	59110	**Element Last Seen:**	1997-02-11
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1997-02-11
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2005-01-03

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.41183 / -121.94427	**Accuracy:**	80 meters
UTM:	Zone-10 N4252038 E592170	**Elevation (ft):**	100
PLSS:	T07N, R01W, Sec. 35 (M)	**Acres:**	0.0

Location:	ABOUT 0.1 MILE EAST OF THE INTERSECTION OF I-505 AND GIBSON CANYON CREEK (NORTH FORK), NE OF VACAVILLE.
Detailed Location:	IN POOL #7 AT NORTH VILLAGE PROJECT SITE.
Ecological:	ANNUAL GRASSLAND WITH SEASONALLY PONDED WETLANDS GRAZED BY CATTLE.
General:	UNKNOWN NUMBER OBSERVED BETWEEN 7 JAN & 11 FEB 1997.
Owner/Manager:	PVT

Lepidurus packardi **Element Code:** ICBRA10010

vernal pool tadpole shrimp

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S3S4
	Other:	IUCN_EN-Endangered			
Habitat:	**General:**	INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.			
	Micro:	POOLS COMMONLY FOUND IN GRASS-BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED AND HIGHLY TURBID.			

Occurrence No.	26	**Map Index:** 32460	**EO Index:** 1767	**Element Last Seen:**	1995-04-26
Occ. Rank:	Poor		**Presence:** Presumed Extant	**Site Last Seen:**	1995-04-26
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1999-12-16

Quad Summary: Elmira (3812138)

County Summary: Solano

Lat/Long:	38.36062 / -121.96860	**Accuracy:**	80 meters
UTM:	Zone-10 N4246331 E590110	**Elevation (ft):**	130
PLSS:	T06N, R01W, Sec. 15, SW (M)	**Acres:**	0.0

Location: 1.1 KM NE OF ELMIRA ROAD AT INTERSTATE ROUTE 80, VACAVILLE.

Detailed Location: ALLISON DRIVE/INTERSTATE 80 INTERCHANGE PROJECT.

Ecological: MIXED, NON-NATIVE ANNUAL GRASSLAND OF ANNUAL GRASSES, WEEDS, SMALL INTRODUCED HERBS, AND VERY SMALL REPRESENTATION BY NATIVE SPECIES; FEW SEASONAL WETLAND SPECIES AROUND SWALE.

General: 1 EGG FOUND AND COLLECTED DURING SOIL SAMPLING, EGG CURRENTLY IN VIAL AT JONES & STOKES; NO SHRIMP OBSERVED DURING AQUATIC SAMPLING; UNCERTAIN IF EGG REPRESENTS VIABLE TADPOLE SHRIMP POPULATION; POOL WILL BE DESTROYED BY HIGHWAY PROJECT.

Owner/Manager: CITY OF VACAVILLE

Desmocerus californicus dimorphus **Element Code:** IICOL48011

valley elderberry longhorn beetle

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G3T2T3
	State:	None		**State:**	S3
	Other:				
Habitat:	**General:**	OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).			
	Micro:	PREFERS TO LAY EGGS IN ELDERBERRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.			

Occurrence No.	259	**Map Index:** 95008	**EO Index:** 96139	**Element Last Seen:**	2008-09-16
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	2008-09-16
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2015-03-09

Quad Summary: Fairfield North (3812231)

County Summary: Solano

Lat/Long:	38.37024 / -122.01866	**Accuracy:**	non-specific area
UTM:	Zone-10 N4247350 E585724	**Elevation (ft):**	255
PLSS:	T06N, R01W, Sec. 18, NW (M)	**Acres:**	45.0

Location: ALONG ALAMO CREEK, FROM 0-0.3 MI E OF HESPELLER RD & PLEASANTS VALLEY RD INTERSECTION, NW EDGE OF VACAVILLE.

Detailed Location: MAPPED ACCORDING TO PROVIDED MAP FOR SURVEY AREA, EXACT LOCATION OF EXIT HOLES WITHIN THE SURVEY AREA UNKNOWN. ALAMO CREEK IS A SLOW-MEDIUM MOVING STREAM WITH SANDY/GRAVELLY BOTTOM.

Ecological: RIPARIAN CORRIDOR EXTENDS APPROX. 35-50 FT ON EITHER SIDE OF CREEK. OVERSTORY: VALLEY OAKS, JUGLANS CALIFORNICA, SALIX LAEVIGAT, QUERCUS WISLIZENI, & ACER MACROPHYLLUM. UNDERSTORY: RUBUS DISCOLOR, SALIX LASIOLEPIS, & SAMBUCUS MEXICANA.

General: NUMEROUS ELDERBERRY STEMS WITH EXIT HOLES OBSERVED DURING PROTOCOL SURVEYS CONDUCTED ON 10 & 11 JUN, 3 JUL, AND 15 & 16 SEP 2008.

Owner/Manager: CITY OF VACAVILLE

Bombus occidentalis

Element Code: IIHYM24250

western bumble bee

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2G3
	State:	None		**State:**	S1
	Other:	USFS_S-Sensitive			
Habitat:	**General:**	ONCE COMMON AND WIDESPREAD, SPECIES HAS DECLINED PRECIPITOUSLY FROM CENTRAL CA TO SOUTHERN B.C., PERHAPS FROM DISEASE.			
	Micro:	□			

Occurrence No.	177	**Map Index:**	24739	**EO Index:**	99943	**Element Last Seen:**	1950-09-22
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1950-09-22
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2015-12-14

Quad Summary: Elmira (3812138), Fairfield North (3812231)
County Summary: Solano

Lat/Long:	38.35642 / -121.98869	**Accuracy:**	1 mile
UTM:	Zone-10 N4245845 E588359	**Elevation (ft):**	175
PLSS:	T06N, R01W, Sec. 20 (M)	**Acres:**	0.0

Location: VACAVILLE.
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB IN THE GENERAL VICINITY OF THE CITY OF VACAVILLE.
Ecological:
General: COLLECTED 22 SEP 1950.
Owner/Manager: UNKNOWN

Bombus crotchii

Element Code: IIHYM24480

Crotch bumble bee

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S1S2
	Other:				
Habitat:	**General:**	COASTAL CALIFORNIA EAST TO THE SIERRA-CASCADE CREST AND SOUTH INTO MEXICO.			
	Micro:	FOOD PLANT GENERA INCLUDE ANTIRRHINUM, PHACELIA, CLARKIA, DENDROMECON, ESCHSCHOLZIA, AND ERIOGONUM.			

Occurrence No.	12	**Map Index:**	97282	**EO Index:**	98549	**Element Last Seen:**	2007-05-20
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-05-20
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2015-08-20

Quad Summary: Fairfield North (3812231)
County Summary: Solano

Lat/Long:	38.33018 / -122.01163	**Accuracy:**	2/5 mile
UTM:	Zone-10 N4242912 E586386	**Elevation (ft):**	200
PLSS:	T06N, R01W, Sec. 30 (M)	**Acres:**	0.0

Location: LAGOON VALLEY RESERVOIR, SW OF VACAVILLE.
Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB IN THE GENERAL VICINITY OF LAGOON VALLEY RESERVOIR.
Ecological:
General: COLLECTED 20 MAY 2007.
Owner/Manager: CITY OF VACAVILLE

Lasthenia conjugens **Element Code:** PDAST5L040

Contra Costa goldfields

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G1
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.1, SB_UCBG-UC Botanical Garden at Berkeley			
Habitat:	**General:**	VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS, ALKALINE PLAYAS, CISMONTANE WOODLAND.			
	Micro:	VERNAL POOLS, SWALES, LOW DEPRESSIONS, IN OPEN GRASSY AREAS. 1-450 M.			

Occurrence No.	36 **Map Index:** 24709	**EO Index:**	51716	**Element Last Seen:**	1918-10-01
Occ. Rank:	None	**Presence:**	Possibly Extirpated	**Site Last Seen:**	1918-10-01
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2005-09-20

Quad Summary: Elmira (3812138)

County Summary: Solano

Lat/Long:	38.32825 / -121.96125	**Accuracy:**	3/5 mile
UTM:	Zone-10 N4242747 E590791	**Elevation (ft):**	
PLSS:	T06N, R01W, Sec. 34 (M)	**Acres:**	0.0

Location: LITTLE OAK.

Detailed Location: MAPPED IN THE HISTORICAL VICINITY OF THE JEPSON FAMILY'S LITTLE OAK RANCH, EAST OF PEABODY ROAD AND SOUTH OF ALAMO DRIVE.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1918 COLLECTION BY JEPSON.

Owner/Manager: UNKNOWN

Plagiobothrys hystriculus **Element Code:** PDBOR0V0H0

bearded popcornflower

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1			
Habitat:	**General:**	VERNAL POOLS, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	WET SITES. 1-275 M.			

Occurrence No.	27	**Map Index:** 88800	**EO Index:** 89814	**Element Last Seen:**	2016-04-12
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	2016-04-12
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2020-05-08

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.40989 / -121.95269	**Accuracy:**	specific area
UTM:	Zone-10 N4251814 E591438	**Elevation (ft):**	115
PLSS:	T07N, R01W, Sec. 34, NE (M)	**Acres:**	10.0

Location: NEAR PG&E RIGHT-OF-WAY WEST OF INTERSTATE 505 BETWEEN MIDWAY ROAD AND ALDRIDGE ROAD, NORTH OF VACAVILLE.

Detailed Location: 2 POLYGONS MAPPED ON EITHER SIDE OF THE RAILROAD LINE, BASED ON 2011 BARTOSH COORDINATES AND 2016 HUGHES COORDINATES.

Ecological: IN VERNAL POOL HABITAT WITH PLAGIOBOTHRYS STIPITATUS VAR. STIPITATUS, P. GREENEI, FESTUCA BROMOIDES, TRIGLOCHIN SCILLOIDES, LIMNANTHES DOUGLASII SSP. ROSEA, MIMULUS TRICOLOR, AND GRATIOLA EBRACTEATA.

General: 175 PLANTS OBSERVED IN EASTERN POLYGON IN 2011. 7 PLANTS OBSERVED IN WESTERN POLYGON IN 2016.

Owner/Manager: PVT

Downingia pusilla

Element Code: PDCAM060C0

dwarf downingia

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	GU
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2			
Habitat:	**General:**	VALLEY AND FOOTHILL GRASSLAND (MESIC SITES), VERNAL POOLS.			
	Micro:	VERNAL LAKE AND POOL MARGINS WITH A VARIETY OF ASSOCIATES. IN SEVERAL TYPES OF VERNAL POOLS. 1-490 M.			

Occurrence No.	92	**Map Index:**	39023	**EO Index:**	34030	**Element Last Seen:**	1998-05-08
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1998-05-08
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-06-22

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.39767 / -121.94467	**Accuracy:**	specific area
UTM:	Zone-10 N4250466 E592153	**Elevation (ft):**	95
PLSS:	T06N, R01W, Sec. 02 (M)	**Acres:**	3.3

Location: ABOUT 1.5 MILES WSW OF VACA DIXON SUBSTATION, 0.2 MILE EAST OF I-505, 0.6 MILE WEST OF LEISURE TOWN ROAD.

Detailed Location:

Ecological: AMONG DENSE ELEOCHARIS MACROSTACHYA, CALLITRICHE MARGINATA, AND LASTHENIA GLABERRIMA.

General: 250,000 PLANTS ESTIMATED IN 1998.

Owner/Manager: UNKNOWN

Legenere limosa

Element Code: PDCAM0C010

legenere

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1, BLM_S-Sensitive, SB_UCBG-UC Botanical Garden at Berkeley			
Habitat:	**General:**	VERNAL POOLS.			
	Micro:	IN BEDS OF VERNAL POOLS. 1-1005 M.			

Occurrence No.	3	**Map Index:**	23957	**EO Index:**	7224	**Element Last Seen:**	1890-05-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1983-05-22
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1993-07-22

Quad Summary: Elmira (3812138)

County Summary: Solano

Lat/Long:	38.35022 / -121.90850	**Accuracy:**	1 mile
UTM:	Zone-10 N4245237 E595374	**Elevation (ft):**	70
PLSS:	T06N, R01E, Sec. 19 (M)	**Acres:**	0.0

Location: LOWER SACRAMENTO VALLEY, NEAR ELMIRA.

Detailed Location:

Ecological: OBSERVED GROWING IN FIELDS IN 1890.

General: TYPE LOCALITY. SEARCHED FOR IN 1983 BUT NOT FOUND; SITE EXTIRPATED ACCORDING TO HOLLAND (1983).

Owner/Manager: UNKNOWN

Atriplex cordulata var. cordulata **Element Code:** PDCHE040B0

heartscale

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3T2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive			
Habitat:	**General:**	CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, MEADOWS AND SEEPS.			
	Micro:	ALKALINE FLATS AND SCALDS IN THE CENTRAL VALLEY, SANDY SOILS. 3-275 M.			

Occurrence No.	5 **Map Index:** 24709	**EO Index:**	2456	**Element Last Seen:**	1892-08-16
Occ. Rank:	None	**Presence:**	Extirpated	**Site Last Seen:**	1892-08-16
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2005-09-20

Quad Summary: Elmira (3812138)

County Summary: Solano

Lat/Long:	38.32825 / -121.96125	**Accuracy:**	3/5 mile
UTM:	Zone-10 N4242747 E590791	**Elevation (ft):**	150
PLSS:	T06N, R01W, Sec. 34 (M)	**Acres:**	0.0

Location: LITTLE OAK, NEAR VACAVILLE.

Detailed Location: MAPPED IN THE HISTORICAL VICINITY OF THE JEPSON FAMILY'S LITTLE OAK RANCH, EAST OF PEABODY ROAD AND SOUTH OF ALAMO DRIVE.

Ecological:

General: TYPE LOCALITY. ONLY SOURCES OF INFORMATION ARE TWO JEPSON COLLECTIONS FROM 1887 AND 1892.

Owner/Manager: UNKNOWN

Extriplex joaquinana

Element Code: PDCHE041F3

San Joaquin spearscale

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	CHENOPOD SCRUB, ALKALI MEADOW, PLAYAS, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	IN SEASONAL ALKALI WETLANDS OR ALKALI SINK SCRUB WITH DISTICHLIS SPICATA, FRANKENIA, ETC. 0-800 M.			

Occurrence No.	111 **Map Index:** 24709	**EO Index:**	82162	**Element Last Seen:**	1891-06-17
Occ. Rank:	None	**Presence:**	Possibly Extirpated	**Site Last Seen:**	1891-06-17
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2010-12-27

Quad Summary: Elmira (3812138)

County Summary: Solano

Lat/Long:	38.32825 / -121.96125	**Accuracy:**	3/5 mile
UTM:	Zone-10 N4242747 E590791	**Elevation (ft):**	
PLSS:	T06N, R01W, Sec. 34 (M)	**Acres:**	0.0

Location: BROCK LANE, VACAVILLE.

Detailed Location: EXACT LOCATION UNKNOWN. OTHER JEPSON COLLECTIONS SAY BROCK LANE IS NEAR LITTLE OAK. MAPPED BY CNDDB AS BEST GUESS AROUND THE HISTORICAL VICINITY OF THE JEPSON FAMILY'S LITTLE OAK RANCH, EAST OF PEABODY ROAD AND SOUTH OF ALAMO DRIVE.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS AN 1891 JEPSON COLLECTION.

Owner/Manager: UNKNOWN

Astragalus tener var. tener

Element Code: PDFAB0F8R1

alkali milk-vetch

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2T1
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.2			
Habitat:	**General:**	ALKALI PLAYA, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS.			
	Micro:	LOW GROUND, ALKALI FLATS, AND FLOODED LANDS; IN ANNUAL GRASSLAND OR IN PLAYAS OR VERNAL POOLS. 0-170 M.			

Occurrence No.	30	**Map Index:** 24709	**EO Index:**	2457	**Element Last Seen:** 1896-05-15
Occ. Rank:	None		**Presence:**	Possibly Extirpated	**Site Last Seen:** 1896-05-15
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 2011-02-22

Quad Summary: Elmira (3812138)

County Summary: Solano

Lat/Long:	38.32825 / -121.96125	**Accuracy:**	3/5 mile
UTM:	Zone-10 N4242747 E590791	**Elevation (ft):**	150
PLSS:	T06N, R01W, Sec. 34 (M)	**Acres:**	0.0

Location: LITTLE OAK, NEAR VACAVILLE.

Detailed Location: MAPPED IN THE VICINITY WHERE THE JEPSON FAMILY'S LITTLE OAK RANCH WAS LOCATED, EAST OF PEABODY RD AND SOUTH OF ALAMO DR.

Ecological:

General: COLLECTED IN THIS AREA SEVERAL TIMES BY JEPSON BETWEEN 1891 AND 1896. WITHAM (2002) BELIEVES SITE IS PROBABLY EXTIRPATED. MOST OF THE IMMEDIATE VICINITY IS URBANIZED OR UNDER INTENSIVE AGRICULTURE.

Owner/Manager: UNKNOWN

Trifolium amoenum

Element Code: PDFAB40040

two-fork clover

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G1
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.1, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley, SB_USDA-US Dept of Agriculture			
Habitat:	**General:**	VALLEY AND FOOTHILL GRASSLAND, COASTAL BLUFF SCRUB.			
	Micro:	SOMETIMES ON SERPENTINE SOIL, OPEN SUNNY SITES, SWALES. MOST RECENTLY CITED ON ROADSIDE AND ERODING CLIFF FACE. 5-310 M.			

Occurrence No.	11	**Map Index:**	24739	**EO Index:**	46523	**Element Last Seen:**	1892-06-18
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1892-06-18
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2001-11-15

Quad Summary: Elmira (3812138), Fairfield North (3812231)

County Summary: Solano

Lat/Long:	38.35642 / -121.98869	**Accuracy:**	1 mile
UTM:	Zone-10 N4245845 E588359	**Elevation (ft):**	
PLSS:	T06N, R01W, Sec. 20 (M)	**Acres:**	0.0

Location: VACAVILLE.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS CENTERED ON THE TOWN OF VACAVILLE.

Ecological:

General: ONLY SOURCE OF INFORMATION IS AN 1892 JEPSON COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Occurrence No.	12	**Map Index:**	23957	**EO Index:**	46520	**Element Last Seen:**	1909-05-04
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1909-05-04
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-08-16

Quad Summary: Elmira (3812138)

County Summary: Solano

Lat/Long:	38.35022 / -121.90850	**Accuracy:**	1 mile
UTM:	Zone-10 N4245237 E595374	**Elevation (ft):**	
PLSS:	T06N, R01E, Sec. 19 (M)	**Acres:**	0.0

Location: ELMIRA.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS CENTERED ON THE TOWN OF ELMIRA.

Ecological: IN RICH SWALES.

General: "DENSE COLONIES" NOTED IN 1903 BY BAKER. ONLY SOURCES OF INFORMATION ARE TWO HISTORICAL COLLECTIONS FROM 1903 AND 1909. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Occurrence No.	30	**Map Index:**	24709	**EO Index:**	84561	**Element Last Seen:**	1892-05-16
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1892-05-16
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-08-17

Quad Summary: Elmira (3812138)

County Summary: Solano

Lat/Long:	38.32825 / -121.96125	**Accuracy:**	3/5 mile
UTM:	Zone-10 N4242747 E590791	**Elevation (ft):**	
PLSS:	T06N, R01W, Sec. 34 (M)	**Acres:**	0.0

Location: LITTLE OAK.

Detailed Location: MAPPED IN THE HISTORICAL VICINITY OF THE JEPSON FAMILY'S LITTLE OAK RANCH, EAST OF PEABODY ROAD AND SOUTH OF ALAMO DRIVE.

Ecological:

General: ONLY SOURCE OF INFORMATION IS AN 1892 JEPSON COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Trifolium hydrophilum **Element Code:** PDFAB400R5

saline clover

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2			
Habitat:	**General:**	MARSHES AND SWAMPS, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS.			
	Micro:	MESIC, ALKALINE SITES. 1-335 M.			

Occurrence No.	12 **Map Index:** 49397	**EO Index:**	49397	**Element Last Seen:**	1960-04-21
Occ. Rank:	Unknown	**Presence:**	Presumed Extant	**Site Last Seen:**	1960-04-21
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2002-11-14

Quad Summary:	Fairfield North (3812231)
County Summary:	Solano

Lat/Long:	38.32807 / -122.01685	**Accuracy:**	2/5 mile
UTM:	Zone-10 N4242673 E585932	**Elevation (ft):**	210
PLSS:	T06N, R01W, Sec. 31 (M)	**Acres:**	0.0

Location:	2.3 MILES SOUTHWEST OF VACAVILLE, 5 MILES NORTHEAST OF FAIRFIELD.
Detailed Location:	MAPPED AS BEST GUESS TO INCLUDE AREA EAST OF VACAVILLE AIRPORT.
Ecological:	ON BORDERS OF SALINE LAGOON AT BOTTOM (BACIGALUPI 1960). WITH A SOLID STAND OF LASTHENIA, SUB-SALINE SOIL, SOUTH MARGIN OF A LARGE POND (CRAMPTON 1954).
General:	SITE BASED ON HISTORIC COLLECTIONS. NEEDS FIELDWORK.
Owner/Manager:	UNKNOWN

Hesperolinon breweri **Element Code:** PDLIN01030

Brewer's western flax

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2			
Habitat:	**General:**	CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	OFTEN IN ROCKY SERPENTINE SOIL IN SERPENTINE CHAPARRAL AND SERPENTINE GRASSLAND. 195-910 M.			

Occurrence No.	10	**Map Index:** 09735	**EO Index:** 18644	**Element Last Seen:**	1892-06-20
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1892-06-20
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2011-09-27

Quad Summary: Mt. Vaca (3812241)

County Summary: Napa, Solano

Lat/Long:	38.38185 / -122.05798	**Accuracy:**	non-specific area
UTM:	Zone-10 N4248603 E582276	**Elevation (ft):**	
PLSS:	T06N, R02W, Sec. 11 (M)	**Acres:**	295.0

Location: GATES CANYON, VACA MOUNTAINS.

Detailed Location: MAPPED BY CNDDB AS BEST GUESS AS A NON-SPECIFIC POLYGON ALONG GATES CANYON ROAD.

Ecological:

General: SITE BASED ON AN 1892 JEPSON COLLECTION.

Owner/Manager: UNKNOWN

Occurrence No.	11	**Map Index:** 09702	**EO Index:** 18643	**Element Last Seen:**	1891-06-01
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1891-06-01
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2011-09-27

Quad Summary: Mt. Vaca (3812241)

County Summary: Solano

Lat/Long:	38.40942 / -122.07464	**Accuracy:**	non-specific area
UTM:	Zone-10 N4251648 E580790	**Elevation (ft):**	
PLSS:	T07N, R02W, Sec. 34 (M)	**Acres:**	293.0

Location: WELDON CANYON (MIX CANYON), VACA MOUNTAINS.

Detailed Location: MAPPED BY CNDDB AS BEST GUESS AS A NON-SPECIFIC POLYGON ALONG MIX CANYON ROAD.

Ecological:

General: SITE BASED ON AN 1891 JEPSON COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Sidalcea keckii

Element Code: PDMAL110D0

Keck's checkerbloom

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	GRASSY SLOPES IN BLUE OAK WOODLAND. ON SERPENTINE-DERIVED, CLAY SOILS, AT LEAST SOMETIMES. 85-505 M.			

Occurrence No.	23	**Map Index:**	B3677	**EO Index:**	116590	**Element Last Seen:**	1983-05-01
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1983-05-01
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2019-08-16

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.4374 / -121.94313	**Accuracy:**	non-specific area
UTM:	Zone-10 N4254876 E592238	**Elevation (ft):**	115
PLSS:	T07N, R01W, Sec. 23 (M)	**Acres:**	69.0

Location: ALONG HARTLEY ROAD SOUTH OF ALLENDALE STORE.

Detailed Location: MAPPED AS BEST GUESS ALONG HARTLEY ROAD SOUTH OF ALLENDALE BASED ON LOCATION DESCRIPTION PROVIDED.

Ecological: ZAMORA CLAY LOAM.

General: ONLY SOURCES OF INFORMATION FOR THIS SITE ARE 1980 AND 1983 CRAMPTON COLLECTIONS; "NOT COMMON" IN 1980. COLLECTIONS IDENTIFIED AS SIDALCEA KECKII BY STEVEN HILL IN 2015.

Owner/Manager: UNKNOWN

Occurrence No.	24	**Map Index:**	B3682	**EO Index:**	116595	**Element Last Seen:**	1996-04-28
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1996-04-28
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2019-08-19

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.46815 / -121.94338	**Accuracy:**	1/5 mile
UTM:	Zone-10 N4258288 E592177	**Elevation (ft):**	110
PLSS:	T07N, R01W, Sec. 11 (M)	**Acres:**	70.0

Location: AT THE CORNER OF TUBBS ROAD AND SWEENEY ROAD, SOUTH OF WINTERS.

Detailed Location: MAPPED AS BEST GUESS AROUND THE INTERSECTION OF TUBBS ROAD AND SWEENEY ROAD.

Ecological: STICKY CLAY SOIL. GROWING IN OPEN GRASSLAND.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1996 WIBAWA COLLECTION. IDENTIFIED AS SIDALCEA KECKII BY STEVEN HILL IN 2015.

Owner/Manager: UNKNOWN

Navarretia leucocephala ssp. bakeri

Element Code: PDPLM0C0E1

Baker's navarretia

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4T2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1			
Habitat:	**General:**	CISMONTANE WOODLAND, MEADOWS AND SEEPS, VERNAL POOLS, VALLEY AND FOOTHILL GRASSLAND, LOWER MONTANE CONIFEROUS FOREST.			

Micro: VERNAL POOLS AND SWALES; ADOBE OR ALKALINE SOILS. 3-1680 M.

Occurrence No.	30	**Map Index:**	24709	**EO Index:**	54575	**Element Last Seen:**	1884-05-31
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1884-05-31
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2005-09-20

Quad Summary: Elmira (3812138)

County Summary: Solano

Lat/Long:	38.32825 / -121.96125	**Accuracy:**	3/5 mile
UTM:	Zone-10 N4242747 E590791	**Elevation (ft):**	120
PLSS:	T06N, R01W, Sec. 34 (M)	**Acres:**	0.0

Location: LITTLE OAK, NEAR VACAVILLE.

Detailed Location: MAPPED IN THE HISTORICAL VICINITY OF THE JEPSON FAMILY'S LITTLE OAK RANCH, EAST OF PEABODY RD AND SOUTH OF ALAMO DR.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1884 COLLECTION BY JEPSON.

Owner/Manager: UNKNOWN

Occurrence No.	41	**Map Index:**	24739	**EO Index:**	62645	**Element Last Seen:**	1916-04-22
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1916-04-22
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-10-30

Quad Summary: Elmira (3812138), Fairfield North (3812231)

County Summary: Solano

Lat/Long:	38.35642 / -121.98869	**Accuracy:**	1 mile
UTM:	Zone-10 N4245845 E588359	**Elevation (ft):**	175
PLSS:	T06N, R01W, Sec. 20 (M)	**Acres:**	0.0

Location: VACAVILLE.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS.

Ecological: DRIED POOL BEDS.

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1916 COLLECTION BY JEPSON.

Owner/Manager: UNKNOWN

Occurrence No.	43	**Map Index:**	72747	**EO Index:**	73578	**Element Last Seen:**	1940-06-10
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1940-06-10
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-10-30

Quad Summary: Allendale (3812148)

County Summary: Solano

Lat/Long:	38.44931 / -121.97477	**Accuracy:**	1 mile
UTM:	Zone-10 N4256166 E589461	**Elevation (ft):**	
PLSS:	T07N, R01W, Sec. 16 (M)	**Acres:**	0.0

Location: 5 MILES SOUTH OF WINTERS.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB 5 AIR MILES DUE SOUTH OF WINTERS.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS 1940 COLLECTION BY EASTWOOD & HOWELL. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Occurrence No.	48	**Map Index:**	83672	**EO Index:**	84701	**Element Last Seen:**	2010-05-04
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2010-05-04
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-09-12

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.39359 / -121.94026	**Accuracy:**	1/5 mile
UTM:	Zone-10 N4250017 E592544	**Elevation (ft):**	100
PLSS:	T06N, R01W, Sec. 02, SE (M)	**Acres:**	0.0

Location:	NORTH SIDE OF VACA VALLEY PARKWAY; 0.1 MILE WEST OF ITS JUNCTION WITH CRESCENT DRIVE, NE OF VACAVILLE.
Detailed Location:	MAPPED BY CNDDB AS BEST GUESS JUST WEST OF THE JUNCTION OF VACA VALLEY PARKWAY AND CRESCENT DRIVE AROUND THE OPEN FIELDS IN THIS AREA.
Ecological:	VERY LARGE AREA OF DISTURBED SOIL DOMINATED BY INTRODUCED GRASSES AND ADJACENT TO A WET DEPRESSION. A SMALL, DRY DEPRESSION IN A GRASSY FLAT.
General:	SITE BASED ON A 2010 HELMKAMP & HELMKAMP COLLECTION; MENTIONED AS "SCARCE" IN 2010.
Owner/Manager:	UNKNOWN

Occurrence No.	53	**Map Index:**	90251	**EO Index:**	91265	**Element Last Seen:**	2011-05-24
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2011-05-24
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-09-05

Quad Summary:	Allendale (3812148)
County Summary:	Solano

Lat/Long:	38.40820 / -121.94191	**Accuracy:**	80 meters
UTM:	Zone-10 N4251637 E592380	**Elevation (ft):**	100
PLSS:	T07N, R01W, Sec. 35, SE (M)	**Acres:**	0.0

Location:	SOUTH SIDE OF GIBSON CANYON CREEK, EAST OF HIGHWAY 505, ABOUT 1.2 AIR MILES WNW OF VACA DIXON SUBSTATION.
Detailed Location:	MAPPED IN THE NW 1/4 OF THE SE 1/4 OF SECTION 35. INCLUDES BOTH VERNAL POOLS AND CREATED WETLANDS.
Ecological:	VERNAL POOLS IN LEVEL PASTURE LAND. ASSOCIATED WITH LASTHENIA FREMONTII, L. GLABERRIMA, PSILOCARPHUS BREVISSIMUS BREVISSIMUS, CONVOLVULUS ARVENSIS, FESTUCA PERENNIS, LYTHRUM HYSSOPIFOLIA, DOWNINGIA ORNATISSIMA ORNATISSIMA, ETC.
General:	8000 PLANTS OBSERVED IN 2011. MITIGATION LAND MANAGED BY THE CENTER FOR NATURAL LANDS MANAGEMENT.
Owner/Manager:	PVT

Delphinium recurvatum **Element Code:** PDRAN0B1J0

recurved larkspur

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2?
	State:	None		**State:**	S2?
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden			
Habitat:	**General:**	CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND.			
	Micro:	ON ALKALINE SOILS; OFTEN IN VALLEY SALTBUSH OR VALLEY CHENOPOD SCRUB. 3-790 M.			

Occurrence No.	12	**Map Index:** 51926	**EO Index:** 51926	**Element Last Seen:**	1940-03-23
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1940-03-23
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2003-07-30

Quad Summary: Elmira (3812138), Allendale (3812148)

County Summary: Solano

Lat/Long:	38.38652 / -121.97761	**Accuracy:**	non-specific area
UTM:	Zone-10 N4249197 E589291	**Elevation (ft):**	
PLSS:	T06N, R01W, Sec. 09 (M)	**Acres:**	230.6

Location: NORTH END OF BROWNS VALLEY, NORTH OF VACAVILLE.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED ALONG BROWNS VALLEY ROAD.

Ecological: ALONG THE ROADSIDE IN CLAY SOIL.

General: SITE BASED ON 2 COLLECTIONS: A 1902 HELLER COLLECTION FROM "NEAR VACAVILLE" (FORMER EO #62) AND A 1940 HELLER COLLECTION FROM "N END OF BROWNS VALLEY". 1940 HELLER SPECIMENS HOUSED AT UC HAVE BEEN ANNOTATED TO D. HESPERIUM. POSSIBLE MIS-ID.

Owner/Manager: UNKNOWN

Fritillaria pluriflora **Element Code:** PMLIL0V0F0

adobe-lily

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2G3
	State:	None		**State:**	S2S3
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley			
Habitat:	**General:**	CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	USUALLY ON CLAY SOILS; SOMETIMES SERPENTINE. 45-945 M.			

Occurrence No.	26	**Map Index:** 78318	**EO Index:** 45336	**Element Last Seen:**	1913-02-22
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1913-02-22
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-03-11

Quad Summary: Elmira (3812138)

County Summary: Solano

Lat/Long:	38.36615 / -121.97464	**Accuracy:**	2/5 mile
UTM:	Zone-10 N4246939 E589575	**Elevation (ft):**	180
PLSS:	T06N, R01W, Sec. 16, E (M)	**Acres:**	0.0

Location: BENNETS HILL, VACAVILLE.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB IN VICINITY OF HILL HISTORICALLY OWNED BY E.L. BENNETT, JUST EAST OF BENNETT HILL DRIVE.

Ecological: SIDES OF HILL AND FLAT AT BASE.

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS 1913 COLLECTION BY JEPSON. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Solano County, California



Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

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Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

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2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS
Northwestern Pond Turtle Actinemys marmorata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS

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Conservancy Fairy Shrimp Branchinecta conservatio — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/8246

Vernal Pool Fairy Shrimp Branchinecta lynchi — Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp Lepidurus packardi — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/2246

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Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

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Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

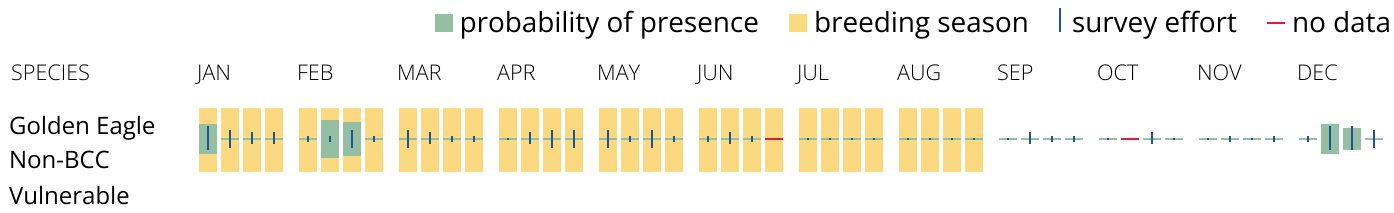
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

NOT FOR CONSULTATION

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

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Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

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NAME	BREEDING SEASON
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Belding's Savannah Sparrow Passerculus sandwichensis beldingi This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole Icterus bullockii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25

California Thrasher Toxostoma redivivum — Breeds Jan 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

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Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

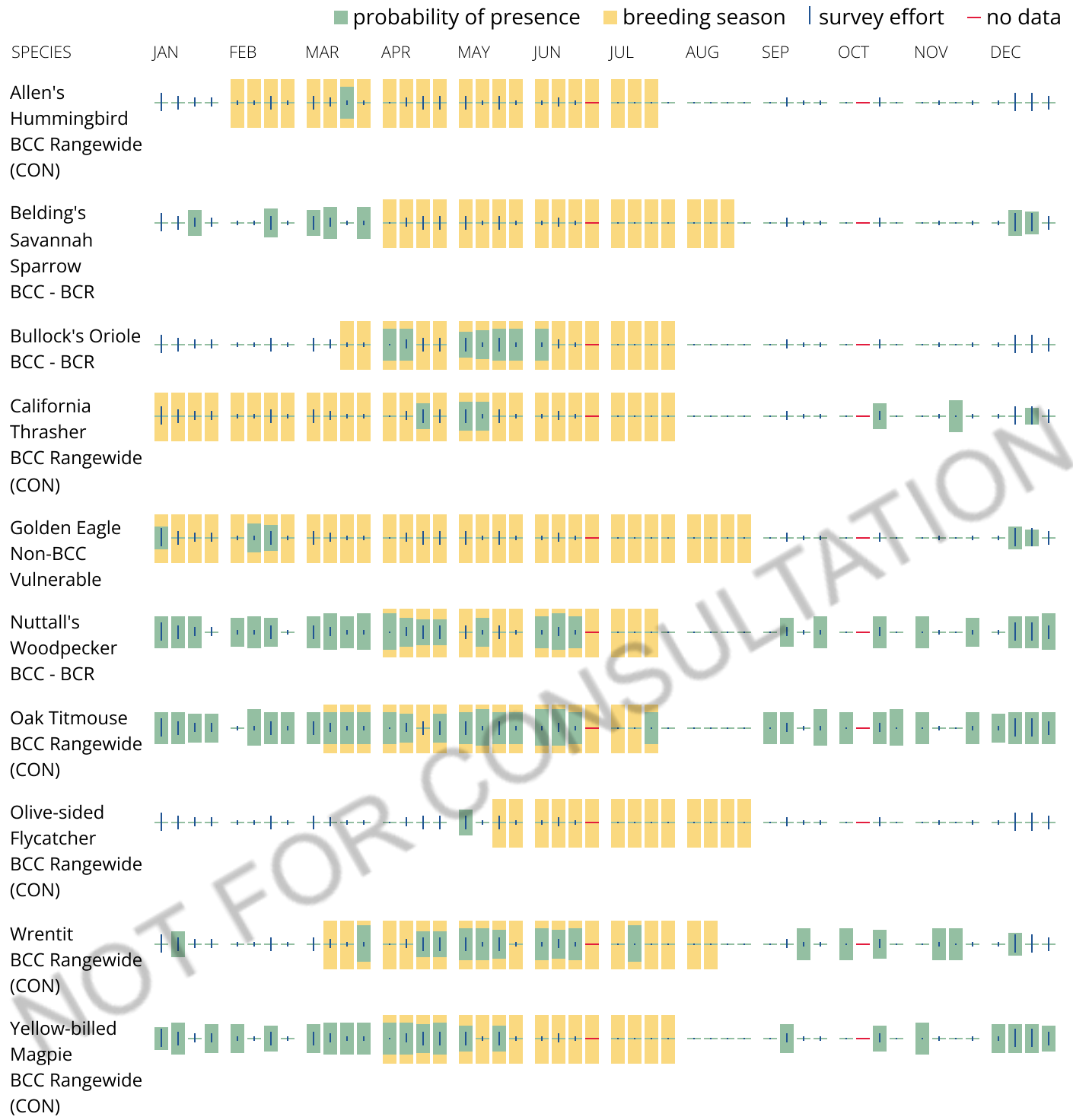
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

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Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on Federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

CBRA information is not available at this time

This can happen when the CBRS map service is unavailable, or for very large projects that intersect many coastal areas. Try again, or visit the CBRS map to view coastal barriers at this location.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

PSSA

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

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The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Scientific Name	Common Name	Family	Lifeform	CRPR	GRank	SRank	Other Status	CESA	FESA	Blooming Period	Habitat	Counties	Threat List	Notes	Full ScientificName	ElementCode
Astragalus tener var. ferrisiae	Ferris' milk-vetch	Fabaceae	annual herb	1B.1	G2T1	S1		None	None	Apr-May	Meadows and seeps (vernally mesic), Valley and foothill grassland (subalkaline flats)	BUT, COL, GLE, SOL, SUT, YOL, YUB	Agriculture, Grazing, Non-native plant impacts, Other, Surface water diversion	Rediscovered in 1989 by V. Oswald in Butte Sink WA (DFG). Most historical habitat destroyed by agriculture. See Brittonia 42(2):100-104 (1990) for original description, and Systematic Botany 17(3):367-379 (1992) for distributional information.	Astragalus tener var. ferrisiae Liston	PDFAB0F8R3
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	1B.2	G2T1	S1	SB_UCSC	None	None	Mar-Jun	Playas, Valley and foothill grassland (adobe clay), Vernal pools	ALA, CCA, MER, MNT, NAP, SBT, SCL, SFO, SJQ, SOL, SON, STA, YOL	Agriculture, Biocides, Development, Disking, Foot traffic/trampling, Grazing, Improper burning regime, Landfill, Non-native plant impacts, ORV activity, Other, Surface water diversion	Threatened by development, competition from non-native plants, and habitat destruction, especially agricultural conversion. Possibly threatened by trampling. Potentially threatened by energy transmission line construction. See Proceedings of the American Academy of Arts and Sciences 6:206 (1864) for original description, and Systematic Botany 17(3):367-379 (1992) for distributional information.	Astragalus tener var. tener	PDFAB0F8R1
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	1B.2	G3T2	S2	BLM_S	None	None	Apr-Oct	Chenopod scrub, Meadows and seeps, Valley and foothill grassland (sandy)	ALA, BUT, CCA, COL, FRE, GLE, KRN, MAD, MER, SJQ, SOL, STA, TUL, YOL	Agriculture, Dam/Inundation, Development, Foot traffic/trampling, Grazing, Non-native plant impacts, Road/trail construction/maint., Waterway bank protection/maintenance	Threatened by competition from non-native plants. Possibly threatened by trampling. Similar to A. coronata var. coronata.	Atriplex cordulata var. cordulata	PDCHE040B0

Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	1B.2	G2	S2		None	None	Apr-Oct	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools	ALA, CCA, COL, FRE, GLE, KNG, MER, SOL, TUL, YOL	Agriculture, Altered flood/tidal/hydrologic regime, Biocides, Dam/Inundation, Development, Disking, Foot traffic/trampling, Grazing, Mining, Non-native plant impacts, Other, Recreational use (non-ORV)	Threatened by development, grazing, and trampling. Closely related to A. minuscula and A. parishii; a synonym of the latter in A California Flora (1959) by P. Munz. See Pittonia 2:304 (1892) for original description.	Atriplex depressa	PDCHE042L0
Atriplex persistens	vernal pool smallscale	Chenopodiaceae	annual herb	1B.2	G2	S2		None	None	Jun-Oct	Vernal pools (alkaline)	COL, GLE, MAD, MER, SOL, STA, TUL	Agriculture, Altered flood/tidal/hydrologic regime, Development, Erosion/runoff, Grazing, Non-native plant impacts, Pollution	Possibly threatened by agriculture and flood control activities. Not in The Jepson Manual (1993). See Madrono 40(4):209-213 (1993) for original description.	Atriplex persistens	PDCHE042P0
Centromadia parryi ssp. parryi	pappose tarplant	Asteraceae	annual herb	1B.2	G3T2	S2	BLM_S	None	None	May-Nov	Chaparral, Coastal prairie, Marshes and swamps (coastal salt), Meadows and seeps, Valley and foothill grassland (vernally mesic)	BUT, COL, GLE, LAK, NAP, SMT, SOL, SON, YOL	Agriculture, Development, Disking, Foot traffic/trampling, Grazing, Landfill, Non-native plant impacts, Other, Road/trail construction/maint.		Centromadia parryi ssp. parryi	PDAST4R0P2
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	4.2	G3T3	S3		None	None	May-Oct	Valley and foothill grassland, Vernal pools	BUT, COL, GLE, LAK, MER, MOD, SAC, SJQ, SOL, STA, YOL		Protected on several refuges including Sacramento NWR, Colusa NWR, the Llano Seco Unit of the North Valley Wildlife Management Area, the Llano Seco Ranch, and the Vic Fazio Yolo Wetlands Preserve.	Centromadia parryi ssp. rudis (Greene) B.G. Baldwin	PDAST4R0P3

Chloropyron molle ssp. hispidum	hispid salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	1B.1	G2T1	S1		None	None	Jun-Sep	Meadows and seeps, Playas, Valley and foothill grassland	ALA, KRN, MER, PLA, SOL	Agriculture, Altered flood/tidal/hydrologic regime, Dam/Inundation, Development, Disking, Erosion/runoff, Foot traffic/trampling, Grazing, ORV activity, Other, Recreational use (non-ORV), Road/trail construction/maint.	Apparently extirpated from much of the lower San Joaquin Valley. Threatened by agricultural conversion, development, and grazing. See Brittonia 25:135-158 (1973) for revised nomenclature.	Chloropyron molle ssp. hispidum (Pennell) Tank & J.M. Egger	PDSCR0J0D1
Cicuta maculata var. bolanderi	Bolander's water-hemlock	Apiaceae	perennial herb	2B.1	G5T4T5	S2?	SB_CalBG/RSABG	None	None	Jul-Sep	Marshes and swamps (brackish, coastal, freshwater)	CCA, MRN, SAC, SBA, SOL	Erosion/runoff, Recreational use (non-ORV)		Cicuta maculata var. bolanderi (S. Watson) G.A. Mulligan	PDAPI0M051
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	1B.2	G2?	S2?	BLM_S; SB_SBBG	None	None	Mar-Jun	Chenopod scrub, Cismontane woodland, Valley and foothill grassland	ALA, BUT, CCA, FRE, KNG, KRN, MAD, MER, MNT, SBA, SBT, SJQ, SLO, SOL, SUT, TUL, YUB	Agriculture, Dam/Inundation, Development, Erosion/runoff, Foot traffic/trampling, Grazing, Landfill, Mining, Non-native plant impacts, ORV activity, Other, Road/trail construction/maint., Vandalism/dumping/litter	Many occurrences historical; need current information on status. Much habitat converted to agriculture; also threatened by grazing, trampling, and non-native plants. Potentially threatened by vehicles.	Delphinium recurvatum	PDRAN0B1J0

Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	2B.2	GU	S2		None	None	Mar-May	Valley and foothill grassland (mesic), Vernal pools	FRE, MER, NAP, PLA, SAC, SJQ, SOL, SON, STA, TEH, YUB	Agriculture, Biocides, Dam/Inundation, Development, Disking, Erosion/runoff, Foot traffic/trampling, Grazing, Improper burning regime, Mining, Non-native plant impacts, ORV activity, Other, Over-collecting/poaching, Pollution, Recreational use (non-ORV), Road/trail construction/maint., Surface water diversion, Vandalism/dumping/litter	Threatened by urbanization, development, agriculture, grazing, non-native plants, vehicles, and industrial forestry.	Downingia pusilla	PDCAM060C0
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	1B.2	G2	S2	BLM_S; SB_CalBG/RSABG	None	None	Apr-Oct	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland	ALA, CCA, COL, FRE, GLE, MER, NAP, SAC, SBT, SJQ, SLO, SOL, YOL	Agriculture, Biocides, Development, Disking, Erosion/runoff, Foot traffic/trampling, Grazing, Landfill, Non-native plant impacts, ORV activity, Other, Recreational use (non-ORV), Road/trail construction/maint., Surface water diversion, Waterway bank protection/maintenance	Many occurrences extirpated. Need historical quads for TUL Co. Need quads for MNT Co. Report from SLO Co. (247D) needs verification. Threatened by grazing, agriculture, development, and non-native plants. See Proceedings of the American Academy of Arts and Sciences 9:108 (1874) for original description, Proceedings of the Biological Society of Washington 17:99 (1904) for alternative nomenclature, and Systematic Botany 35(4):839-857 (2010) for revised nomenclature.	Extriplex joaquinana	PDCHE041F3

Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	4.2	G3	S3		None	None	Mar-Jun	Chaparral, Cismontane woodland, Pinyon and juniper woodland, Valley and foothill grassland	ALA, CCA, COL, FRE, KNG, KRN, MEN, MER, MNT, MPA, PLA, SAC, SBA, SBT, SCL, SLO, SMT, SOL, STA, TUL, TUO, VEN, YOL, YUB	Agriculture, Dam/Inundation, Development, Disking, Grazing, ORV activity, Other, Over-collecting/poaching, Road/trail construction/maint.	Most populations small. Threatened by development, grazing, and vehicles. Possibly threatened by non-native plants.	Fritillaria agrestis	PMLIL0V010
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	1B.2	G2	S2	SB_CalBG/RSABG; USFS_S	None	None	Feb-Apr	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland	ALA, CCA, MNT, MRN, SBT, SCL, SFO, SMT, SOL, SON	Dam/Inundation, Development, Erosion/runoff, Feral pigs, Foot traffic/trampling, Grazing, Improper burning regime, Insufficient population/stand size, Non-native animal impacts, Non-native plant impacts, ORV activity, Other, Over-collecting/poaching, Recreational use (non-ORV), Road/trail construction/maint.	Threatened by grazing, agriculture, urbanization, and non-native plants. Possibly threatened by recreational activities and foot traffic. Quite variable.	Fritillaria liliacea	PMLIL0V0C0
Fritillaria pluriflora	adobe-lily	Liliaceae	perennial bulbiferous herb	1B.2	G2G3	S2S3	BLM_S; SB_CalBG/RSABG; SB_UCBG	None	None	Feb-Apr	Chaparral, Cismontane woodland, Valley and foothill grassland	BUT, COL, GLE, LAK, NAP, SOL, TEH, YOL	Biocides, Dam/Inundation, Development, Foot traffic/trampling, Grazing, Non-native plant impacts, ORV activity, Other, Over-collecting/poaching, Recreational use (non-ORV), Road/trail construction/maint.	Threatened by grazing, vehicles, development, mining, non-native plants, and horticultural collecting.	Fritillaria pluriflora	PMLIL0V0F0

Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	1B.2	G2	S2	BLM_S	CE	None	Apr-Aug	Marshes and swamps (lake margins), Vernal pools	FRE, LAK, LAS, MAD, MEN, MER, MOD, PLA, SAC, SHA, SIS, SJQ, SOL, SON, TEH	Agriculture, Altered flood/tidal/hydrologic regime, Biocides, Development, Erosion/runoff, Feral pigs, Foot traffic/trampling, Grazing, Landfill, Mining, Non-native animal impacts, Non-native plant impacts, ORV activity, Other, Recreational use (non-ORV), Road/trail construction/maint.	Threatened by agriculture, development, grazing, trampling, and vehicles. Known from one occurrence in OR, where state listed as Threatened. Lassen NF has adopted species management guidelines. See Madrono 12(5):150-152 (1954) for original description.	Gratiola heterosepala	PDSCR0R060
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	4.2	G3	S3		None	None	Mar-Jun	Valley and foothill grassland (mesic clay), Vernal pools (shallow)	ALA, BUT, CCA, COL, FRE, GLE, KRN, MER, MNT, MPA, SAC, SDG, SJQ, SLO, SOL, SON, STA, SUT, TEH, TUO, YOL, YUB		Threatened by development and agriculture. Possibly threatened by overgrazing. See Proceedings of the American Academy of Arts and Sciences 7:356 (1868) for revised nomenclature, and Systematic Botany 17(2):293-310 (1992) for taxonomic treatment.	Hesperevax caulescens	PDASTE5020
Hesperolinon breweri	Brewer's western flax	Linaceae	annual herb	1B.2	G2	S2		None	None	May-Jul	Chaparral, Cismontane woodland, Valley and foothill grassland	ALA, CCA, NAP, SOL	Dam/Inundation, Development, Erosion/runoff, Foot traffic/trampling, Grazing, Landfill, Non-native plant impacts, Other, Recreational use (non-ORV), Road/trail construction/maint.	Threatened by development, and several occurrences threatened by construction of Los Vaqueros Reservoir. See University of California Publications in Botany 32:235-314 (1961) for taxonomic treatment.	Hesperolinon breweri	PDLIN01030

Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	1B.2	G5T3	S3	SB_CalBG/RSABG; SB_UCBG	None	None	Jun-Sep	Marshes and swamps (freshwater)	BUT, CCA, COL, GLE, SAC, SJQ, SOL, SUT, YOL	Agriculture, Altered flood/tidal/hydrologic regime, Biocides, Dam/Inundation, Degraded water quality, Development, Erosion/runoff, Foot traffic/trampling, Grazing, Improper burning regime, Mining, Non-native plant impacts, ORV activity, Other, Recreational use (non-ORV), Road/trail construction/maint., Surface water diversion, Waterway bank protection/maintenance, Wood cutting or brush clearing	Most occurrences are very small. Seriously threatened by habitat disturbance, development, agriculture, recreational activites, and channelization of the Sacramento River and its tributaries. Also threatened by weed control measures and erosion. Possibly threatened by trail maintenance. See Madrono 56(2):104-111 for revised taxonomy.	Hibiscus lasiocarpos var. occidentalis (Torr.) A. Gray	PDMAL0H0R3
Isocoma arguta	Carquinez goldenbush	Asteraceae	perennial shrub	1B.1	G1	S1	SB_UCBG	None	None	Aug-Dec	Valley and foothill grassland (alkaline)	CCA, SOL	Agriculture, Biocides, Development, Grazing, Recreational use (non-ORV), Road/trail construction/maint.	Threatened by grazing and trampling at Jepson Prairie Preserve. Treatened by development and agriculture elsewhere. See Manual of the Botany of the Region of San Francisco Bay, p. 175 (1894) by E. Greene for original description, and Phytologia 70(2):69-114 (1991) for taxonomic treatment.	Isocoma arguta	PDAST57050
Lasthenia chrysantha	alkali-sink goldfields	Asteraceae	annual herb	1B.1	G2	S2		None	None	Feb-Apr	Vernal pools	FRE, KNG, KRN, MAD, MER, SAC, SOL, STA, TUL	Agriculture, Development, Grazing, Non-native plant impacts	See Synoptical Flora of North America 1(2):445 (1884) for original description, and Manual of the Botany of the Region of San Francisco Bay, p. 204 (1894) by E.L. Greene for revised nomenclature.	Lasthenia chrysantha	PDAST5L030

Lasthenia conjugens	Contra Costa goldfields	Asteraceae	annual herb	1B.1	G1	S1	SB_UCBG	None	FE	Mar-Jun	Cismontane woodland, Playas (alkaline), Valley and foothill grassland, Vernal pools	ALA, CCA, MEN, MNT, MRN, NAP, SBA, SCL, SOL, SON	Agriculture, Altered flood/tidal/hydrologic regime, Development, Disking, Erosion/runoff, Feral pigs, Grazing, Landfill, Military operations, Non-native plant impacts, ORV activity, Other, Recreational use (non-ORV), Wood cutting or brush clearing	Many historical occurrences extirpated by development and agriculture. Currently threatened by development, habitat alteration, hydrological alterations, overgrazing, and non-native plants. See Pittonia 1:221 (1888) for original description, and Madrono 50(2):83-93 (2003) for ecological information.	Lasthenia conjugens	PDAST5L040
Lasthenia ferrisiae	Ferris' goldfields	Asteraceae	annual herb	4.2	G3	S3		None	None	Feb-May	Vernal pools (alkaline, clay)	ALA, BUT, CCA, COL, FRE, KNG, KRN, MER, MNT, SAC, SJQ, SLO, SOL, STA, TUL, YOL		Threatened by development and agriculture. Possibly threatened by vehicles and foot traffic. See University of California Publications in Botany 40:74 (1966) for original description.	Lasthenia ferrisiae	PDAST5L070
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	Asteraceae	annual herb	1B.1	G4T2	S2	BLM_S; SB_CalBG/RSABG; SB_SBBG	None	None	Feb-Jun	Marshes and swamps (coastal salt), Playas, Vernal pools	COL, KRN, LAX, MER, ORA, RIV, SBA, SBD, SDG, SLO, SOL, TEH, TUL, VEN, YOL	Agriculture, Altered flood/tidal/hydrologic regime, Biocides, Dam/Inundation, Development, Disking, Foot traffic/trampling, Grazing, Groundwater pumping, Insufficient population/stand size, Non-native plant impacts, ORV activity, Other, Road/trail construction/maint., Vandalism/dumping/litter	Known to have declined significantly by 1966; seriously threatened by urbanization and agricultural development. Also threatened by road maintenance. Potentially threatened by foot traffic and drought. Does plant occur in TUL Co.? See Synoptical Flora of North America 1(2):324 (1884) for original description, University of California Publications in Botany 40:1-92 (1966) for taxonomic treatment, and Madrono 47(3):174-188 (2000) for ecological information.	Lasthenia glabrata ssp. coulteri (Gray) Ornduff	PDAST5L0A1

Lathyrus jepsonii var. jepsonii	Delta tule pea	Fabaceae	perennial herb	1B.2	G5T2	S2	SB_BerrySB; SB_CalBG/RSABG	None	None	May-Jul(Aug-Sep)	Marshes and swamps (brackish, freshwater)	CCA, NAP, SAC, SJQ, SOL, SON, YOL	Agriculture, Biocides, Development, Erosion/runoff, Foot traffic/trampling, Grazing, Non-native plant impacts, Other, Pollution, Recreational use (non-ORV), Road/trail construction/maint., Waterway bank protection/maintenance	Most populations small. Threatened by agriculture, water diversions, and erosion. See Pittonia 2:158 (1890) for original description.	Lathyrus jepsonii var. jepsonii	PDFAB250D2
Legenere limosa	legenere	Campanulaceae	annual herb	1B.1	G2	S2	BLM_S; SB_UCBG	None	None	Apr-Jun	Vernal pools	ALA, LAK, MNT, NAP, PLA, SAC, SCL, SHA, SJQ, SMT, SOL, SON, STA, TEH, YUB	Agriculture, Development, Disease, Disking, Feral pigs, Foot traffic/trampling, Grazing, Landfill, Mining, Non-native plant impacts, ORV activity, Other, Recreational use (non-ORV), Road/trail construction/maint., Vandalism/dumping/litter	Many historical occurrences extirpated. Threatened by grazing, road widening, non-native plants, and development. See Pittonia 2:81 (1890) for original description, North American Flora 32(1):13-14 (1943) for revised nomenclature, and Wasmann Journal of Biology 33(1-2):91 (1975) for distributional information.	Legenere limosa	PDCAM0C010
Lepidium latipes var. heckardii	Heckard's pepper-grass	Brassicaceae	annual herb	1B.2	G4T1	S1		None	None	Mar-May	Valley and foothill grassland (alkaline flats)	GLE, MER, SAC, SOL, YOL	Development, Disking, Foot traffic/trampling, Grazing	Many plants from the Woodland area (YOL Co.) are intermediate with L. latipes var. latipes; needs further study. A synonym of L. latipes in TJM 2. See Harvard Papers in Botany 4:47 (1993) for original description.	Lepidium latipes var. heckardii Roll.	PDBRA1M0K1

Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	1B.1	G2	S2		CR	None	Apr-Nov	Marshes and swamps (brackish, freshwater), Riparian scrub	ALA, CCA, MRN, NAP, SAC, SJQ, SOL, YOL	Altered flood/tidal/hydrologic regime, Biocides, Development, Erosion/runoff, Foot traffic/trampling, Grazing, Non-native plant impacts, Other, Pollution, Recreational use (non-ORV), Surface water diversion, Vandalism/dumping/litter, Waterway bank protection/maintenance	Locally common in Suisun Bay. Threatened by erosion, channel stabilization, development, flood control projects, recreation, agriculture, shading resulting from marsh succession, and competition with non-native Eichhornia crassipes. Many populations ephemeral, exploiting newly deposited or exposed sediments. Collection from Chicken Ranch Beach, MRN Co. (485D) is probably L. occidentalis. Treated differently here than Madrono 58(3):131-144 (2011), which treats L. masonii as a synonym of L. occidentalis. See Madrono 24(2):81 (1977) for original description.	Lilaeopsis masonii	PDAPI19030
Limosella australis	Delta mudwort	Scrophulariaceae	perennial stoloniferous herb	2B.1	G4G5	S2		None	None	May-Aug	Marshes and swamps (brackish, freshwater), Riparian scrub	CCA, SAC, SJQ, SOL	Altered flood/tidal/hydrologic regime, Degraded water quality, Erosion/runoff, Foot traffic/trampling, Grazing, Non-native plant impacts, Other, Recreational use (non-ORV), Vandalism/dumping/litter, Waterway bank protection/maintenance	Threatened by stream bank alteration, levee maintenance, erosion, recreational activities, and foot traffic. Also occurs on the Atlantic Coast, where threatened by habitat destruction. Native status in CA is inconclusive; definitive study needed. Treated as naturalized in TJM (1993) and TJM 2. See Prodromus Florae Novae Hollandiae 1:443 (1810) for original description.	Limosella australis	PDSCR10030
Malacothamnus helleri	Heller's bush-mallow	Malvaceae	perennial deciduous shrub	3.3	G2Q	S2		None	None	May-Jul	Chaparral (sandstone), Riparian woodland (gravel)	COL, GLE, LAK, NAP, YOL		Previously CRPR 4.3; move to CRPR 1B? Location, rarity, and taxonomic information needed. A synonym of M. fremontii in TJM (1993) and TJM 2. See Leaflets of Western Botany 1(18):217-218 (1936) for original description and 6(6):124-125 (1951) for taxonomic treatment.	Malacothamnus helleri	PDMAL0Q0G0

Myosurus minimus ssp. apus	little mousetail	Ranunculaceae	annual herb	3.1	G5T2Q	S2	SB_CRES	None	None	Mar-Jun	Valley and foothill grassland, Vernal pools (alkaline)	CCA, COL, LAK, MER, RIV, SBD, SDG, SOL, TUL, YOL	Agriculture, Development, Disking, Grazing, Non-native plant impacts, ORV activity, Other, Road/trail construction/maint., Vandalism/dumping/litter	Move to List 1B? Reduced by vernal pool habitat loss; threatened by vehicles, grazing, development, and agriculture. Taxonomic problems; distinguishing between this taxon and M. sessilis (= M. minimus ssp. apus var. sessiliflorus in A California Flora (1959) by P. Munz) is difficult; are both rare? Plants in the Central Valley that resemble this taxon may be hybrids between M. minimus and M. sessilis; see Flora of North America 3:136 and Evolution 13:151-174 (1959) for details. See M. minimus in TJM (1993); not in TJM 2. See Bulletin of the California Academy of Sciences 1:277 (1885) for original description, and Aliso 2(4):396 (1952) for revised nomenclature.	Myosurus minimus ssp. apus (Greene) G.R. Campbell	PDRAN0H031
Navarretia leucocephala ssp. bakeri	Baker's navarretia	Polemoniaceae	annual herb	1B.1	G4T2	S2	SB_CalBG/RSABG	None	None	Apr-Jul	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools	COL, GLE, HUM, LAK, LAS, MEN, MRN, NAP, SOL, SON, SUT, TEH, YOL	Agriculture, Development, Feral pigs, Foot traffic/trampling, Grazing, Non-native plant impacts, ORV activity, Other, Recreational use (non-ORV), Road/trail construction/maint., Surface water diversion, Vandalism/dumping/litter	May be more widespread; need information. Need quads for COL Co.	Navarretia leucocephala ssp. bakeri (Mason) A.G. Day	PDPLM0C0E1

Neostapfia colusana	Colusa grass	Poaceae	annual herb	1B.1	G1	S1		CE	FT	May-Aug	Vernal pools (adobe clay)	COL, GLE, MER, SOL, STA, YOL	Agriculture, Altered flood/tidal/hydrologic regime, Biocides, Dam/Inundation, Development, Disking, Erosion/runoff, Foot traffic/trampling, Grazing, Non-native animal impacts, Non-native plant impacts, ORV activity, Other, Pollution, Road/trail construction/maint., Surface water diversion	Threatened by agriculture, development, overgrazing, hydrological alterations, non-native plants, and habitat fragmentation and loss. See Erythea 6:110-113 (1898) for original description, Fremontia 4(3):22-23 (1976) for species account and habitat information, and Conservation Genetics (2011) pp. 1-14 for population genetic information.	Neostapfia colusana	PMPOA4C010
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	1B.1	G1	S1		CE	FT	Apr-Sep	Vernal pools	FRE, MAD, MER, SOL, STA, TUL	Agriculture, Altered flood/tidal/hydrologic regime, Dam/Inundation, Development, Disking, Erosion/runoff, Foot traffic/trampling, Grazing, Non-native plant impacts, ORV activity, Other, Recreational use (non-ORV), Road/trail construction/maint., Vandalism/dumping/litter	Seriously threatened by agriculture, development, overgrazing, channelization, and non-native plants. See Madrono 3(6):229 (1936) for original description, and American Journal of Botany 69:1082-1095 (1982) for taxonomic treatment.	Orcuttia inaequalis	PMPOA4G060

Perideridia gairdneri ssp. gairdneri	Gairdner's yampah	Apiaceae	perennial herb	4.2	G5T3T4	S3S4	SB_SBBG; SB_UCSC	None	None	Jun-Oct	Broadleafed upland forest, Chaparral, Coastal prairie, Valley and foothill grassland, Vernal pools	DNT, KRN, MEN, MNT, MRN, SCL, SCR, SLO, SMT, SOL, SON		Endangered in the southern portion of its range; status of occurrences uncertain. Can be relatively common locally, especially in northern counties. Is plant extant in SMT Co.? Threatened by agriculture, grazing, non-native plants, habitat alteration, and urbanization. See University of California Publications in Botany 55:1-74 (1969) for taxonomic treatment.	Perideridia gairdneri ssp. gairdneri	PDAPI1N062
Plagiobothrys hystriculus	bearded popcornflower	Boraginaceae	annual herb	1B.1	G2	S2		None	None	Apr-May	Valley and foothill grassland (mesic), Vernal pools (margins)	NAP, SOL, YOL	Development, Disking, Non-native plant impacts, Other, Road/trail construction/maint.	Rediscovered in 2005 by B. Schafer, M. Widdowson, and R. Preston; last seen in 1892. Easily confused with P. acanthocarpus, P. trachycarpus, and others. Threatened by disking, development, and non-native plants. See Contributions of the U.S. National Herbarium 22:79-113 (1920) for original description, Contributions from the Arnold Arboretum 3:5-82 (1932) for revised nomenclature, and Madrono 57(4):242-245 (2010) for discussion of rediscovery.	Plagiobothrys hystriculus	PDBOR0V0H0
Puccinellia simplex	California alkali grass	Poaceae	annual herb	1B.2	G2	S2	BLM_S	None	None	Mar-May	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools	ALA, BUT, CCA, COL, FRE, GLE, KNG, KRN, LAK, LAX, MAD, MER, NAP, SBD, SCL, SCR, SLO, SOL, STA, TUL, YOL	Agriculture, Altered flood/tidal/hydrologic regime, Dam/Inundation, Development, Foot traffic/trampling, Landfill, Mining, Non-native plant impacts, Other, Recreational use (non-ORV), Road/trail construction/maint.	Threatened by hydrological alterations, urbanization, agricultural conversion, development, and habitat fragmentation, disturbance, alteration, and loss; resulting in extirpation of some occurrences. Potentially threatened by solar energy development. Possibly threatened by grazing and proximity to roads. Similar to P. parishii. See Circular, United States Department of Agriculture, Division of Agrostology 16:1 (1899) for original description.	Puccinellia simplex	PMPOA53110

Sidalcea keckii	Keck's checkerbloom	Malvaceae	annual herb	1B.1	G2	S2	SB_CalBG/RSABG	None	FE	Apr-May(Jun)	Cismontane woodland, Valley and foothill grassland	COL, FRE, GLE, LAK, MER, NAP, SOL, TUL, YOL	Agriculture, Development, Grazing, Non-native plant impacts, Other, Road/trail construction/maint.	Rediscovered in 1992 by J. Stebbins and K. Kirkpatrick; known from only three occurrences. Plants from inner north coast ranges may actually be S. diploscypha; needs study. See Contributions from the Dudley Herbarium 3:55-56 (1940) for original description.	Sidalcea keckii	PDMAL110D0
Stuckenia filiformis ssp. alpina	northern slender pondweed	Potamogetonaceae	perennial rhizomatous herb (aquatic)	2B.2	G5T5	S2S3		None	None	May-Jul	Marshes and swamps (shallow freshwater)	ALA, BUT, CCA, ELD, LAS, MER, MNO, MOD, MPA, PLA, SCL, SHA, SIE, SMT, SOL, SON		To be expected in the San Joaquin Valley, San Francisco Bay area, and the central high Sierra Nevada; need information. On review list in OR.	Stuckenia filiformis ssp. alpina (Blytt) R.R. Haynes et al.	PMPOT03091
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	1B.2	G2	S2	SB_CalBG/RSABG; SB_USDA	None	None	(Apr)May-Nov	Marshes and swamps (brackish, freshwater)	CCA, NAP, SAC, SJQ, SOL, YOL	Biocides, Development, Erosion/runoff, Foot traffic/trampling, Military operations, Non-native plant impacts, Other, Recreational use (non-ORV), Road/trail construction/maint., Waterway bank protection/maintenance	Intergrades into A. chilensis. See Manual of the Botany of the Region of San Francisco Bay, p. 180 (1894) by E. Greene for original description and Phytologia 77(3): 286 (1994) for revised nomenclature.	Symphyotrichum lentum	PDASTE8470
Trifolium amoenum	two-fork clover	Fabaceae	annual herb	1B.1	G1	S1	SB_CalBG/RSABG; SB_UCBG; SB_USDA	None	FE	Apr-Jun	Coastal bluff scrub, Valley and foothill grassland (sometimes serpentinite)	MRN, NAP, SMT, SOL, SON	Development, Erosion/runoff	Rediscovered in 1993 by P. Conners near Occidental; only one plant found, and subsequent surveys in 1994-1995 unsuccessful. Another occurrence (502C) discovered in 1996. Historical habitat lost to urbanization and agriculture. See Flora Franciscana, p. 27 (1891) by E. Greene for original description, and Fremontia 22(2):3-7 (1994) for account of rediscovery.	Trifolium amoenum	PDFAB40040

Trifolium hydrophilum	saline clover	Fabaceae	annual herb	1B.2	G2	S2		None	None	Apr-Jun	Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools	ALA, CCA, LAK, MEN, MNT, NAP, SAC, SBT, SCL, SCR, SJQ, SLO, SMT, SOL, SON, YOL	Agriculture, Biocides, Development, Disking, Grazing, Improper burning regime, Landfill, Mining, Non-native plant impacts, ORV activity, Other, Road/trail construction/maint., Vandalism/dumping/litter	Many sites likely extirpated; need current information on rarity and endangerment. Need quads for COL Co. Threatened by development, trampling, road construction, and vehicles. Possibly threatened by non-native plants. See Manual of the Botany of the Region of San Francisco Bay, p.100 (1894) for original description, and Brittonia 32(1):55 (1980) for revised nomenclature.	Trifolium hydrophilum	PDFAB400R5
Tuctoria mucronata	Crampton's tuctoria or Solano grass	Poaceae	annual herb	1B.1	G1	S1	SB_CalBG/RSABG	CE	FE	Apr-Aug	Valley and foothill grassland (mesic), Vernal pools	SOL, YOL	Altered flood/tidal/hydrologic regime, Grazing, Insufficient population/stand size, Non-native plant impacts, Other, Over-collecting/poaching, Recreational use (non-ORV)	Known from only three occurrences: one at Olcott Lake at Jepson Prairie Preserve, one nearby on private land, and one south of Davis on DOD land. Only four plants found at Jepson Prairie in 1993, and none in 1994-1996, 1998, 2000 and later; site presumed extirpated in 2005. Threatened by non-native plants. See Madrono 15(4):106-108 (1959) for original description, and American Journal of Botany 69:1082-1095 (1982) for revised taxonomy.	Tuctoria mucronata	PMPOA6N020
Viburnum ellipticum	oval-leaved viburnum	Viburnaceae	perennial deciduous shrub	2B.3	G4G5	S3?		None	None	May-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest	ALA, CCA, ELD, FRE, GLE, HUM, LAK, MEN, NAP, PLA, SHA, SOL, SON, TEH	Improper burning regime, Non-native plant impacts, Other, Road/trail construction/maint.		Viburnum ellipticum	PDCPR07080

APPENDIX D

Definitions for

Special Status Species Designations

DEFINITIONS FOR SPECIAL STATUS SPECIES DESIGNATIONS

Federal Endangered Species Act

The following are the standard definitions for the status designations under the federal Endangered Species Act (ESA), implementing regulations and relevant notices (as published in the Federal Register). The ESA is administered by the U.S. Fish and Wildlife Service (USFWS).

Endangered – A species that is in danger of extinction throughout all or a significant portion of its range.

Threatened – A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Proposed for Listing – Taxa formally noticed as being under review to determine whether listing as threatened or endangered is warranted.

Candidate – Taxa for which USFWS has on file sufficient information on biological vulnerability and threat to support a proposed rule to list the species as endangered or threatened. Proposals to list have not yet been issued because this action is precluded by other listing activity. Species in this category are assigned a listing priority in order to assist the FWS in determining those species most in need of protection.

[Note: As of February 1996, the USFWS eliminated the differing categories of candidate species and now has only one category of candidate species as defined above.]

California Endangered Species Act

The following are the standard definitions for the status classifications under the California Endangered Species Act (CESA), administered by the California Department of Fish and Game (CDFG), now renamed the California Department of Fish and Wildlife (CDFW).

Endangered species – A native California bird, mammal, fish, amphibian, reptile or plant (species or subspecies) is endangered when it is in serious danger of becoming extinct throughout all, or a significant portion of, its range due to one or more causes, including loss of habitat, change of habitat, over-exploitation, predation, competition or disease (CDFW Code, Section 2062).

Threatened species – A native bird, mammal, fish, amphibian, reptile or plant (subspecies or species) is threatened when, although not presently threatened with extinction, it is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts. Any animal listed as "rare" by the Commission on or before January 1, 1985, is a threatened species (CDFW Code, Section 2067).

Candidate species – A native California species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant is a candidate when the Fish and Wildlife Commission (Commission) has formally noticed it as being under review by the CDFW to determine whether listing as threatened or endangered is warranted, or when it is the subject of a proposed rulemaking by the Commission to list as threatened or endangered (CDFW Code, Section 2068).

California Department of Fish and Wildlife

Fully Protected – Fully Protected species may not be taken or possessed without a permit from the Fish and Wildlife Commission. Information of Fully Protected species can be found in the CDFW Code, (birds at §3511, mammals at §4700, reptiles and amphibians at §5050, and fish at §5515). Additional information on Fully Protected fish can be found in the California Code of Regulations, Title 14, Division 1, Subdivision 1, Chapter 2, Article 4, §5.93. The category of Protected Amphibians and reptiles in Title 14 has been repealed.

Species of Special Concern – A California species of special concern is a plant or animal species or subspecies that is possibly declining or is vulnerable to extirpation and may be considered for listing or for special management and protection measures. These species, although not legally protected under the CESA, are monitored by the CDFW.

It is the goal and responsibility of the CDFW to maintain viable populations of all native species. To this end, the CDFW has designated certain species as “Species of Special Concern” because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. The goal of designating species as “Species of Special Concern” is to halt or reverse their decline by calling attention to their plight and addressing the issues of concern early enough to secure their long term viability. Not all “Species of Special Concern” have declined equally; some species may be just starting to decline, while others may have already reached the point where they meet the criteria for listing as a “Threatened” or “Endangered” species under the State and/ or Federal Endangered Species Acts.

California Native Plant Protection Act

The California Native Plant Protection Act (CNPPA), administered by the CDFW, protects "rare" plant species.

Rare – A native California plant (species, subspecies or variety) is rare when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens (CDFW Code, Section 1901).

California Native Plant Society (CNPS) List of Rare, Threatened and Endangered Vascular Plants of California

The CNPS maintains a list of rare, threatened and endangered vascular plants of California which summarizes the distribution, rarity, endangerment, and ecology of these plants. CNPS updates this list approximately every four years. The most recent edition (8th ed.) was published in December 2010. The CNPS listing designations are as follows:

California Rare Plant Rank (CRPR) 1A – The plants Ranked as 1A are presumed extinct because they have not been seen or collected in the wild in California for many years. All of the List 1A plants meet the definitions of "rare", "endangered", or "threatened" contained in Fish and Game Code Section 1901 (Native Plant Protection Act), and Sections 2062 and 2067 (CESA).

CRPR 1B – The plants Ranked as 1B are rare throughout their range, and all but a few are endemic to California. List 1B plants are considered vulnerable under present circumstances or have a high potential for becoming so because of their limited or vulnerable habitat, low numbers of individuals per population, or their limited number of populations. As with List 1A plants, all of the 1B plants meet the definitions of "rare", "endangered", or "threatened" contained in Sections 1901, 2062 and 2067 of the Fish and Game Code.

CRPR 2 – Except for being common outside California, Rank 2 plants are defined similarly to List 1B plants.

CRPR 3 – Rank 3 contains plants about which more information is needed to assign them to one of the other lists or reject them. Some List 3 plants meet the definitions of "rare", "endangered", or "threatened" contained in Sections 1901, 2062 and 2067 of the Fish and Game Code.

CRPR 4 – The plants in Rank 4 are of limited distribution or infrequent throughout a broader area in California, and their susceptibility to threat appears low at this time. These plants are uncommon enough that their status should be monitored regularly. Very few List 4 plants meet the definitions of "rare", "endangered", or "threatened" contained in Sections 1901, 2062 and 2067 of the Fish and Game Code, and few, if any, are eligible for state listing.

CNPS Threat Code extensions and their meanings:

.1 – Seriously endangered in California

.2 – Fairly endangered in California

.3 – Not very endangered in California

CNPS Local Listings (Alameda and Contra Costa Counties)

***A1** or ***A2** – Species in Alameda and Contra Costa Counties listed as rare, threatened or endangered statewide by federal or state agencies or by the state level of CNPS.

A1x – Species previously known from Alameda or Contra Costa Counties, but now presumed extirpated here.

A1 – Species currently known from two or less regions in Alameda and Contra Costa Counties.

A2 – Species currently known from three to five regions in the two counties, or, if more, meeting other important criteria such as small populations, stressed or declining populations, small geographical range, limited or threatened habitat, etc.

A1? – Species with taxonomic or distribution problems that make it unclear if they actually occur here.

Special Animals

California Department of Fish and Wildlife (CDFW)

Special Animals – Special animals is a general term that refers to all of the taxa that the California Natural Diversity Database (CNDDB) is interested in tracking, regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special status species". The CDFW considers the taxa on this list to be those of greatest conservation need and were used in the development of California's Wildlife Action Plan (CDFG 2009). Special animals includes a broad list of agency designations.
For more information see: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPAnimals.pdf

Watch List – The Watch List consists of taxa that were previously Species of Special Concern (SSC's) but no longer merit SSC status or which do not meet SSC criteria but for which there is concern and a need for additional information to clarify status.

Other "Special Animal" Status Codes:

The status of species on the Special Animals List according to other conservation organizations is provided. Taxa on these lists are reviewed for inclusion in the CNDDB Special Animals List, but are not automatically included. For example, taxa that are regionally rare within a portion of California may not be included, because they may be of lesser conservation concern across their full range in California.

These species, which are also tracked regardless of their legal or protection status, are provided below.

U.S Fish and Wildlife Service (USFWS)

Birds of Conservation Concern – The goal of the Birds of Conservation Concern report is to accurately identify the migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent the US Fish and Wildlife Service's highest conservation priorities and draw attention to species in need of conservation action.

National Marine Fisheries Service (NMFS) also known as NOAA Fisheries

Species of Concern – NOAA Fisheries is responsible for the management, conservation, and protection of living marine resources within the United States Exclusive Economic Zone. Species of Concern are those species about which we have some concerns regarding status and threats, but for which insufficient information is available to indicate a need to list the species under the Endangered Species Act (ESA). Though NMFS wishes to draw proactive attention and conservation action to these species, "Species of concern" status does not carry any procedural or substantive protections under the ESA.

Bureau of Land Management

Sensitive – According to BLM Manual 6840, a Bureau Sensitive Species must meet the following criteria to be considered for sensitive species listing:

- They must be native species found on BLM-administrated lands for which BLM has the capability to significantly affect the conservation status of the species through management.
- Information is available that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range.

- The species depends on ecological refugia or specialized or unique habitats on BLM-administrated lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.
- All federally designated candidate species, proposed species, and delisted species in the 5 years following their delisting shall be conserved as Bureau Sensitive Species.

Once a species is declared sensitive by the BLM, it is their obligation to determine its distribution and manage the species' habitat.

California Dept. of Forestry & Fire Protection

CDF Sensitive **–** California Department of Forestry and Fire Protection classifies "sensitive species" as those species that warrant special protection during timber operations. The list of "sensitive species" is given in §895.1 (Definitions) of the California Forest Practice Rules.

International Union for Conservation of Nature (IUCN)

IUCN List **–** The IUCN assesses, on a global scale, the conservation status of species, subspecies, varieties and even selected subpopulations in order to highlight taxa threatened with extinction, and therefore promote their conservation. Detailed information on the IUCN and the Red List is available at: http://www.iucnredlist.org

Marine Mammal Commission

Species of Special Concern **–** Section 202 of the Marine Mammal Protection Act directs the Marine Mammal Commission, in consultation with its Committee of Scientific Advisors, to make recommendations to the Department of Commerce, the Department of the Interior, and other federal agencies on research and management actions needed to conserve species of marine mammals. To meet this charge, the Commission devotes special attention to particular species and populations that are vulnerable to various types of human-related activities, impacts, and contaminants. Such species may include marine mammals listed as Endangered or Threatened under the Endangered Species Act or as depleted under the Marine Mammal Protection Act. In addition, the Commission often directs special attention to other species or populations of marine mammals not so listed whenever special conservation challenges arise that may affect them.

More information on the Marine Mammal Protection Act and the Marine Mammal Species of Special Concern list is available at: http://www.mmc.gov/species/welcome.shtml

U.S Forest Service

Sensitive – USDA Forest Service defines sensitive species as plant and animal species identified by a regional forester that are not listed or proposed for listing under the Federal Endangered Species Act for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. Regional Foresters identify sensitive species occurring within each region. California is the Pacific Southwest Region (Region 5).
More information is available at: http://www.fs.usda.gov/main/r5/plants-animals and at:
http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5435266.xlsx

North American Bird Conservation Initiative (NABCI)

North American Bird Conservation Initiative Watchlist – The North American Bird Conservation Initiative is a coalition of private organization and government agencies. They work to ensure the long-term health of North America's native bird populations and publish an annual State of the Birds report. The annual State of the Bird report includes a watch list of bird species in need of conservation help and classifies the birds as either Red Watch List or Yellow Watch List species. Species on the Red Watch List have extremely high vulnerability, and Yellow Watch List species are species that may be range restricted or may be widespread but with declines and high threats. More information is available at http://stateofthebirds.org.

American Fisheries Society (AFS)

AFS List – Designations for freshwater and diadromous species were taken from the paper: Jelks,.L., S.J. Walsh, N.M. Burkhead, S.Contreras-Balderas, E. Díaz-Pardo, D.A. Hendrickson, J. Lyons, N.E. Mandrak, F. McCormick, J.S. Nelson, S.P. Platania, B.A. Porter, C.B. Renaud, J. J. Schmitter-Soto, E.B. Taylor, and M.L. Warren, Jr. 2008. Conservation status of imperiled North American freshwater and diadromous fishes. Fisheries 33(8):372-407. Available at:
http://www.fisheries.org/afs/docs/fisheries/fisheries_3308.pdf
Designations for marineand estuarine species were taken from the paper: Musick, J.T. et al. 2000. "Marine, Estuarine, and Diadromous Fish Stocks at Risk of Extinction in North America (Exclusive of Pacific Salmonids). Fisheries 25(11):6-30. Available at:
http://www.flmnh.ufl.edu/fish/sharks/sawfish/Reprint1390.pdf

Western Bat Working Group (WBWG)

WBWG List – The WBWG is comprised of agencies, organizations and individuals interested in bat research, management and conservation from the 13 western states and provinces. The goals are (1) to facilitate communication among interested parties and reduce risks of species decline or extinction; (2) to provide a mechanism by which current information on bat ecology, distribution and research techniques can be readily accessed; and (3) to develop a forum to discuss conservation strategies, provide technical assistance and encourage education programs. Species are ranked as High, Medium, or Low Priority in each of 10 regions in western North America. Because California includes multiple regions where a species may have different WBWG Priority ranks, the CNNDB includes categories for Medium-High, and Low-Medium Priority. The CNDDB tracks bat species that are at least Low-Medium Priority in California. More information is available at: http://www.wbwg.org

The Xerces Society

Red List – The Xerces Society is an international non-profit organization dedicated to protecting biological diversity through invertebrate conservation. The Society advocates for invertebrates and their habitatsby working with scientists, land managers, educators, and citizens on conservation and education projects. Their core programs focus on endangered species, native pollinators, and watershed health. More information on the Red List is available at:
http://www.xerces.org

Special Status Species Abbreviations

Federal Endangered Species Act

FE	Federally-listed as endangered
FT	Federally-listed as threatened
FPE	Federally proposed for listing as endangered or threatened
FC	Federal candidate for listing as endangered or threatened

State Endangered Species Act

SE	State-listed as endangered
ST	State-listed as threatened
SC	State candidate for listing as endangered or threatened

California Department of Fish and Wildlife

FP	Fully protected
SSC	California species of special concern
WL	Watch List

California Native Plant Protection Act

CNPPA: Rare	Rare plant

California Native Plant Society

CRPR	California Rare Plant Rank

SPECIAL ANIMALS (SA)

California Department of Fish and Wildlife

CDFW: WL Watch list

CDFW: SA Special Animal

US Fish and Wildlife Service

USFWS:BCC Birds of Conservation Concern

NMFS (NOAA Fisheries)

NMFS: SC Species of Concern

Bureau of Land Management

BLM:S Sensitive

California Dept. of Forestry & Fire Protection

CDFS:S Sensitive

International Union for Conservation of Nature

IUCN:CD Conservation Dependent

IUCN:CR Critically Endangered

IUCN:DD Data Deficient

IUCN:EN Endangered

IUCN:EW Extinct in the Wild

IUCN:EX Extinct

IUCN:LC Least Concern

IUCN:NE Not evaluated

IUCN:NT Near Threatened

IUCN:VU Vulnerable

Marine Mammal Commission

MMC:SSC Species of Special Concern

National Marine Fisheries Service

NMFS:SC Species of Special Concern

U.S Forest Service

USFS:S Sensitive

Western Bat Working Group

WBWG: H High priority

WBWG: LM low-medium priority

WBWG: M medium priority

WBWG: MH medium-high priority

Xerces Society Red List

X: CI Critically imperiled

X: DD Data deficient

X: IM Imperiled

X: VU Vulnerable

North American Bird Conservation Initiative

NABCI: RWL Red watch list

NABCI: YWL Yellow watch list

American Fisheries Society

AMS: EN Endangered

AMS: TH Threatened

AMS: VU Vulnerable

APPENDIX E

Wetland Delineation Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McMurtry Ct Estates City/County: Vacaville, Solano Co Sampling Date: 7/11/22

Applicant/Owner: State: CA Sampling Point: 1

Investigator(s): Sean Micallef & Emily Section, Township, Range:

Landform (hillslope, terrace, etc.): Terrace Mathews Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks:

Upland Grassland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Avena fatua	25	Y	UPL
2. Festuca perennis	55	Y	FAC
3. Centaurea solstitialis	7.5	—	UPL
4. Convolvulus arvensis	5	—	UPL
5. Cardus pycnocephalus	5	—	UPL
6.			
7.			
8.			
	97.5 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 2.5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species 55	x 3 =	165
FACU species ____	x 4 =	____
UPL species 42.5	x 5 =	212.5
Column Totals: 97.5 (A)		377.5 (B)

Prevalence Index = B/A = 3.87

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Upland Vegetation is Dominant

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
12	10YR 3/3		7.5YR 5/8				Clay loam	
								Redox prevalent

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Hydric Indicator present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Presence of redox is only Indicator

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McMurtry Creek Estates City/County: Vacaville, Solano Sampling Date: 7/11/22

Applicant/Owner: _____ State: CA Sampling Point: 2

Investigator(s): Sean M & Emily M Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

Upland Grassland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Elymus glaucus – multisac	40	Y	UPL
2. Avena fatua	20	Y	UPL
3. Centaurea solstitialis	5	—	UPL
4. Centromadia pungens	2.5	—	FAC
5. Bromus hordeaceus	15	Y	FACU
6. Trifolium hirtum	2.5	—	UPL
7. Erodium botrys	20	Y	FACU
8.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Upland Vegetation Dominates

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
3	10YR 4/2						loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks:

No Indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No Indicators

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McMurtry Creek Estates City/County: Vacaville, Solano Sampling Date: 7/11/22

Applicant/Owner: _____ State: CA Sampling Point: 3

Investigator(s): Sean M & Emily M Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

Upland Grassland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Avena fatua	30	Y	UPL
2. Festuca perennis	25	Y	FAC
3. Medicago polymorpha	40	Y	FACW
4. Trifolium hirtum	10	—	UPL
5. Bromus hordeaceus	7.5	—	FACU
6.			
7.			
8.			
	112.5 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____	(A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Upland Vegetation Dominates

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
10	10YR 3/2						clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No Indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No Indicators

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McMurtry Creek Estates City/County: Vacaville, Solano Sampling Date: 7/11/22

Applicant/Owner: _____ State: CA Sampling Point: 4

Investigator(s): Sean M & Emily M Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

Constructed Season Wetland Basin

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Cynosurus echinatus	40	Y	FACU
2. Polypogon monspeliensis	20	Y	FACW
3. Xanthium strumarium	20	Y	FAC
4. Festuca perennis	10	–	FAC
5. Chenopodium album	1	–	FACU
6. polygonum aviculare	5	–	FAC
7. Plagiobothrys bracteatus	5	–	FACW
8.			
	106 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Hydrophytes are Dominant

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
12	10YR 7/1		7.5YR 5/8				Silty clay loam	
								lots of redox features

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric Indicators Present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Multiple Indicators

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
7	10YR 4/2		7.5YR 5/8		C	M	Silty clay loam	
								Lots & Strong
								texture
								change
								at surface

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric Indicators Present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- X Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Multiple Indicators

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McMurtry Creek Estates City/County: Vacaville, Solano Sampling Date: 7/11/22

Applicant/Owner: _____ State: CA Sampling Point: 6

Investigator(s): Sean M & Emily M Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

Upland Grassland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1. Elymus caput-medusae	50	Y	UPL
2. Centaurea solstitialis	30	Y	UPL
3. Festuca perennis	12.5	—	FAC
4. Avena fatua	3.5	—	UPL
5. Bromus hordeaceus	7.5	—	FACU
6. Medicago polymorpha	7.5	—	FACU
7. Geranium dissectum	10	—	UPL
8.			
	115 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Upland Vegetation is Dominant

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McMurtry Creek Estates City/County: Vacaville, Solano Sampling Date: 7/11/22

Applicant/Owner: _____ State: CA Sampling Point: 5

Investigator(s): Seanna & Emily M Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

Constructed Seasonal Wetland Basin

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1. Polygonum maritimum	15	Y	FACW
2. Festuca perennis	45	Y	FAC
3. Plantago bracteata	15	Y	FACW
4. Chenopodium album	1	—	FACU
5. Xanthium strumarium	1	—	FAC
6. Juncus balticus	25	—	FACW
7. Plagiobothrys sp.	5	—	FACW
8. Polygonum aviculare	20	—	FAC
	92 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 8 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Hydrophytes Dominate

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
12	10YR 4/2	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No Indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No Indicators

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: McMurtry Creek Estates City/County: Vacaville, Solano Sampling Date: 7/11/22

Applicant/Owner: _____ State: CA Sampling Point: 7

Investigator(s): Sean M & Emily M Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

Upland Grassland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Avena fatua	45	Y	UPL
2. Centaurea solstitialis	40	Y	UPL
3. Convolvulus arvensis	5	–	UPL
4. Festuca perennis	15	Y	FAC
5. Medicago polymorpha	5	–	FACU
6.			
7.			
8.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species 15	x 3 =	45
FACU species 5	x 4 =	20
UPL species 90	x 5 =	450
Column Totals: 110 (A)		515 (B)

Prevalence Index = B/A = 4.68

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Upland Vegetation is Dominant

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/1						Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No Indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No Indicators

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APPENDIX C

GEOTECHNICAL INVESTIGATION

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GEOTECHNICAL EXPLORATION REPORT
on
PROPOSED RESIDENTIAL SUBDIVISION
McMurtry Creek Estates
at
4420 McMurtry Lane
Vacaville, California
for
SURESH PARANJPE



By

KC ENGINEERING COMPANY

Project No. VV5308

6 April 2022

865 Cotting Lane, Suite A
Vacaville, California 95688
(707) 447-4025, fax 447-4143

8798 Airport Road
Redding, California 96002
(530) 222-0832, fax 222-1611

KC ENGINEERING COMPANY
A SUBSIDIARY OF MATERIALS TESTING, INC.

Project No. VV5308
6 April 2022

Mr. Suresh Paranjpe
11150 SW Riverwood Road
Portland, OR 97219

Subject: Proposed Residential Subdivision - McMurtry Creek Estates
APN's 0105-200-140 & -150
4420 McMurtry Lane
Vacaville, California
GEOTECHNICAL EXPLORATION REPORT

Dear Mr. Paranjpe:

In accordance with your authorization, **KC ENGINEERING COMPANY** has explored the geotechnical conditions of the surface and subsurface soils of the proposed residential subdivision to be constructed at the subject site. This report pertains to the proposed 20 lots and not the entire 35.5-acre property.

The accompanying report presents our conclusions and recommendations based on our exploration. Our findings indicate that the proposed residential subdivision is geotechnically feasible for construction on the subject site provided the recommendations of this report are carefully followed and are incorporated into the project plans and specifications.

Should you have any questions relating to the contents of this report or should you require additional information, please contact our office at your convenience.

Respectfully Submitted,
KC ENGINEERING COMPANY

David V. Cymanski, G.E.
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
DAVID V. CYMANSKI
GE 2585
EXP. 6-30-22
GEOTECHNICAL
STATE OF CALIFORNIA

Reviewed by,

Andrew L. King, P.E.
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
ANDREW L. KING
No. C 83139
Exp. 3-31-23
CIVIL
STATE OF CALIFORNIA

Copies: 3 mail & email to Client

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GEOTECHNICAL EXPLORATION

Purpose and Scope

The purpose of the geotechnical exploration for the proposed McMurtry Creek Estates residential subdivision to be located at 4420 McMurtry Lane in Vacaville, California was to determine the surface and subsurface soil conditions at the subject site. Based on the results of the exploration, geotechnical criteria were established for the grading of the site, design of foundations, slabs-on-grade, retaining walls, pavement sections, drainage, and the construction of other related facilities on the property.

In accordance with your authorization, our exploration services included the following tasks:

a. A review of available geotechnical and geologic literature concerning the site and vicinity;
b. Site reconnaissance by the Geotechnical Engineer to observe and map surface conditions;
c. Drilling and logging of seven exploratory test borings and sampling of the subsurface soils;
d. Laboratory testing of the samples obtained to determine their classification and engineering characteristics;
e. Analysis of the data and formulation of conclusions and recommendations; and
f. Preparation of this written report.

Site Location and Description

The 35.5-acre property is identified as Assessor's Parcel Numbers (APNs) 0105-200-140 and -150, located at 4420 McMurtry Lane in Vacaville, California as shown on Figure 1, "Aerial Vicinity Map" included in the Appendix of this report. The property is accessed and situated at the northern terminus of McMurtry Lane. The property currently contains, a residence, barn, shop building, greenhouse, chicken coops, livestock, several sheds and vacant land. The area of the proposed McMurtry Creek Estates subdivision is located on the eastern portion of the property as shown on Figure 1 and Figure 2, "Site Plan". The topography of the proposed 20-lot development area consists of a relatively flat to gently sloping broad central valley with hills on the east and west. A seasonal creek crosses the southern portion of the site. A seasonal pond is located on the southeast portion of the site. Flowing water in the creek was present during our field exploration, and the pond was nearly full. A relatively small landslide is present on the slope above McMurtry Lane on the southwest. Vegetation on the site consists of native grasses, weeds and scattered trees.

The above description is based on a reconnaissance of the site by the Geotechnical Engineer, a review of Google Earth images and a Grading Plan by Phillippi Engineering dated 1/5/22. The Google Earth images were used as the basis for our "Aerial Vicinity Map" and the Grading Plan as use for our "Site Plan" included as Figures 1 and 2, respectively in the Appendix of this report.

Proposed Construction

The proposed construction is planned to consist of developing the eastern portion of the property into a residential subdivision as shown on Figure 2, "Site Plan". Based on our review of the Phillippi drawing, the proposed McMurtry Creek Estates residential subdivision will consist of constructing 20 lots for single family residences. The structures are expected to be one to two-story, wood-framed structures supported by post-tension slab foundations. Structural loads are expected to be typical for this type of single-family residential construction. Additional site improvements are planned to consist of installing underground utilities, concrete and asphalt pavements, sidewalks, driveways, landscaping and storm water bio-filtration detention swales and/or basins. The seasonal creek will be aligned in a defined swale and cross through new culverts. McMurtry Lane will be widened to 28 feet to meet City Standards and may require use of new retaining walls. A perimeter fire access road is planned around the subdivision. A 20 feet wide maintenance road is planned on the east. Concrete V-ditches are planned along the access roads near the toe of the uphill slopes.

Demolition of the existing buildings and removal of exiting foundations, underground utilities/pipes, along with designated tree removal will be required prior to earthwork grading. A septic tank with leach field and other buried items may be present which will require removal. Earthwork grading is expected to consist of various cuts and fills to establish the proposed building pads, street and access road grades. The small landslide on the southwest will require removal and replacement. Any proposed cut slopes steeper than 2.5H:1V (horizontal to vertical) will require slope buttressing as recommended herein.

Field Exploration

The field exploration was performed 01/25/22 and included a reconnaissance of the site and the drilling of seven exploratory borings at the approximate location shown on Figure 2, "Site Plan". Representative bulk samples of the near surface soils were also obtained.

The borings were drilled to a maximum depth of 21.5 feet below the existing ground surface. The drilling was performed with a CME 55 drill rig using power-driven, 4-inch diameter continuous flight augers. Visual classifications were made from the auger cuttings and the samples in the field. As the drilling proceeded, relatively undisturbed tube samples were obtained by driving a 3-inch O.D.,

California Modified split-tube sampler, containing thin brass liners, into the boring bottom in accordance with ASTM D3550. Disturbed samples were also obtained by driving a 2-inch O.D., split-barrel SPT sampler into the boring bottom in accordance with ASTM D1586. The samplers were driven into the in-situ soils under the impact of a 140 pound hammer having a free fall of 30 inches. The number of blows required to advance the sampler 12 inches into the soil were adjusted to the standard penetration resistance (N-Value). The raw blow counts obtained using the California sampler were corrected to equivalent N-Values using Burmister's (1948) 65% energy and diameter correction formula. When the sampler was withdrawn from the boring bottom, the brass liners containing the relatively undisturbed samples were removed, examined for identification purposes, labeled and sealed to preserve the natural or in-situ moisture content.

The samples were then transported to our laboratory for testing. Classifications made in the field were verified in the laboratory after further examination and testing. The stratification of the soils, descriptions, location of undisturbed soil samples and standard penetration resistance are shown on the respective "Log of Test Boring" contained within the Appendix.

Laboratory Testing

The laboratory testing program was directed towards providing sufficient information for the estimation of the engineering characteristics of the site soils so that the recommendations outlined in this report could be formulated. The laboratory test results are presented in the Appendix.

Moisture content and dry density tests (ASTM D2937) were performed on representative relatively undisturbed soil samples in order to determine the consistency of the soil and the moisture variation throughout the explored soil profile as well as estimate the compressibility of the underlying soils.

The strength parameters of the foundation soils were determined from unconfined compression tests (ATSTM D2166) and direct shear tests (ATSTM D3080) performed on selected relatively undisturbed soil samples. Standard field penetration resistance (N-Values) and pocket penetrometer readings also assisted in the determination of strength and bearing capacity. The test results, standard penetration resistances readings and penetrometer readings are recorded on the respective "Log of Test Boring".

In order to assist in the identification and classification of the subsurface soils, sieve analysis and hydrometer tests (ASTM D6913) (ASTM D422) and Atterberg Limits tests (ASTM D4318) were performed on selected soil samples. The Atterberg Limits test results were used to estimate the expansion potential of the near surface soils. The results also aided in our liquefaction analysis.

An R-Value test (Cal Test 301) was performed on a composite bulk sample representative of the proposed subgrade to assist in pavement section design.

A representative bulk samples of the near-surface pad soils were obtained and tested to evaluate the presence and concentration of water-soluble sulfates in accordance with ASTM C1580. These test results were used to identify the corrosion potential of the soils to at or below grade concrete. Additional corrosivity indicator tests were performed including soil pH, minimum resistivity and chlorides. A discussion is presented in the "Soil Corrosivity" section of this report with test results presented in the Appendix.

Subsurface Conditions

Based on our field exploration and laboratory test results, the sites surface and subsurface soils consist of variably stratified alluvial fan deposits underlain by weathered bedrock. At Borings 1 and 2, the upper 2 to 3 feet consist of firm to stiff highly expansive clay, underlain by stiff to very stiff layers of sandy clay and medium dense to dense clayey sand to depths of 15 to 20 feet below grade. These alluvial deposits are underlain by highly weathered and weak sandstone and claystone bedrock. At Borings 3 through 7, the upper 1.5 to 6 feet consist of highly expansive firm to stiff clay and sandy clay, underlain by highly weathered and friable to weak siltstone, tuff and sandstone bedrock. A medium dense sand with clay layer was found in Boring 7 between 3 and 6 feet below grade.

Perched groundwater was encountered in Boring 2 at a depth of 20 feet over the underlying claystone bedrock. No groundwater was encountered in the other borings at the time of drilling. Fluctuations in the groundwater conditions can occur with variations in seasonal rainfall, irrigation on the site, creek flows, and variations in subsurface stratification.

A more thorough description and stratification of the soils encountered along with the results of the laboratory tests are presented on the respective boring logs in the Appendix. The approximate locations of the borings are shown on Figure 2, "Site Plan".

Soil Corrosivity

A representative composite sample of the near surface building pad soils (upper 5 feet) was collected and transported to Sunland Analytical in Rancho Cordova for testing of water-soluble sulfates, pH, minimum resistivity and chlorides per ASTM and California Test Methods.

The testing indicates a sulfate content of 280.3 ppm (mg/kg), a chloride content of 8.8 ppm, a minimum resistivity of 800 ohm-cm, and a soil pH of 6.25 for the sample collected. It is noted

that the sulfate test results indicate low or "S0" sulfate exposure to concrete as identified in the Durability Requirements, Section 1904 of the 2019 California Building Code, and Tables 19.3.1.1 of ACI 318-14 Building Code Requirements for Structural Concrete. No cement type restriction is required, however, we do recommend that a Type I/II cement be utilized in concrete mixes for additional sulfate and corrosion resistance.

The Caltrans Corrosion Guidelines[1] defines a corrosive site as one where the soil and/or water has a sulfate concentration of 1,500 ppm or more, a chloride concentration of 500 ppm or more, a pH of 5.5 or less, and a minimum resistivity less than 1,100 ohm-cm. Based on these criteria, and the low resistivity, the soils at the site have a higher propensity for corrosion to buried metal.

KC Engineering Company is not a corrosion engineering firm. Therefore, to further define the soil corrosion potential and interpret the above test results, or to design cathodic protection or grounding systems, a licensed Corrosion Engineer should be consulted.

Site Geology

According to the Preliminary Geologic Map of the Lodi 30' x 60' Quadrangle, California[2], the site is mapped with variable geologic units. On the west, the hills are mapped the Eocene-aged Markley Formation that is described as Yellow and tan-weathering, white to light-gray quartz-muscovite and quartz lithic sandstone and siltstone. The central valley area is mapped as latest Pleistocene-aged alluvial fan deposits described as sand, gravel, silt and clay that is moderately to poorly sorted and bedded. A thin zone just east of the alluvial fan deposits is mapped as late Miocene-aged Neroly Sandstone described as blue-gray, fine to coarse grained lithic sandstone. The hills on the east are mapped as the Pliocene-aged Tehama Formation described as poorly consolidated, nonmarine, gray to maroon siltstone, quartz arenite sandstone, tuff and pebble to cobble conglomerate. The subsurface deposits encountered during our exploration generally agree with published geologic mapping. A portion of the Lodi 30' x 60' quadrangle showing the project site and surrounding area is attached as Figure 3, "Geologic Map".

[1] California Department of Transportation, Division of Engineering Services, Materials Engineering and Testing Services Corrosion Branch, *Corrosion Guidelines*, Version 3.2, May 2021.

[2] Dawson, T.E., 2009, *Preliminary Geologic Map of the Lodi 30' x 60' Quadrangles*, California Geological Survey.

Geo-Hazards

Seismicity & Ground Motion Analysis

The site is not located within an Alquist-Priolo Earthquake Fault Zone[3]. There are no known Holocene-active faults crossing the site as mapped and/or recognized by the State of California. However, Vacaville is located in a seismically-active region and earthquake related ground shaking should be expected during the design life of structures constructed on the site. The California Geological Survey has defined an active fault as one that has had surface displacement in the last 11,700 years or has experienced earthquakes in recorded history.

Based on our review of the Fault Activity Map of California[4] and the USGS National Seismic Hazard Maps-Source Parameters[5], the nearest active faults are the Great Valley 4b Gordon Valley/Vaca Fault, the Green Valley Fault, the Hunting Creek-Berryessa Fault, and the West Napa Fault, located approximately 1 miles west, 10.4 miles southwest, 11.8 miles northwest, and 19.2 miles west of the site, respectively. Various other active faults in the Bay Area and central valley can produce seismic shaking at the site.

The 2019 CBC specifies that the potential for liquefaction and soil strength loss should be evaluated, where applicable, for the Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration with an adjustment for site class effects in accordance with American Society of Civil Engineer (ASCE 7-16)[6]. The MCE_G peak ground acceleration is based on the geometric mean peak ground acceleration with a 2 percent probability of exceedance in 50 years. Based on ASCE 7-16, the MCE_G peak ground acceleration with adjustment for site class effects (PGA_M) was calculated to be 0.678g using the SEA/OSHPD seismic design maps web-based tool with a site coefficient (F_{PGA}) of 1.2 for Site Class C.

Structures at the site should be designed to withstand the anticipated ground accelerations. Based on the SEA/OSHPD U.S Seismic Design Maps website and ASCE 7-16, the 2019 CBC earthquake design values are as follows. The US seismic design summary report is included in the Appendix.

[3] Parish, J.G., 2018 *Earthquake Fault Zones*, California Geological Survey, Special Publication 42, Revised 2018.
[4] Jennings, C.W. and Bryant, W.A., 2010, *Fault Activity Map of California*, California Geological Survey Geologic Data Map No. 6, scale 1:750,000
[5] U.S. Geological Survey, 2008 National Seismic Hazards Maps – Source Parameters, accessed 4/5/22, from USGS web site: https://earthquake.usgs.gov/cfusion/hazfaults_2008_search/query_main.cfm
[6] American Society of Civil Engineer (ASCE), 2016, Minimum Design Loads for Buildings and Other Structures, Standard 7-16 and Supplement 1, dated 12/12/18

Site Class:	C
Mapped Acceleration Parameters:	S_S = 1.352g; S_1 = 0.483g
Design Spectral Response Accelerations:	S_{DS} = 1.082g; S_{D1} = 0.483g

Fault Rupture

The site is not located within an Alquist-Priolo Earthquake Fault Zone. Based on our review of geologic maps, no known active faults cross or project toward the subject site. It is our opinion that there is a low potential for fault-related surface rupture at the subject site.

Landsliding

The central valley area of the subject site is relatively flat to gently sloping and not subject to seismically induced landslide hazards. A small landslide was identified just west of McMurtry Lane on the southwest that will need to be removed and repaired during site grading. Obvious signs of slope instability or landslides were not observed on the remainder of the adjacent hillside areas on the east and west. Proposed cut slopes are planned which may lead to sloughing or landsliding during seismic events. In our opinion, any planned cut slope steeper than 2.5H:1V should be over-excavated and re-constructed as a well-drained cut slope buttress as recommended herein.

Liquefaction

Soil liquefaction is a phenomenon in which loose and saturated cohesionless soils are subject to a temporary, but essentially total loss of shear strength, due to pore pressure build-up under the reversing cyclic shear stresses associated with earthquakes. Soils typically found most susceptible to liquefaction are saturated and loose, fine to medium grained sand having a uniform particle range and less than 35% fines passing the No. 200 sieve, and a corrected standard penetration blow count $(N_1)_{60}$ less than 30. According to Special Publication 117A by the California Geological Survey, the assessment of hazards associated with potential liquefaction of soil deposits at a site must consider translational site instability (i.e. lateral spreading, etc.) and more localized hazards such as bearing failure and settlement. The acceptable factor of safety against liquefaction is recommended in SP117 to be 1.3 or greater.

Based on our site exploration and laboratory test data, the soil profile for the majority of the site generally consists of firm to stiff cohesive soils with some medium dense to dense clayey sand layers which are not liquefiable due to the lack of groundwater and the presence of underlying bedrock.

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

General

From a geotechnical point of view, the proposed residential subdivision and associated improvements are considered to be feasible for construction on the subject site provided the recommendations presented in this report are incorporated into the project plans and specifications.

All grading and foundation plans for the development should be reviewed by ***KC ENGINEERING CO.*** prior to contract bidding or submittal to governmental agencies to ensure that the geotechnical recommendations contained herein are incorporated and utilized in design.

KC ENGINEERING CO. should be notified at least two working days prior to site clearing, grading, and/or foundation operations on the property. This will give the Soil Engineer ample time to discuss the geotechnical characteristics of the site that may be encountered in the field.

Field observation and testing during the grading and/or foundation operations shall be provided by representatives of ***KC ENGINEERING CO.*** to enable them to form an opinion regarding the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the specification requirements. Any work related to the grading and/or foundation operations performed without the full knowledge and under the direct observation of the Soil Engineer will render the recommendations of this report invalid.

Geotechnical Considerations

The primary geotechnical considerations for the site are the presence of near-surface highly expansive clays, the likelihood of differential soil conditions and thicknesses from earthwork grading, the presence of a landslide, and the potential for slope instability of planned cut slopes.

The site's near surface soils are considered highly expansive and prone to heave and shrink movements with changes in moisture content and, consequently, must be carefully considered in the design of foundations, drainage, and landscaping. Considering the presence of highly expansive soils, we recommend that uniformly thickened post-tension slab foundation systems be utilized to support the structures to minimize differential movements and structure distress. Specific grading, drainage and foundation recommendations are provided herein.

Various planned cuts and fills are proposed as part of the site grading which are expected to result in differing soil materials and thicknesses across the pads. Grading mitigation measures such as over-excavation of the cut portion of cut/fill pads and minimization of differential fill thicknesses are recommended to minimize potential differential settlement. Upon removal of the trees, underground utilities and demolition of the structures and foundations, we expect the ground surface to be disturbed in those areas and will require processing and compacting the upper 2 feet of existing materials as engineered fill. In addition, undocumented fills at the pond dam and likely soft deposits in the pond area will require over-excavation.

A small landslide was identified just west of McMurtry Lane on the southwest that will need to be removed and repaired during site grading. Obvious signs of slope instability or landslides were not observed on the remainder of the adjacent hillside areas on the east and west of the development. Proposed cut slopes are planned which may lead to sloughing or landsliding during seismic or heavy rainfall events. In our opinion, any planned cut slope steeper than 2.5H:1V should be over-excavated and re-constructed as a well-drained cut slope buttress as recommended herein. Specific recommendations are provided in the "Grading" and "Slopes" section herein.

Demolition

As noted above, the site contains trees, various old buildings, a septic tank and leach field, and underground utilities. Demolition should include the complete removal of all vegetation and tree roots, as well as surface and subsurface structures, pipelines, foundations, concrete flat work, wooden power poles, concrete rubble, debris and deleterious material. It is vital that ***KC ENGINEERING CO.***, intermittently observe the demolition operations and test backfill of such areas.

Excavations made by the removal of the above items should be left open by the demolition contractor for backfill in accordance with the requirements for engineered fill. The removal of any underground structures should be done under the observation of the Soil Engineer to assure adequacy of the removal and that subsoils are left in proper condition for placement of engineered fills. Any soil exposed by the demolition operations, which are deemed soft or unsuitable by the Soil Engineer, shall be excavated as uncompacted fill soil and be removed as required by the Soil Engineer during grading. The demolition operation should be approved by the Soil Engineer prior to commencing grading operations. Any resulting excavations should be properly backfilled with engineered fill under the observation of the Soil Engineer. Should the location of any localized excavation be found to underlie any new structure, backfill should be compacted to a minimum relative compaction of 92% or the excavation widened to extend 5 feet

beyond the footprint of the structure and backfilled to the specifications for engineered fill as recommended in the "Grading" section herein.

Grading

Grading activities may be performed during the rainy season, however, achieving proper compaction will be difficult due to excessive moisture; and delays may occur. Grading performed during the dry months will minimize the occurrence of the above problems. When specific project grading plans become available for our review, supplemental grading recommendations may be required.

After demolition, the site should be stripped of vegetation and removed from the site. Any loose or soft soil materials must be excavated to undisturbed native ground. The undocumented fill of the pond and any muck should be removed and replaced as engineered fill. Excavated soil materials may be used as engineered fill with the approval of the Soil Engineer provided it does not contain debris or excessive organics.

After demolition and clearing of vegetation, we recommend the upper 2 feet of the existing site grades be processed and compacted as engineered fill. We recommend that the exposed upper 12 inches be over-excavated, followed by the bottom 12 inches scarified in-place, moisture conditioned and compacted to a minimum degree of relative compaction of 90% at 4% or more above optimum moisture content as determined by ASTM D1557 Laboratory Test Procedure. After processing and compacting the lower 12 inches, the site may be brought to the desired finished grades by placing engineered fill in lifts of 8 to 12 inches in un-compacted thickness and compacting to a relative compaction of 90% at 4% or more above optimum moisture in accordance with the aforementioned test procedure. The over-excavation and compaction of the upper 2 feet should occur for the building pads plus a 5 feet minimum over-build. All soils encountered during our investigation are suitable for use as engineered fill when placed and compacted at the recommended moisture content.

Where cut and fill pad transitions occur, we recommend that the cut portion be over-excavated 2 feet, the exposed bottom scarified, moisture conditioned and compacted, followed by filling to design grades as recommended above. Additionally, differential fill thicknesses under building pads should be limited to no more than 5 feet vertical.

Should select import material be needed to meet design grades for the building pads or be required for general fill, the import material should be approved by the Soil Engineer before it is brought to the site. Where select import soil is to be used, it should meet the following requirements:

a. Have a Plasticity Index not higher than 15;
b. Not more than 15% passing the No. 200 sieve;
c. No rocks larger than 3 inches in maximum size;

The fill materials shall be placed in uniform lifts of not more than 8 to 12 inches in uncompacted thickness depending on size and weight of equipment used. Each layer shall be spread evenly and shall be thoroughly blade mixed during the spreading to obtain uniformity of material in each layer. Before compaction begins, the fill shall be brought to a water content that will permit proper compaction by either (a) aerating the material if it is too wet, or (b) spraying the material with water if it is too dry.

Prior to compaction, each layer should be spread evenly and should be thoroughly blade mixed during the spreading to obtain uniformity of material in each layer. The fill should be brought to a water content noted above by either (a) aerating the material if it is too wet, or (b) spraying the material with water if it is too dry. Compaction should be performed by footed rollers or other types of approved compaction equipment and methods. Compaction equipment should be of such design that they will be able to compact the fill to the specified density. Rolling of each layer should be continuous over its entire area and the equipment should make sufficient trips to ensure that the required density has been obtained. No ponding or jetting is permitted.

The standard test used to define maximum densities and optimum moisture content of all compaction work shall be the Laboratory Test procedure ASTM D1557 and field tests shall be expressed as a relative compaction in terms of the maximum dry density and optimum moisture content obtained in the laboratory by the foregoing standard procedure. Field density and moisture tests shall be made in each compacted layer by the Soil Engineer in accordance with ASTM D6938, respectively. When footed rollers are used for compaction, the density and moisture tests shall be taken in the compacted material below the surface disturbed by the roller. When these tests indicate that the compaction requirements for any layer of fill, or portion thereof, have not been met, the particular layer, or portion thereof, shall be reworked until the compaction requirements have been met.

Slope Grading

Should any fill slope grading be required, we recommend that the toe of fill slopes be properly keyed into competent material before filling. Prior to placement of fill slopes and after stripping of vegetation, a toe of slope keyway must be constructed into competent soil materials prior to placement of engineered fill as required by the 2019 CBC Appendix J. A toe key excavation should be placed at the base of all such fills where the ground surface is equal to or steeper than 6H:1V. This key should be a minimum of 12 feet in width, cut into competent non-yielding material a

minimum of 2 vertical feet, and sloped into the hillside at a gradient of no less than 5%. Subsequent keyed benches should be excavated as the fill progresses upslope. Subdrainage in keyways will also be required. A typical fill slope detail is provided in the Appendix.

As discussed above, a relatively small landslide is located above McMurtry lane on the southwest as shown on Figure 2. This landslide will require removal, followed by excavation of a keyway, installation of a subdrain and replacement as engineered fill. The typical fill slope detail in the Appendix can be used as a guide for this slide repair.

Unsupported cut slopes should not be steeper than 2.5H:1V (horizontal to vertical). Where steeper cut slopes are planned (2H:1V maximum), the cut slope should be over-excavated and re-constructed as a well-drained cut slope buttress. A typical cut slope buttress detail is provided in the Appendix. Fill slopes should not be steeper than 2H:1V and must be compacted as the filling operation progresses upslope and include over-constructing the fill slope face and cutting back the looser surface soils to a firm and adequately compacted designed slope grade. Track-walking of slope surfaces does not provide adequate soil densities and is an unacceptable method of slope compaction.

Subdrains should be placed at the rear of the keyway, on benches every 20 vertical feet, and at the upper bench. Subdrains should consist of a 6-inch diameter perforated pipe (SDR35) surrounded by Caltrans Class 2 Permeable Drainrock. The pipe should be underlain by 4 inches of drainrock. The drainrock section should be a minimum of 18 inches wide and 4 feet in vertical height. As the buttress construction proceeds up, the fill should be benched into the uphill slope with an approximate height between benches of 5 vertical feet and a minimum bench width of 5 feet. The actual dimensions of the keyway and benches and subdrain locations will depend on geologic conditions and slope height and should be determined during grading by the Geotechnical Engineer and/or Engineering Geologist. In addition, we must review the project final grading plan to determine and provide specific hillside mitigation grading requirements.

Drainage benches should be provided at intervals no greater than 30 feet vertical. Drainage benches should also be provided at all locations of changing slope gradient. Minimum 6 feet wide benches are recommended with concrete lined v-ditches leading to a controlled discharge facilities. Caution must be exercised such that the uphill lip on the concrete swale/ditch is properly backfilled to prevent infiltration of surface water beneath the ditch which may result in saturated soils and a slope failure. The drainage bench should have a minimum gradient of two (2) percent downwards towards the concrete v-ditch.

Cut and fill slopes may experience severe erosion when grading is halted during rainy weather. Before work is stopped, a positive gradient away from the slopes must be established to carry the

surface runoff water away from the slopes to areas where erosion and sediment can be controlled. Concrete lined drainage facilities should be constructed above all cut and fill slopes where the natural drainage is directed toward the slopes from large drainage areas above. The purpose of the drainage facilities is to divert the excess surface runoff from the slopes and, consequently, minimize sloughing or erosion of the slope surfaces.

After the completion of the slope grading, erosion protection must be provided on all soil surfaces. Slope planting, preferably with deep-rooted native plants, must be completed on all exposed surfaces of cut and fill slopes. Graded slopes should not be left exposed through a winter season without the completion of erosion control measures and slope planting.

Surface Drainage

A very important factor affecting the performance of structures and surrounding flatwork is the proper design, implementation, and maintenance of surface drainage, as well as maintaining uniform moisture conditions around the structures and improvements. The site soils are considered to be highly expansive and subject to volume changes due to variations in moisture content. Ponded water will cause swelling and/or loss of soil strength and may also seep under structures. Should surface water be allowed to seep under the structures, differential foundation movement resulting in structural damage and/or standing water under the slab will occur. This may cause dampness to the floor which may result in mildew, staining, and/or warping of floor coverings. To minimize the potential for the above problems, dampproofing, waterproofing and foundation drainage should be provided as required by Section 1805 of the 2019 CBC. In addition, the following surface drainage measures are recommended and must be maintained by the property owner in perpetuity:

a) Positive building pad slopes and drainage must be provided by the project Civil Engineer to remove all storm water from the pad and to prevent storm and/or irrigation water from ponding adjacent to the structure foundations. The finished pad grade around the structures should be compacted and sloped 5% away from the exterior foundations and as required in Section 1804.4 of the 2019 CBC and be directed to yard swales and drainage outlets. Earth swales should slope a minimum of 2% to suitable outlet.

b) Enclosed or trapped planter areas adjacent to the structure foundations should be avoided if possible. Where enclosed planter areas are constructed, these areas must be provided with adequate measures to drain surface water (irrigation and rainfall) away from the foundation. Positive surface gradients and/or controlled drainage area inlets should be provided. Care should be taken to adequately slope surface grades

away from the structure foundations and into area inlets. Drainage area inlets should be piped to a suitable discharge facility.

c) Adequate measures for storm water discharge from the roof gutter downspouts must be provided by the project Civil Engineer and maintained by the property owners at all times, such that no water is allowed to pond next to the structure. Closed pipe discharge lines and/or splash blocks should be connected to downspouts and discharged into a suitable drainage swales, bio-filtration basins and storm drain facilities.

d) Site drainage should be designed by the project Civil Engineer. Civil engineering, hydraulic engineering, and surveying expertise are necessary to design proper surface drainage to assure that the flow of water is directed away from the foundations.

e) Over-irrigation of plants is a common source of water migrating beneath a structure. Consequently, the amount of irrigation should not be any more than the amount necessary to support growth of the plants. Foliage requiring little irrigation (drip system) is recommended for the areas immediately adjacent to the structures.

f) Landscape mounds or concrete flatwork should not be constructed to block or obstruct the surface drainage paths. The Landscape Architect or other landscaper should be made aware of these landscaping recommendations and should implement them as designed. The surface drainage facilities should be constructed by the contractor as designed by the Civil Engineer.

Foundations

Based on the results of the field and laboratory investigation, the site's foundation soils are considered to be highly expansive and subject to differential heave and shrink movements. Provided that the residential building pads are constructed in accordance with the "Grading" section above, we recommend the single-family homes be supported by properly designed and constructed uniformly thickened post-tensioned slab foundation systems. Foundation recommendations are presented below.

Post-tensioned slabs should be a minimum 12 inches in thickness (for uniform thickness slabs) and designed using the following criteria which is based on the design method of the "Standard Requirements for Design of Shallow Post-Tensioned Concrete Foundations on Expansive Soils", dated May 2008, Third Edition, prepared by the Post Tensioning Institute:

Edge Moisture Variation Distance:

e_m (Edge Lift)	=	4.2 feet
e_m (Center Lift)	=	6.2 feet

Differential Movement:

y_m (Edge Lift)	=	3.5 inches
y_m (Center Lift)	=	-2.2 inches

Estimated Differential Settlement: = 0.75 inches

In addition to the recommendations and guidelines in the Third Edition by the PTI, the following recommendations should also be incorporated into the design and construction for the above structural mat foundation systems:

a) An allowable bearing capacity of 1,000 p.s.f. may be utilized and may be increased by one-third to resist short-term wind and seismic loading.

b) To resist lateral loading, a coefficient of friction between the perimeter concrete thickened edge and the soil of 0.30 may be used.

c) All areas to receive slabs should be thoroughly soaked to a depth of 12 inches prior to placing the underslab components. This work should be performed under the observation of the Soil Engineer and approved prior to vapor barrier and concrete placement.

d) The reinforcement and/or cables shall be placed in the center of the slab unless otherwise designated by the Structural Engineer.

e) A vapor retarder membrane should be installed between the prepared building pad and the interior slab to minimize moisture condensation under the floor coverings and/or upward vapor transmission. The vapor barrier membrane should be a minimum 15-mil extruded polyolefin plastic that complies with ASTM E1745 Class A and have a permeance of less than 0.01 perms per ASTM E96 or ASTM F1249. It is noted that polyethylene films (visqueen) do not meet these specifications. The vapor barrier must be adequately lapped and taped/sealed at penetrations and seems in accordance with ASTM E1643 and the manufacturer's specifications. The vapor retarder must be placed continuously across the slab area.

f) The slabs should be thickened at the perimeter to extend below interior pad grade at least 6 inches for a width of 12 inches to create frictional resistance for lateral loading, to provide additional edge rigidity, and to minimize moisture infiltration under the slab.

g) Water vapor migrating to the surface of the concrete can adversely affect floor covering adhesives. Provisions should be provided in the concrete mix design to minimize moisture emissions. This should include the selection of a water-cement ratio which inhibits water permeation (0.45 max). Additional suitable admixtures to limit water transmission may also be utilized. The slabs should not be subjected to rainfall or cleaning water prior to placement of the floor coverings. In addition, we recommend that a Type I/II cement be utilized in the concrete mix to provide an additional protection against sulfate attack.

h) Exterior porches, garages and attached covered patios areas should also be designed as part of the same post-tension foundation system.

i) We recommend that appropriate provisions be provided by the Structural Engineer and Contractor to minimize slab cracking, such as curing measures and/or admixtures to minimize concrete shrinkage and curling. American Concrete Institute methods and guidelines of curing, such as wet curing or membrane curing, are recommended to minimize drying shrinkage cracking.

j) The foundation plans, specifications, calculations and concrete mix designs should be provided to the Structural Engineer and us for review prior to construction to ensure conformance with the above recommendations.

Slab-on-Grade Construction

Exterior concrete slabs/flatwork, including pedestrian sidewalks, driveways and non-structural detached patios and general flatwork may experience some cracking due to finishing and curing methods as well as from heaving or shrinking from moisture variations within the underlying clay soils. We should note that City maintained curbs, gutters, sidewalks and driveway aprons should be designed and constructed per the City of Vacaville Standards, Specifications and Plans. To reduce the potential cracking of the slabs-on-grade, the following recommendations are made:

a) All areas to receive slabs should be thoroughly wetted and soaked to seal any desiccation cracks prior to placing concrete. This work should be done under the observation of the Soil Engineer.

b) Slabs should be underlain by a minimum of 4 inches of angular gravel or clean crushed rock material placed between the finished subgrade and the slabs to serve as a capillary break between the subsoil and the slab. The gravel should not have more that 10% passing the No. 4 sieve per CBC Section 1805.4.1.

c) Driveway slabs should be a minimum of 5 inches thick and reinforced with a minimum of No. 4 rebar spaced 18 inches center to center, each way. Exterior pedestrian walkways should be a minimum of 4 inches thick with #3 rebar at 18 inches on center each way. Additional concrete pavement recommendations are provided in the "Pavement Areas" section of this report. The actual slab thickness and reinforcement should be determined by the project Structural Engineer in accordance with the structural requirements and the anticipated loading conditions. The reinforcement shall be placed in the center of the slab unless otherwise designated by the design engineer.

d) Slabs for driveways, and exterior flatwork should be placed structurally independent of the foundations. A 30-pound felt strip, expansion joint material, or other positive separator should be provided around the edge of all floating slabs to prevent bonding to the foundation. As an added measure to minimize vertical deflections between the foundation and exterior slabs, rebar doweling can be provided. Details should be provided by the Structural Engineer.

e) Slabs should be provided with crack control saw cut joints, tool joints or other methods to allow for expansion and contraction of the concrete. In general, contraction joints should be spaced no more than 20 times the slab thickness in each direction. The layout of the joints should be determined by the project Structural Engineer and/or Architect.

f) To minimize moisture infiltration under slabs where located adjacent to landscape areas, we recommend that slabs be thickened at the edges to extend below the aggregate base layer to the soil subgrade for a minimum width of 6 inches.

g) Curing of slabs should follow the guidelines provided by the American Concrete Institute and the CBC to minimize shrinkage cracking.

Pavement Areas

The roadways are anticipated to consist of either asphalt concrete (AC) or Portland cement concrete (PCC) surfaces. Recommendations for both pavement surfaces are presented below. We emphasize

that the performance of the pavement is critically dependent upon adequate and uniform compaction of the subgrade soils, as well as engineered fill and utility trench backfill within the limits of pavements. Pavements will typically have poor performance and shorter life where water is allowed to migrate into the aggregate base and subgrade soils. The main source of water into a pavement section is landscape planters constructed within or adjacent to pavement areas. Where this is planned, it is recommended to extend the curbs into the soil subgrade at least 2 inches. The construction of all pavements should conform to the requirements set forth by the latest Standard Specifications of the Department of Transportation of the State of California (Caltrans) and the City of Vacaville.

R-Value: A composite bulk sample was obtained of the near surface soils within the planned roadway that is relatively representative of the anticipated subgrade soils. The sample was tested in accordance with the California Test Method 301 to determine the R-Value for the site soils. An R-Value of 7 was determined for the sample as shown in the Appendix.

Preparation of Subgrade: After underground utilities have been placed in the areas to receive pavement and removal of excess material has been completed, the upper 12 inches of the subgrade soil shall be scarified, moisture conditioned and compacted to a minimum relative compaction of 95% at a moisture content at 3% or more above optimum in accordance with the grading recommendations specified in this report. Prior to placement of aggregate baserock, it is recommended that the subgrade be proof rolled and observed for deflection by the Soils Engineer. Should deflection and/or pumping conditions be encountered, stabilization recommendations, such as use of Tensar NX750 geogrid or lime treatment, will be provided by the Geotechnical Engineer based on actual field conditions.

Aggregate Base: Prior to placement of aggregate base, subgrade separation fabric must be placed on the subgrade per City Standard CS 7-02 and 7-03. All aggregate base material placed subsequently should also be compacted to a minimum relative compaction of 95% based on the ASTM Test Procedure D1557. Aggregate base should be crushed and angular and meet the minimum requirements of Caltrans Class 2 per Section 26. The recommended aggregate base thicknesses for asphalt concrete pavements are noted in the table below. The minimum aggregate base thickness for PCC roadway pavements is 6 compacted inches.

Asphalt Concrete: Asphalt concrete shall conform with Section 39 of Caltrans Standard Specifications and shall be per the City of Vacaville Standards. Based on an R-Value of 7 and a range of traffic indices provided by the City of Vacaville Table 3.1, the recommended pavement sections were calculated in accordance with Topic 608 of the California Department of Transportation Highway Design Manual. The appropriate traffic index (TI) and any minimum

pavement sections should be determined by the Civil Engineer in conformance with the City of Vacaville Specifications.

Traffic Condition	Traffic Index (TI)	Asphalt Concrete (inches)	Class II Aggregate Base[1] (inches)
Residential Local Streets	6.0	3.5	12.0
Collector	8.0	4.5	18.0

NOTES:
(1) Minimum R-Value = 78 per Section 26
(2) All layers in compacted thickness to CalTrans Standard Specifications.

Portland Cement Concrete: Where PCC pavement areas are utilized, the concrete should be poured on the compacted aggregate base layer. The concrete section should be a minimum of 6 inches thick and reinforced with No. 4 rebar at 16 inches on center each way, or as determined by the project Structural Engineer. City maintained PCC sections, such as streets and driveway aprons, should be designed and constructed per City of Vacaville Standards, Specifications and Plans. Driveway slabs should be designed and constructed per the recommendations in the "Slab-on-Grade" section of this report.

Retaining Walls

Any retaining walls that are to be incorporated into the project should be designed to resist lateral pressures exerted from a media having an equivalent fluid weight as follows:

Gradient of Back Slope	Equivalent Fluid Weight (p.c.f.)			Coefficient of Friction
	Unrestrained Condition (Active)	Restrained Condition (At Rest)	Passive Resistance	
Horizontal	60	75	200	0.30
2:1	70	85	200	0.30

It should be noted that the effects of any surcharge or compaction loads behind the walls must be accounted for in the design of the walls. We recommend that the project Structural Engineer use the formula $P_Q = QHKa$ where Q = uniform surcharge load in psf, Ka = 0.5, and H = wall height. Because the surcharge pressure acting on the retaining wall is considered relatively uniform, the resultant force P_Q should be applied at mid-height of the wall.

Per Section 1803.5.12 of the 2019 California Building Code, dynamic lateral earth pressures on retaining walls supporting more than 6 feet of backfill in height are required. Based on the

Mononobe-Okabe & Seed-Whitman equations, a total unit weight of 120 pcf and a Kh of ½ PGAm, an earthquake load of $15.5H^2$ should be applied at 1/3H where H = wall height, from the bottom of the wall is applicable.

Low height retaining walls (less than 6 feet), including dry stack non-mortared walls, may be founded on continuous spread footings that extend to a minimum depth of 24 inches below lowest adjacent pad grade (i.e., trenching depth). At this depth, the recommended design bearing pressure for continuous and isolated footings should not exceed 2,000 p.s.f. due to dead plus live loads. The above allowable pressures may be increased by 1/3 due to all loads which include wind and seismic. All foundations must be adequately reinforced to provide structural continuity and resist the anticipated loads as determined by the project Structural Engineer. To accommodate lateral building loads, the passive resistance of the foundation soil can be utilized. The passive soil pressures can be assumed to act against the front face of the footing below a depth of 1 foot below the ground surface. It is recommended that a passive pressure equivalent to that of a fluid weighing 200 p.c.f. be used. For design purposes, an allowable friction coefficient of 0.30 can be assumed at the base of the spread footings. These two modes of resistance should not be added unless the frictional component is reduced by 50 percent since the mobilization of the passive resistance requires some horizontal movement, effectively reducing the frictional resistance.

The above criteria are based on fully drained conditions. In order to achieve fully-drained conditions, a gravel drainage filter blanket should be placed behind the wall. The gravel blanket should be a minimum of 12 inches thick and should extend to within 12 inches of the surface and capped with compacted soil. If the excavated area behind the wall exceeds 12 inches, the entire excavated space behind the 12-inch blanket should consist of compacted engineered fill or blanket material. The gravel drainage blanket material may consist of either granular crushed rock or drainpipe fully encapsulated in geotextile filter fabric (Mirafi 140N or equivalent) or Class II permeable material that meets CalTrans Specification, Section 68. A 4-inch diameter SDR35 perforated drainpipe should be installed in the bottom of the drainage blanket and should be underlain by 4 inches of filter type material. Piping with a minimum gradient of 2% should be provided to discharge water that collects behind the walls to an adequately controlled discharge system away from the structure foundations.

If mechanically stabilized earth, segmental block retaining walls such as Anchor, Basalite or Keystone walls are utilized, the design and construction of these proposed flexible modular retaining wall systems should conform to the recommendations of the manufacturer and the National Concrete Masonry Association (NCMA). The following soil parameters would be applicable for design using on-site soil materials within the reinforced, retained and bearing zones: φ = 22 degrees, c = 250 p.s.f., γ = 120 p.c.f. The wall backfill within the reinforced zone should consist of Caltrans Class 2

permeable materials compacted to a minimum of 90%. The wall embedment should conform to the recommendations by the manufacturer or NCMA.

Soundwalls

Non-mortared dry stacked masonry block sound walls and/or any free standing conventional grouted CMU sound walls should be founded on pier foundations with inter-connecting, reinforced tie beams. Piers should be a minimum of 12 inch diameter and 8 feet deep designed on the basis of skin friction acting between the soil and that portion of the pier that extends below a depth of 2 feet below finished grade. For the soils at the site, an allowable skin friction value of 400 p.s.f. can be used for combined dead and live loads, below the upper 2 feet from grade. This value can be increased by one-third for total loads which include wind or seismic forces. Spacing should be determined as required by the load distribution, but minimum spacing should not be less than 3 pier diameters, center to center. Maximum spacing and the minimum depth of piers is to be determined by the Structural Engineer. To resist lateral loads, the passive resistance of the soil can be used. The soil passive pressures can be assumed to act against the lateral projected area of the pier described by the vertical dimension of twice the pier diameter. It is recommended that a passive pressure equivalent of that of a fluid weighing 200 p.c.f. be used below 2 feet.

Underground Utility and Excavations

Groundwater was encountered at a depth of 20 feet below the existing ground surface. Depending on the time of year of underground construction, shallower groundwater may be encountered, especially in deeper utilities. Temporary dewatering and shoring are the responsibility of the Contractor.

Should groundwater be encountered, the utility construction should begin at its lowest point and proceed uphill. The utility trench should be over-excavated 6 to 12 inches below the Vacaville required pipe bedding material. Open-graded 1.5-inch crushed aggregate should be placed in the bottom of the trench followed by the City standard bedding material. A sump area should be excavated at the lowest point of the open excavation/trench to facilitate pumping of collected water. The collected water should be pumped to a City approved discharge facility.

Utility excavations extending underneath all traffic areas must be backfilled with native or approved import material and compacted to relative compaction of 90% to within 12 inches of the subgrade. The upper 12 inches should be compacted to 95% relative compaction in accordance with Laboratory Test Procedure ASTM D1557. Backfilling and compaction of these excavations must meet the requirements set forth by the City of Vacaville, Department of Public Works.

Applicable safety standards require that excavations in excess of 5 feet must be properly shored or that the walls of the excavation slope back to provide safety for installation of lines. If excavation wall sloping is performed, the inclination should vary with the soil type. The soils at the site are considered to be OSHA Type C. During excavation operations, the underground contractor should consult with the Soil Engineer for additional recommendations as deemed necessary.

With respect to state-of-the-art construction or local requirements, utility lines are generally bedded with granular materials. These materials can convey surface or subsurface water beneath the structures. It is, therefore, recommended that all utility trenches which possess the potential to transport water be sealed with a compacted impervious cohesive soil material or lean concrete where the trench enters/exits the building perimeter. This impervious seal should extend a minimum of 2 feet away from the building perimeter.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. It should be noted that it is the responsibility of the owner or his representative to notify ***KC ENGINEERING CO.***, in writing, a minimum of two working days before any clearing, grading, or foundation excavation operations can commence at the site.

2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings and from a reconnaissance of the site. Should any variations or undesirable conditions be encountered during the development of the site, ***KC ENGINEERING CO.***, will provide supplemental recommendations as dictated by the field conditions.

3. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are brought to the attention of the Architect and Engineer for the project and incorporated into the plans and that the necessary steps are taken to see that the Contractor and Subcontractors carry out such recommendations in the field.

4. At the present date, the findings of this report are valid for the property investigated. With the passage of time, significant changes in the conditions of a property can occur due to natural processes or works of man on this or adjacent properties. In addition, legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may render this report invalid, wholly or partially. Therefore, this report should not be considered valid after a period of two (2) years without our review, nor should it be used, or is it applicable, for any properties other than those investigated.

5. Not withstanding, all the foregoing applicable codes must be adhered to at all times.

APPENDIX

Aerial Vicinity Map

Site Plan

Geologic Map

Log of Test Borings

Subsurface Exploration Legend

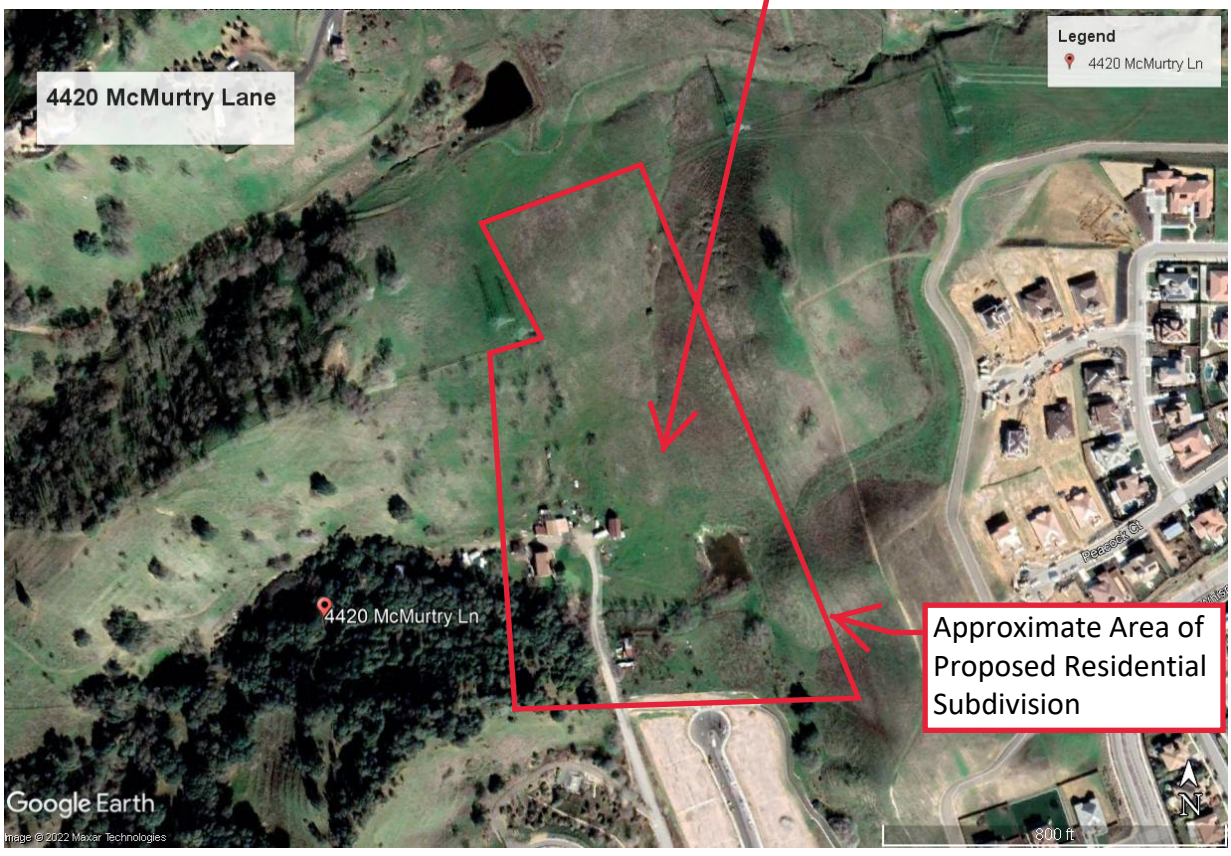
Laboratory Test Results

US Seismic Design Report

Typical Fill Slope Detail

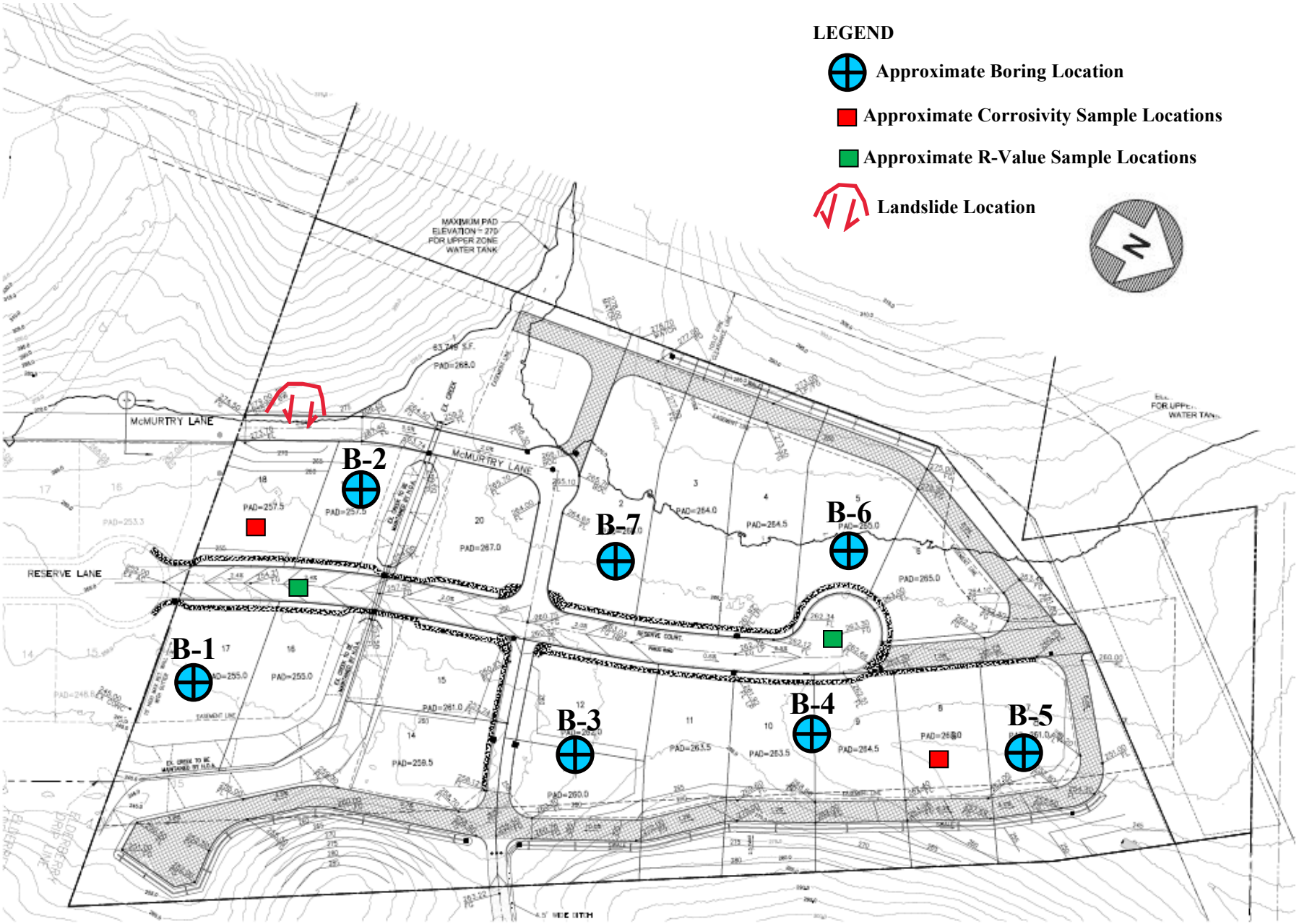
Typical Cut Slope Buttress Detail





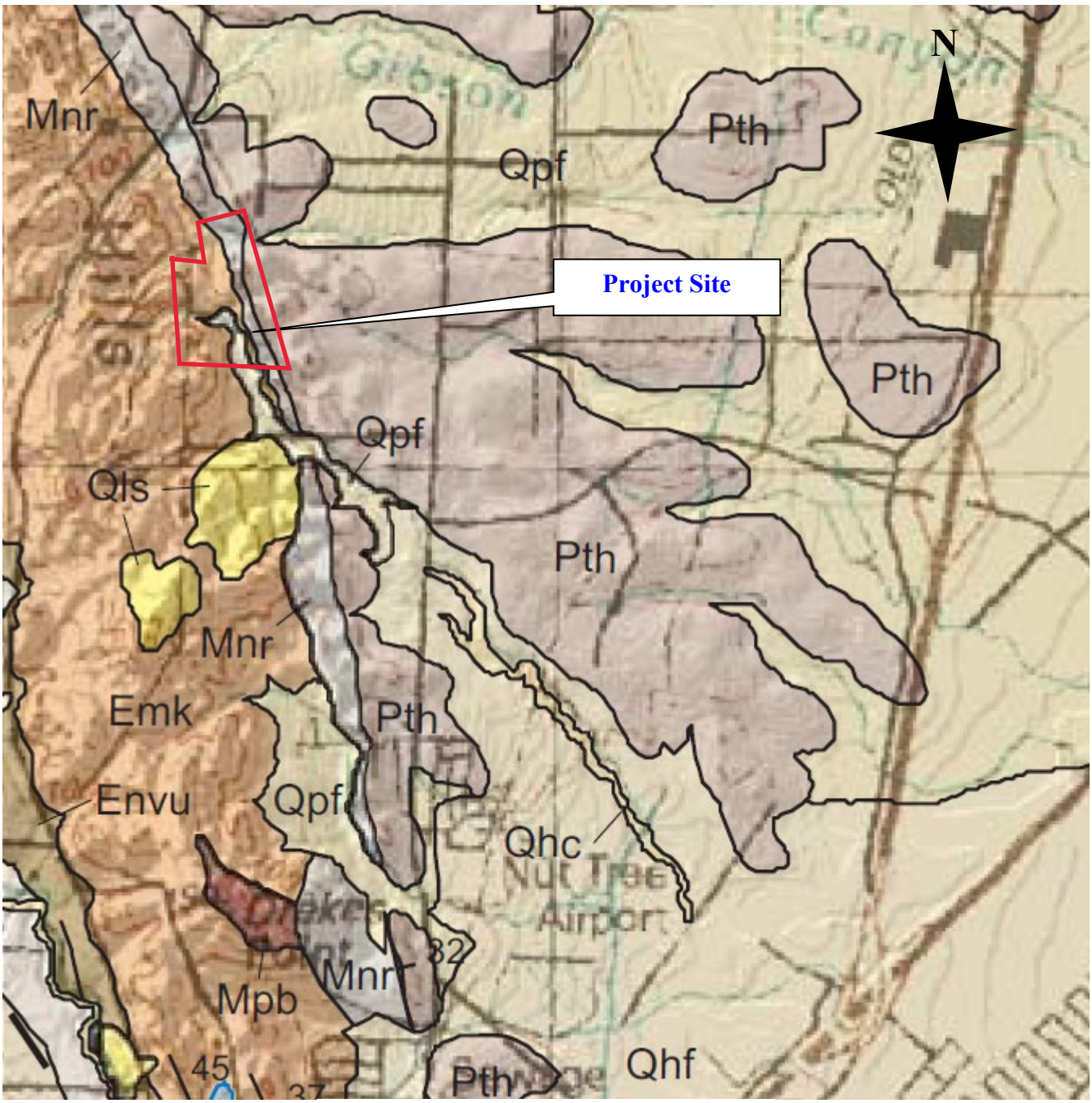
KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688
707.447.4025

Project No. VV5308
Proposed Residential Subdivision
4420 McMurtry Lane, Vacaville, CA
Figure 1 – AERIAL VICINITY MAP



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4420 McMurtry Lane, Vacaville, California
Figure 2 – SITE PLAN



PRELIMINARY GEOLOGIC MAP OF
THE LODI 30' x 60' QUADRANGLE, CALIFORNIA

Markley Formation

Emk | Emku | Emkl

Qpf Alluvial fan deposits

Mnr Neroly Sandstone

Pth Tehama Formation

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Project No. VV5308
Proposed Residential Subdivision
4420 McMurtry Lane, Vacaville, CA
Figure 3 – GEOLOGIC MAP

LOG OF TEST BORING
BORING NO.: 1

PROJECT: Proposed Residential Subdivision
CLIENT: Suresh Paranjpe
LOCATION: 4420 McMurtry Lane, Vacaville, CA
DRILLER: Cal-Nev
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ :

PROJECT NO.: VV5308
DATE: 1/25/22
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 4"
FINAL: ▼ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0	1-0			Black CLAY w/ Sand; moist, firm to stiff.	CH					LL=47 PI=29 %<200=71
	1-1			Brown Sandy CLAY; moist, stiff.	CL	9	109.0	21.0	2.0	ϕ=24.8° c=403 psf
5				Dark Reddish Brown Sandy CLAY; moist, very stiff.	CL					
	1-2					21	112.5	17.5	3.5	
10				Brown Clayey SAND w/ Few Gravels; moist, medium dense to dense.	SC					
	1-3					29	108.8	12.7	4.5	%<200=41
15				Grayish Brown SANDSTONE; highly weathered, weak.	Rx					
	1-4					50-5"				
				Boring Trminated @ 18'. No Groundwater Encountered.						
20										
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

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Figure 4

LOG OF TEST BORING
BORING NO.: 2

PROJECT: Proposed Residential Subdivision
CLIENT: Suresh Paranjpe
LOCATION: 4420 McMurtry Lane, Vacaville, CA
DRILLER: Cal-Nev
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ : 20'

PROJECT NO.: VV5308
DATE: 1/25/22
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 4"
FINAL: ▼ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Dark Brown CLAY; moist, firm to stiff.	CH					
	2-1			Brown Sandy CLAY; moist, stiff.	CL/CH	9	100.1	23.8	1.25	UCC=1,351 psf
5	2-2					10	103.1	20.5	2.0	UCC=2,531 psf
				Dark Yellowish Brown Sandy CLAY; moist, very stiff.	CL					
10	2-3					16	106.0	14.7	4.0	%<200=54
15	2-4			As Above.		23	112.5	18.6	4.5+	
20				▽	Rx					
	2-5			Olive Silty CLAYSTONE; highly weathered, weak.		54	102.3	23.4		
				Boring Terminated @ 21.5'. Groundwater Encountered @ 20'.						
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

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Figure 5

LOG OF TEST BORING
BORING NO.: 3

PROJECT: Proposed Residential Subdivision
CLIENT: Suresh Paranjpe
LOCATION: 4420 McMurtry Lane, Vacaville, CA
DRILLER: Cal-Nev
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ :

PROJECT NO.: VV5308
DATE: 1/25/22
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 4"
FINAL: ▼ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Dark Brown CLAY w/ Sand; moist, firm to stiff.	CH					
				Light Brown SANDSTONE; highly weathered, weak.	Rx					
	3-1					50-5"				
5				White SILTSTONE/ TUFF; highly weathered, weak.						
	3-2					50-1"	82.6	24.7		
				Boring Terminated @ 8'. No Groundwater Encountered.						
10										
15										
20										
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

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Figure 6

LOG OF TEST BORING
BORING NO.: 4

PROJECT: Proposed Residential Subdivision
CLIENT: Suresh Paranjpe
LOCATION: 4420 McMurtry Lane, Vacaville, CA
DRILLER: Cal-Nev
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ :

PROJECT NO.: VV5308
DATE: 1/25/22
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 4"
FINAL: ▼ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0	4-0			Dark Brown CLAY w/ Sand; moist, firm to very stiff.	CH					LL=64 PI=45 %<200=81
	4-1			White SILTSTONE/ TUFF; highly weathered, friable to weak.	Rx	39	90.3	23.9		
5	4-2			As Above.		50-5"				
10	4-3			As Above.		50-5"				
				Boring Terminated@ 10.5;. No Groundwater Encountered.						
15										
20										
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

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Figure 7

LOG OF TEST BORING
BORING NO.: 5

PROJECT: Proposed Residential Subdivision
CLIENT: Suresh Paranjpe
LOCATION: 4420 McMurtry Lane, Vacaville, CA
DRILLER: Cal-Nev
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ :

PROJECT NO.: VV5308
DATE: 1/25/22
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 4"
FINAL: ▼ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0	5-1			Dark Brown CLAY; wet, firm.	CH					
				White SILTSTONE; highly weathered, weak.	Rx					
5	5-2					50-5"				
				Boring Terminated @ 7'. No Groundwater Encountered.						
10										
15										
20										
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

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Figure 8

LOG OF TEST BORING
BORING NO.: 6

PROJECT: Proposed Residential Subdivision
CLIENT: Suresh Paranjpe
LOCATION: 4420 McMurtry Lane, Vacaville, CA
DRILLER: Cal-Nev
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ :

PROJECT NO.: VV5308
DATE: 1/25/22
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 4"
FINAL: ▼ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0	6-1			Brown Sandy Silty CLAY; wet, firm.	CL-ML					LL=20 PI=4 %<200=54
				Light Brown SILTSTONE; highly weathered, weak.	Rx					
5	6-2					50-4"				
				Boring Terminated @ 6'. No Groundwater Encountered.						
10										
15										
20										
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

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Figure 9

LOG OF TEST BORING
BORING NO.: 7

PROJECT: Proposed Residential Subdivision
CLIENT: Suresh Paranjpe
LOCATION: 4420 McMurtry Lane, Vacaville, CA
DRILLER: Cal-Nev
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ :

PROJECT NO.: VV5308
DATE: 1/25/22
ELEVATION: n/a
LOGGED BY: DVC
BORING DIAMETER: 4"
FINAL: ▼ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Dark Brown Sandy CLAY; very moist, firm to very stiff.	CL/CH					
	7-1			Brown SAND w/ Clay; moist, medium dense.	SC	25				
5				Light Brown SANDSTONE; highly weathered, weak.	Rx					
	7-2					50-5"				
10										
	7-3			As Above.		51				
				Boring Terminated @ 13.5'. No Groundwater Encountered.						
15										
20										
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

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Figure 10

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOLS		TYPICAL NAMES
COARSE GRAINED SOILS More than half of material is retained on the No. 200 Sieve	GRAVEL More than half of coarse fraction is larger than No. 4 sieve	Clean gravels (<5% fines)	GW		Well graded gravels, gravel-sand mixtures, little or no fines (Cu>4 & 1≤Cc≤3)
			GP		Poorly graded gravels, gravel-sand mixtures, little or no fines (Cu < 4 and/or 1>Cc>3)
		Gravel with fines (>12% fines)	GM		Silty gravels and gravel-sand-silt mixtures (PI<4 or below "A" line)
			GC		Clayey gravels and gravel-sand-clay mixtures (PI>7 & on or above "A" line)
	SAND Half or more of the coarse fraction is smaller than No. 4 sieve	Clean sands (<5% fines)	SW		Well graded sands, gravelly sands, little or no fines (Cu>6 & 1≤Cc≤3)
			SP		Poorly graded sands, gravelly sands, little or no fines (Cu<6 and/or 1>Cc>3)
		Sand with fines (>12% fines)	SM		Silty sands and gravel-sand-silt mixtures (PI<4 or below "A" line)
			SC		Clayey sands and gravel-sand-clay mixtures (PI>7 & on or above "A" line)
FINE GRAINED SOILS Half or more of the material passes the No. 200 Sieve	SILTS AND CLAYS Liquid Limit is less than 50%		ML		Inorganic silts with gravel and sand having slight plasticity (PI<4 or below "A" line)
			CL		Inorganic clays of low to med. plasticity with gravel and sand (PI>7 & on or above "A" line)
			OL		Organic silts and clays of low plasticity
	SILTS AND CLAYS Liquid Limit is 50% or more		MH		Inorganic elastic silts (PI below "A" line)
			CH		Inorganic clays of high plasticity, fat clays (PI on or above "A" line)
			OH		Organic silts and clays of medium to high plasticity
HIGHLY ORGANIC SOILS			Pt		Peat and other highly organic soils

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SAMPLER AND LAB TESTING LEGEND

- Auger
- Bulk Sample, taken from auger cuttings
- California Sampler
- Bulk/Grab Sample
- Pitcher
- Standard Penetration Test
- Shelby Tube
- No Recovery

LL=Liquid Limit (%)
PI=Plasticity Index
¦ =Friction Angle
C=Cohesion
UCC=Unconfined Compression
R value=Resistance Value
Consol=Consolidation Test

SOIL GRAIN SIZE

U.S. STANDARD SIEVE OPENINGS

		#200		#40		#10		#4	¾"		3"		12"
CLAY	SILT	SAND							GRAVEL			COBBLES	BOULDERS
		FINE		MEDIUM		COARSE			FINE		COARSE		
	0.002		0.075		0.425		2.00	4.75		19.0		75	300

SOIL GRAIN SIZE IN MILLIMETERS

RELATIVE DENSITY (Coarse-grained soils)

SANDS & GRAVELS	BLOWS/FOOT[1]
Very Loose	0 – 4
Loose	4 – 10
Medium Dense	10 – 30
Dense	30 – 50
Very Dense	> 50

CONSISTENCY (Fine-grained soils)

SILTS & CLAYS	STRENGTH[2]	BLOWS/FOOT[1]
Very Soft	< 500	0 – 2
Soft	500 – 1,000	2 – 4
Firm	1,000 – 2,000	4 – 8
Stiff	2,000 – 4,000	8 – 15
Very Stiff	4,000 – 8,000	15 – 30
Hard	> 8,000	>30

1 – Number of blows of 140 pound hammer falling 30 inches to drive a 2-inch O.D. split spoon sampler (ASTM D1586)
2 – Unconfined compressive strength in lb/ft^2 as determined by lab testing or approximated by the standard penetration test (ASTM D1586) or pocket penetrometer.

WEATHERING (Bedrock)

Fresh	No visible sign of decomposition or discoloration; rings under hammer impact
Slightly weathered	Slight discoloration inwards from open fractures; little or no effect on normal cementation; otherwise similar to Fresh
Moderately weathered	Discoloration throughout; weaker minerals decomposed; strength somewhat less than fresh rock but cores can not be broken by hand or scraped with knife; texture preserved; cementation little to not affected; fractures may contain filling
Highly weathered	Most minerals somewhat decomposed; specimens can be broken by hand with effort or shaved with knife; texture becoming indistinct but fabric preserved; faint fractures
Completely weathered	Minerals decomposed to soil but fabric and structure preserved; specimens can be easily crumbled or penetrated

STRENGTH (Bedrock)

Plastic	Very low strength
Friable	Crumbles easily by rubbing with fingers
Weak	An unfractured specimen will crumble under light hammer blows
Moderately strong	Specimen will withstand a few heavy hammer blows before breaking
Strong	Specimen will withstand a few heavy ringing blows and will yield with difficulty only dust and small flying fragments
Very strong	Specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments

BEDDING (Bedrock) SPACING (inches)

Very thickly bedded	> 48
Thickly bedded	24 to 48
Thin bedded	2.5 to 24
Very thin bedded	5/8 to 2.5
Laminated	1/8 to 5/8
Thinly laminated	<1/8

FRACTURING (Bedrock) SPACING (inches)

Very little fractured	> 48
Occasionally fractured	12 to 48
Moderately fractured	6 to 12
Closely fractured	1 to 6
Intensely fractured	5/8 to 1
Crushed	<5/8

Materials Testing, Inc.

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Client: Suresh Paranjpe
11150 S Riverwood Road
Portland, OR 97219

Project: Proposed Residential Subdivision
4420 McMurtry Lane, Vacaville, California

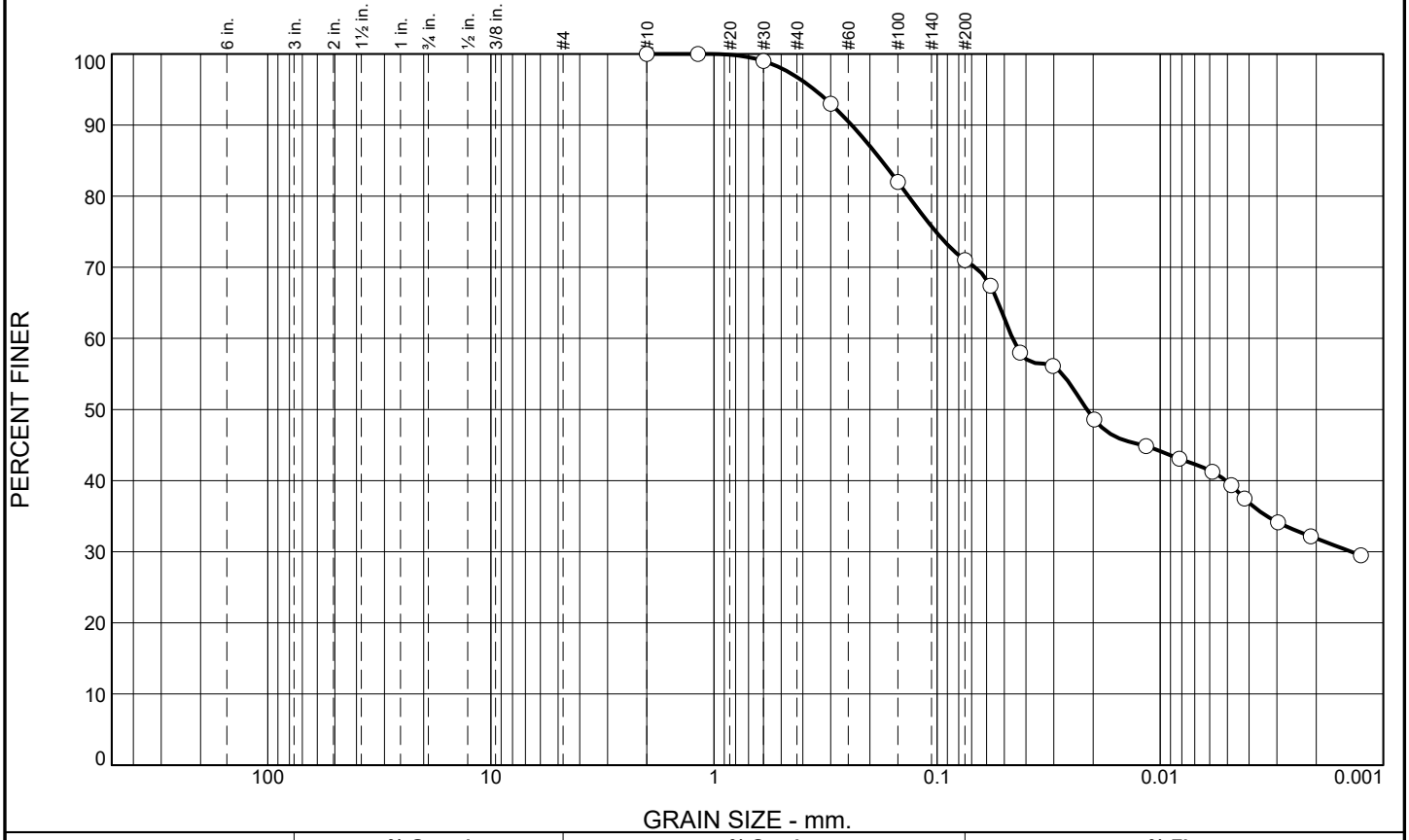
Client No.: VV5308
Figure No.: 0300-001
Date: 02/10/2022
Page No.: 1 of 1
Submitted by: KC Engineering
Date Sampled: 01/25/2022

Density of Soil in Place by the Drive-Cylinder Method (ASTM D2937) and Liquid Limit, Plastic Limit & Plasticity Index of Soils (ASTM D4318)

Sample #	Description	Dry Density p.c.f.	Moisture Content %	Liquid Limit	Plastic Limit	Plastic Index
1-0 @ 0.0'-2.0'	Black Clay with Sand (visual)	---	---	47	18	29
1-1 @ 3.0'	Brown Sandy Clay (visual)	100.9	21.0	---	---	---
1-2 @ 8.0'	Dark Reddish Brown Sandy Clay (visual)	112.5	17.5	---	---	---
1-3 @ 13.0'	Brown Clayey Sand (visual)	108.8	12.7	---	---	---
2-1 @ 2.0'	Dark Brown Clay (visual)	100.1	23.8	---	---	---
2-2 @ 6.0'	Brown Sandy Clay (visual)	103.1	20.5	---	---	---
2-3 @ 11.0'	Dark Yellowish Brown Sandy Clay (visual)	100.6	14.7	---	---	---
2-4 @ 16.0'	Dark Yellowish Brown Sandy Clay (visual)	112.5	18.6	---	---	---
2-5 @ 21.0'	Olive Silty Claystone (visual)	102.3	23.4	---	---	---
3-2 @ 7.0'	White Siltstone (visual)	82.6	24.7	---	---	---
4-0 @ 0.0'-2.0'	Dark Brown Clay with Sand	---	---	64	19	45
4-1 @ 2.5'	White Siltstone (visual)	90.3	23.9	---	---	---
6-1 @ 0.0'-3.0'	Brown Sandy Silty Clay	---	---	20	16	4

Tested by John Hubbard.
The samples were tested according to the referenced standard test procedures and relate only to the items inspected or tested.
Results are not transferable and shall not be reproduced, except in full, without written permission from MTI.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	3	26	31	40

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100		
#16	100		
#30	99		
#50	93		
#100	82		
#200	71		

* (no specification provided)

Material Description

Black Clay with Sand

Atterberg Limits

PL= 18 LL= 47 PI= 29

Coefficients

D_{90}= 0.2418 D_{85}= 0.1776 D_{60}= 0.0459
D_{50}= 0.0213 D_{30}= 0.0014 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO= A-7-6(19)

Remarks

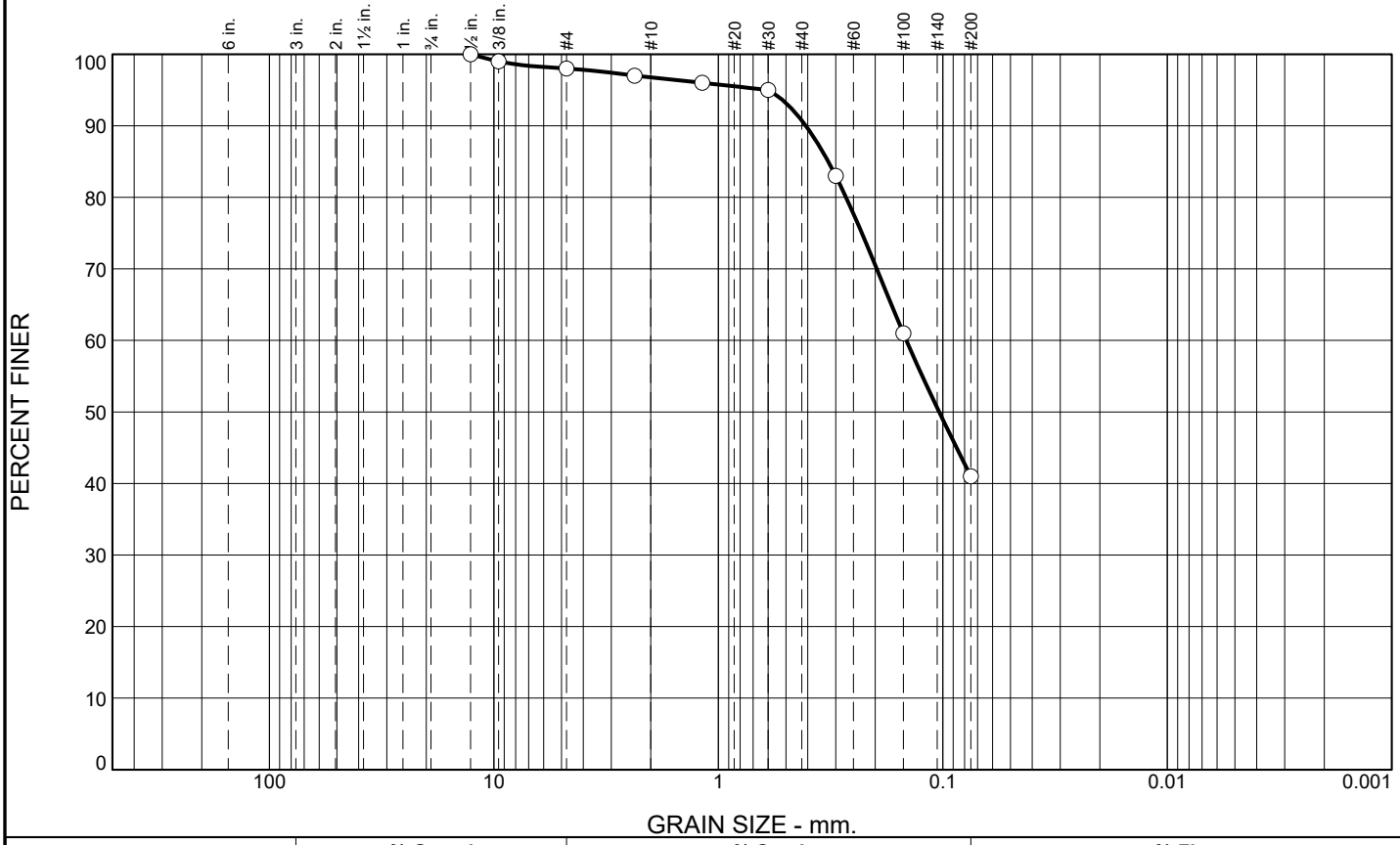
Material Tested in Accordance with ASTM D422.

Location: 1-0
Sample Number: 2 **Depth:** 0.0'-2.0' **Date:** 02/10/2022

Client: Suresh Paranjpe
Project: Proposed Residential Subdivision
4420 McMurtry Lane, Vacaville, California
Project No: VV5308 **Figure** 0300-002

Tested By: John Hubbard

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	2	1	6	50	41	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2"	100		
3/8"	99		
#4	98		
#8	97		
#16	96		
#30	95		
#50	83		
#100	61		
#200	41		

* (no specification provided)

Material Description

Brown Clayey Sand (visual)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4079 D_{85}= 0.3240 D_{60}= 0.1453
D_{50}= 0.1038 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO=

Remarks

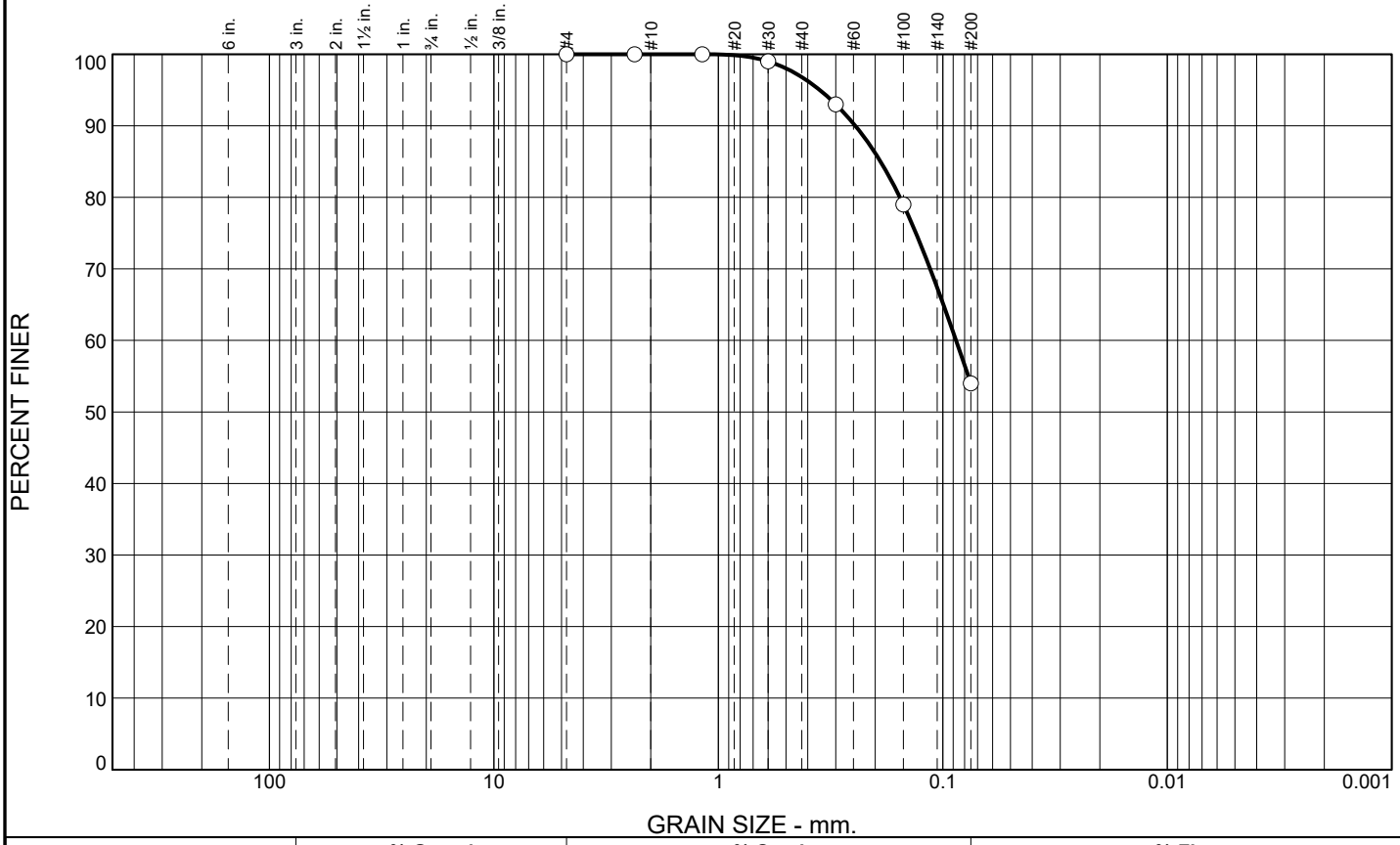
Material Tested in Accordance with ASTM D6913.

Location: 1-3
Sample Number: 5 **Depth:** 13.0' **Date:** 02/10/2022

Client: Suresh Paranjpe
Project: Proposed Residential Subdivision
4420 McMurtry Lane, Vacaville, California
Project No: VV5308 **Figure** 0300-003

Tested By: John Hubbard

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	3	43	54	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100		
#8	100		
#16	100		
#30	99		
#50	93		
#100	79		
#200	54		

* (no specification provided)

Material Description

Dark Yellowish Brown Sandy Clay (visual)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2454 D_{85}= 0.1897 D_{60}= 0.0873
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

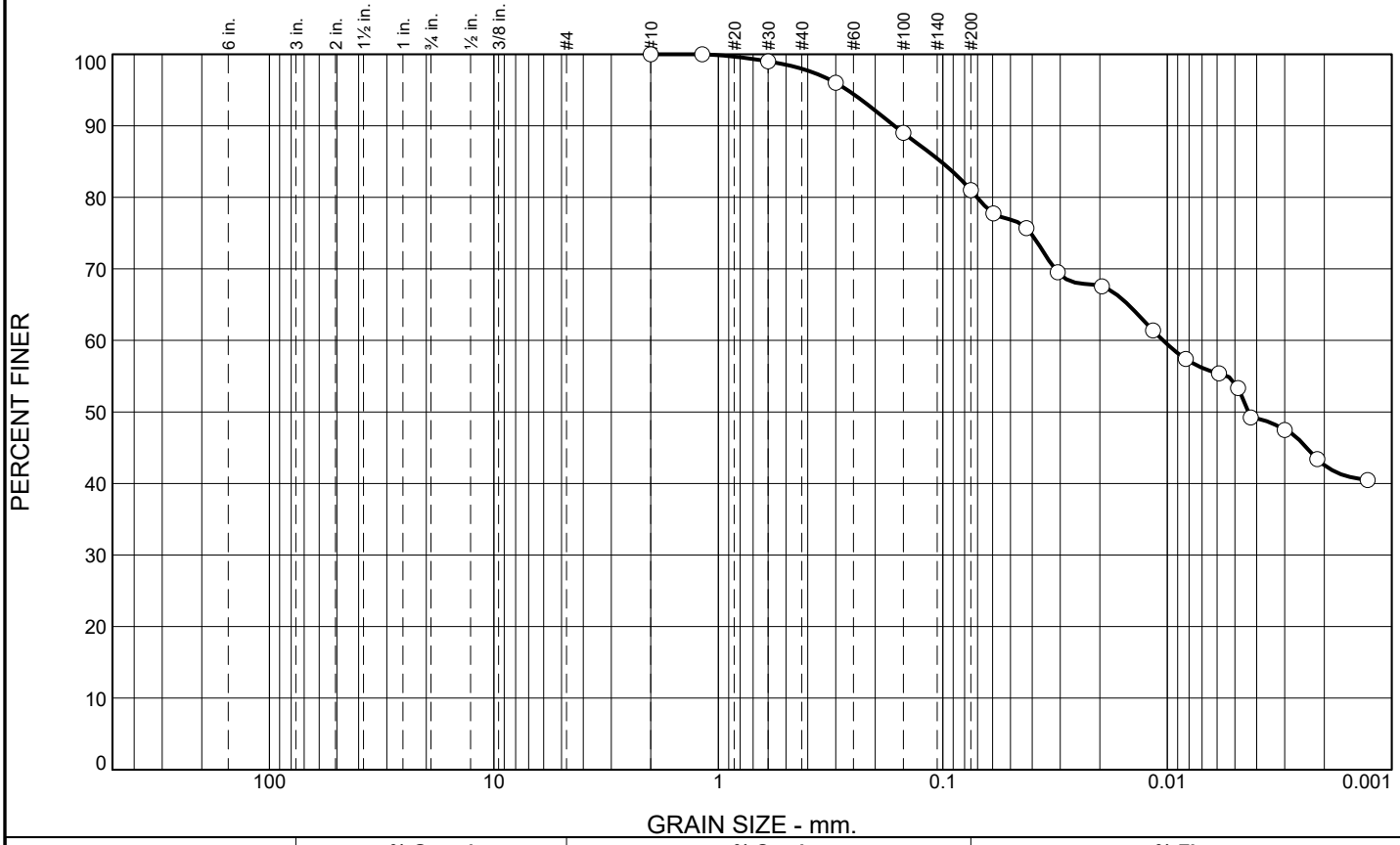
Material Tested in Accordance with ASTM D6913.

Location: 2-3
Sample Number: 8 **Depth:** 11.0' **Date:** 02/10/2022

Client: Suresh Paranjpe
Project: Proposed Residential Subdivision
4420 McMurtry Lane, Vacaville, California
Project No: VV5308 **Figure** 0300-004

Tested By: John Hubbard

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	2	17	27	54

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100		
#16	100		
#30	99		
#50	96		
#100	89		
#200	81		

* (no specification provided)

Material Description

Dark Brown Clay with Sand

Atterberg Limits

PL= 19 LL= 64 PI= 45

Coefficients

D_{90}= 0.1648 D_{85}= 0.1019 D_{60}= 0.0105
D_{50}= 0.0044 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO= A-7-6(38)

Remarks

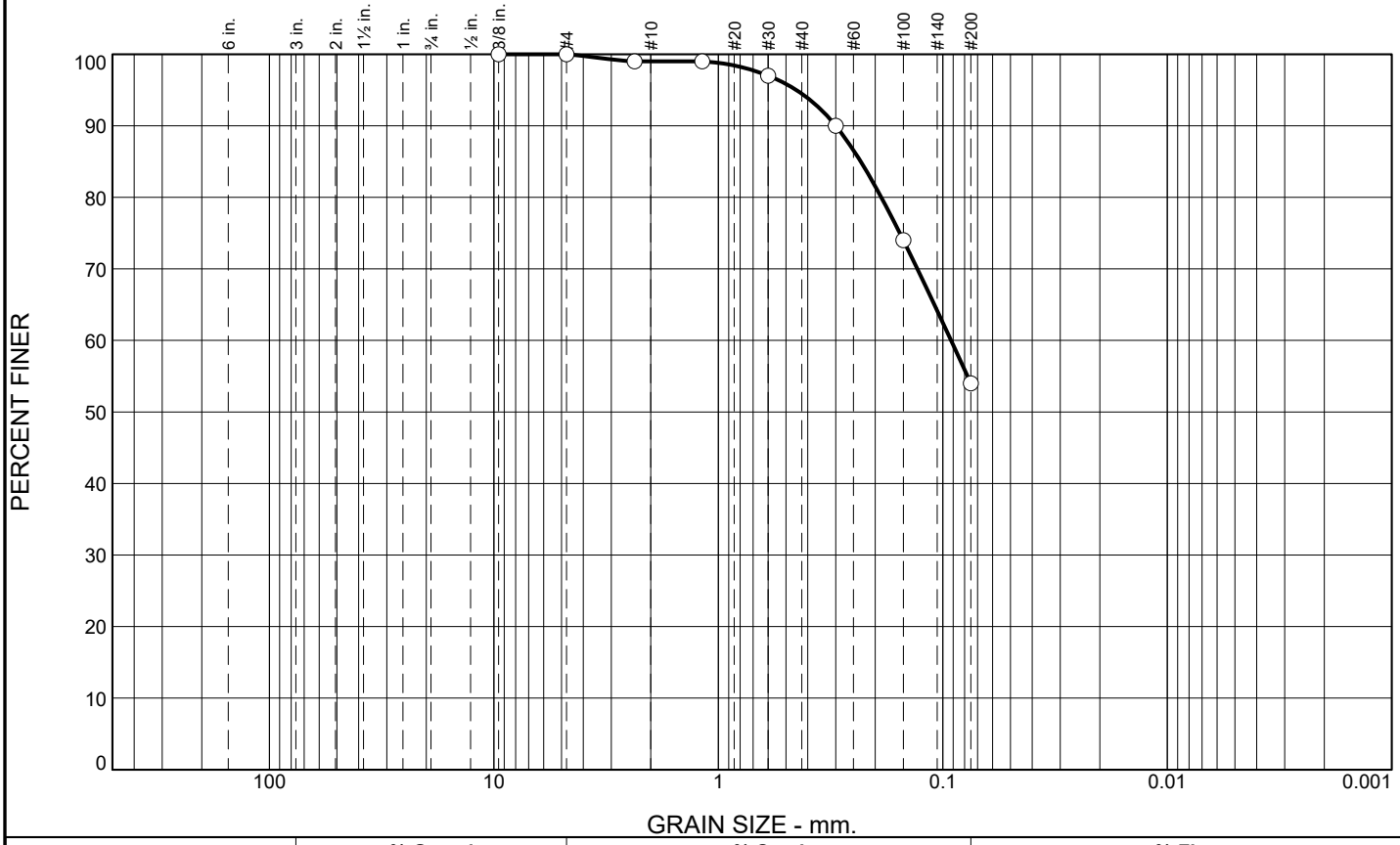
Material Tested in Accordance with ASTM D422.

Location: 4-0
Sample Number: 12 **Depth:** 0.0'-2.0' **Date:** 02/10/2022

Client: Suresh Paranjpe
Project: Proposed Residential Subdivision
4420 McMurtry Lane, Vacaville, California
Project No: VV5308 **Figure** 0300-005

Tested By: John Hubbard

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	1	5	40	54	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100		
#4	100		
#8	99		
#16	99		
#30	97		
#50	90		
#100	74		
#200	54		

* (no specification provided)

Material Description

Brown Sandy Silty Clay

Atterberg Limits

PL= 16 LL= 20 PI= 4

Coefficients

D_{90}= 0.3000 D_{85}= 0.2323 D_{60}= 0.0919
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL-ML AASHTO= A-4(0)

Remarks

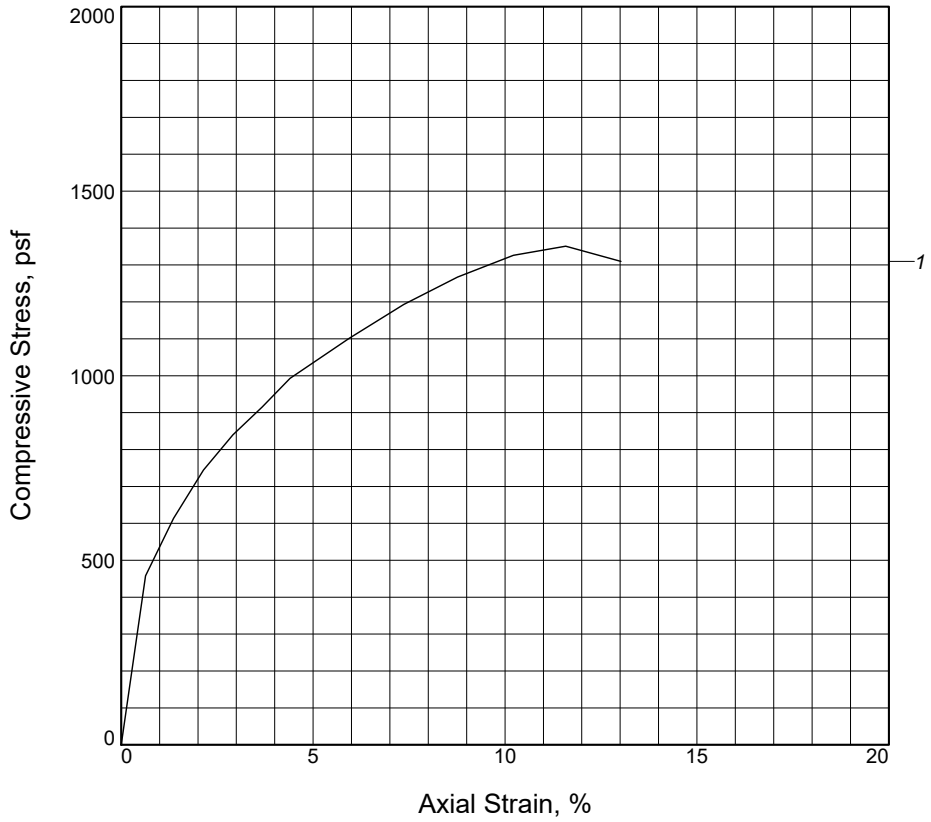
Material Tested in Accordance with ASTM D6913.

Location: 6-1
Sample Number: 15 **Depth:** 0.0'-3.0' **Date:** 02/10/2022

Client: Suresh Paranjpe
Project: Proposed Residential Subdivision
4420 McMurtry Lane, Vacaville, California
Project No: VV5308 **Figure** 0300-006

Tested By: Jack Bianchin

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	1351			
Undrained shear strength, psf	675			
Failure strain, %	11.6			
Strain rate, in./min.	0.075			
Water content, %	23.8			
Wet density, pcf	124.0			
Dry density, pcf	100.1			
Saturation, %	100.3			
Void ratio	0.6148			
Specimen diameter, in.	2.41			
Specimen height, in.	5.50			
Height/diameter ratio	2.28			

Description: Dark Brown Clay (visual)

LL =	**PL =**	**PI =**	**GS=** 2.59	**Type:** Tube

Project No.: VV5308
Date Sampled: 02/10/2022

Remarks:
Material Tested in Accordance with ASTM D2166.
Type of Failure - Columnar

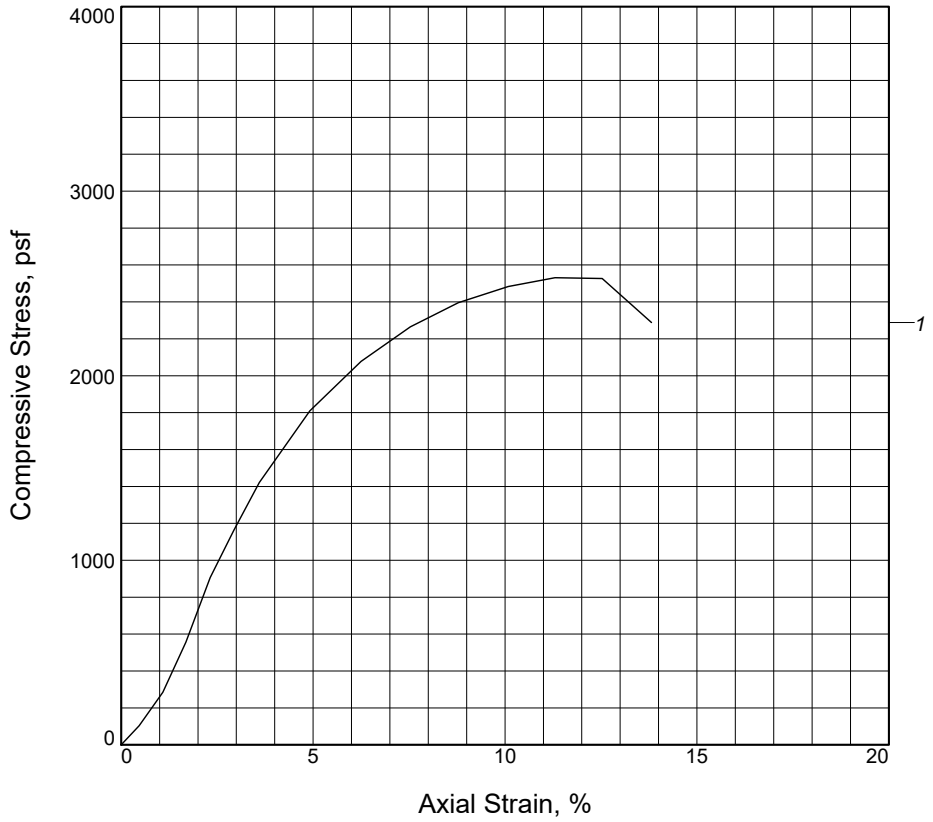
Figure 0300-007

Client: Suresh Paranjpe

Project: Proposed Residential Subdivision
4420 McMurtry Lane, Vacaville, California
Location: 2-1
Sample Number: 6 **Depth:** 2.0'

Tested By: Cindy Gooden

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	2531			
Undrained shear strength, psf	1266			
Failure strain, %	11.3			
Strain rate, in./min.	0.075			
Water content, %	20.5			
Wet density, pcf	124.2			
Dry density, pcf	103.1			
Saturation, %	83.4			
Void ratio	0.6832			
Specimen diameter, in.	2.41			
Specimen height, in.	6.00			
Height/diameter ratio	2.49			

Description: Brown Sandy Clay (visual)

LL =	**PL =**	**PI =**	**GS=** 2.78	**Type:** Tube

Project No.: VV5308
Date Sampled: 02/10/2022

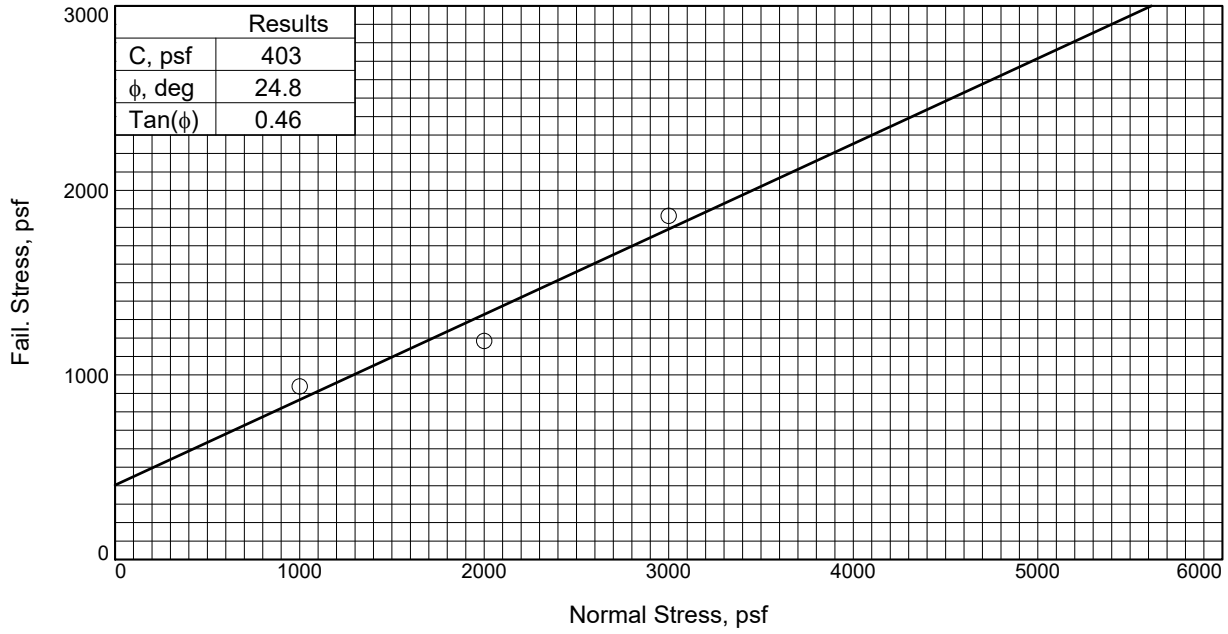
Remarks:
Material Tested in Accordance with ASTM D2166.
Type of Failure - Columnar

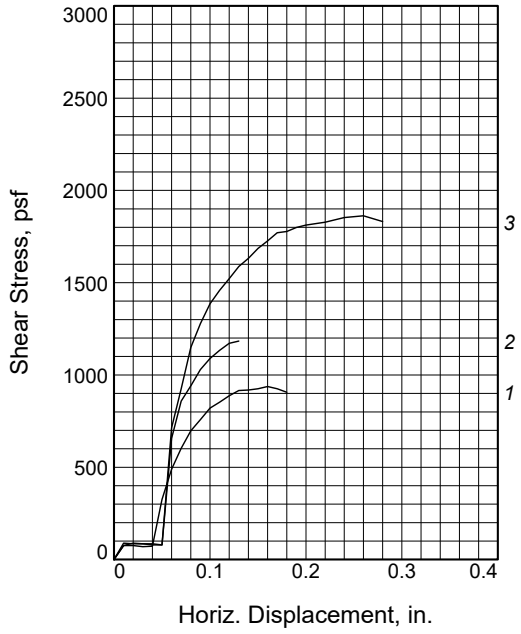
Figure 0300-008

Client: Suresh Paranjpe

Project: Proposed Residential Subdivision
4420 McMurtry Lane, Vacaville, California
Location: 2-2
Sample Number: 7 **Depth:** 6.0'

Tested By: John Hubbard





Sample No.		1	2	3
Initial	Water Content, %	20.8	20.8	20.8
	Dry Density, pcf	101.9	96.6	98.5
	Saturation, %	82.2	72.5	75.8
	Void Ratio	0.7026	0.7965	0.7622
	Diameter, in.	2.41	2.41	2.41
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	24.2	24.6	23.7
	Dry Density, pcf	101.8	95.0	93.0
	Saturation, %	95.4	82.7	76.2
	Void Ratio	0.7048	0.8265	0.8662
	Diameter, in.	2.41	2.41	2.41
	Height, in.	1.00	1.02	1.06
Normal Stress, psf		1000	2000	3000
Fail. Stress, psf		938	1184	1862
Displacement, in.		0.16	0.13	0.26
Ult. Stress, psf				
Displacement, in.				
Strain rate, in./min.		0.002	0.002	0.002

Sample Type: Tube
Description: Brown Sandy Clay (visual)

Specific Gravity= 2.78
Remarks: Material Tested in Accordance with ASTM D3080.

Figure 0300-009

Client: Suresh Paranjpe

Project: Proposed Residential Subdivision
4420 McMurtry Lane, Vacaville, California
Location: 1-1
Sample Number: 3 **Depth:** 3.0'
Proj. No.: VV5308 **Date Sampled:** 02/10/2022

Tested By: Brayden Burnham

Materials Testing, Inc.

8798 Airport Road
Redding, California 96002
(530) 222-1116, fax 222-1611

865 Cotting Lane, Suite A
Vacaville, California 95688
(707) 447-4025, fax 447-4143

Client:	Suresh Paranjpe 11150 S Riverwood Road Portland, OR 97219	Client No.: Figure No.: Date: Page No.:	VV5308 0300-010 02/10/2022 1 of 1
Project:	Proposed Residential Subdivision 4420 McMurtry Lane, Vacaville, California	Submitted by: Date Sampled:	KC Engineering 01/25/2022

"R" VALUE TEST REPORT
(CTM 301)

Sample: 1
Description: Dark Brown Clay with Gravel
Location: Subgrade 0.0'-3.0'

SIEVE ANALYSIS

Sieve Size	1"	3/4"	1/2"	3/8"	#4
As Received (% Pass)	---	---	---	---	100
As Used (% Pass)	---	---	---	---	100

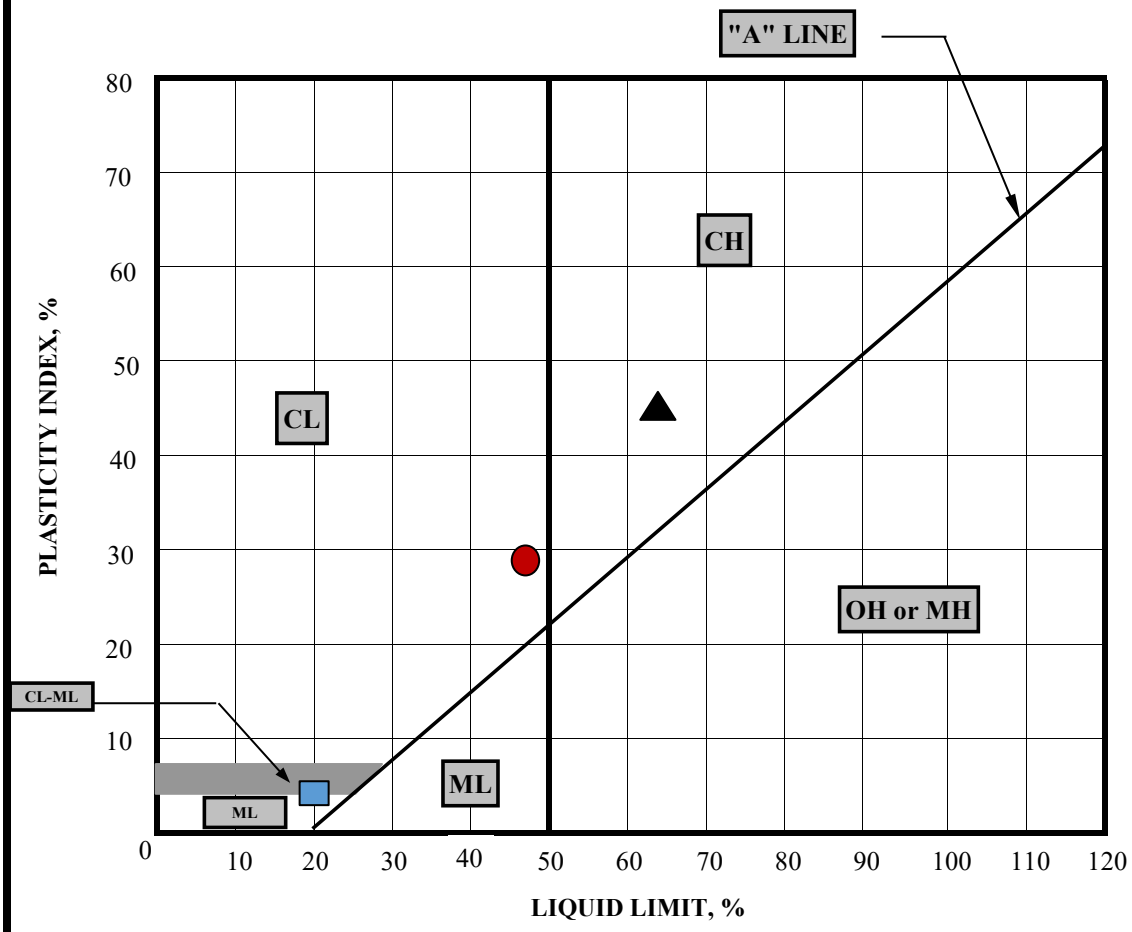
RESISTANCE VALUE

Specimen Number	Dry Unit Weight, PCF	Moisture (%)	Exudation Pressure (PSI)	Expansion Pressure Dial Reading & PSF		R-Value
1	94.7	34.2	391	0	0	8
2	92.4	26.1	300	0	0	7
3	90.9	27.9	204	0	0	6

R-Value @ 300 PSI Exudation Pressure = **7**

Notes:

Tested by John Hubbard.
The samples were tested according to the referenced standard test procedures and relate only to the items inspected or tested.
Results are not transferable and shall not be reproduced, except in full, without written permission from MTI.



KEY SYMBOL	SAMPLE NUMBER	DEPTH	NATURAL MOISTURE CONTENT, %	LIQUID LIMIT, LL	PLASTIC LIMIT, PL	PLASTICITY INDEX, PI	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
●	1-0	0.0'-2.0'	N/A	47	18	29	N/A	CL
▲	4-0	0.0'-2.0'	N/A	64	19	45	N/A	CH
■	6-1	0.0'-3.0'	N/A	20	16	4	N/A	CL-ML

Note: Atterberg Limits tested in accordance with ASTM D4318.

Materials Testing, Inc.

PLASTICITY CHART AND DATA

Proposed Residential Subdivision
4420 McMurtry Lane, Vacaville, California

Project No:	Date:	Figure No:
VV5308	2/10/2022	0300-011

Sunland Analytical
11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 02/02/2022
Date Submitted 01/27/2022

To: David Cymanski
K.C. Engineering
865 Cotting Lane Suite A
Vacaville, CA 95688

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : VV5308 Site ID : SITE 0-5.
Thank you for your business.

* For future reference to this analysis please use SUN # 86543-180201.

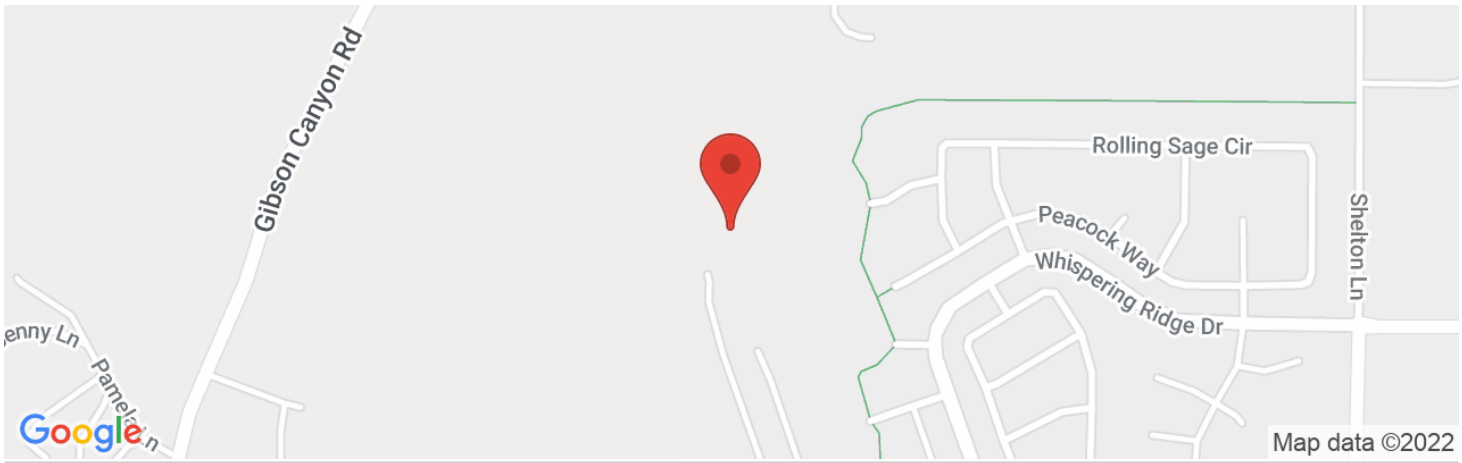
EVALUATION FOR SOIL CORROSION

Soil pH	6.25	
Minimum Resistivity	0.80 ohm-cm (x1000)	
Chloride	8.8 ppm	0.00088 %
Sulfate-SO4	280.3ppm	0.02803 %

METHODS
pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)
Sulfate-SO4 ASTM C1580, Chloride CA DOT Test #422m

4420 McMurtry Lane, Vacaville

Latitude, Longitude: 38.4027, -121.9889



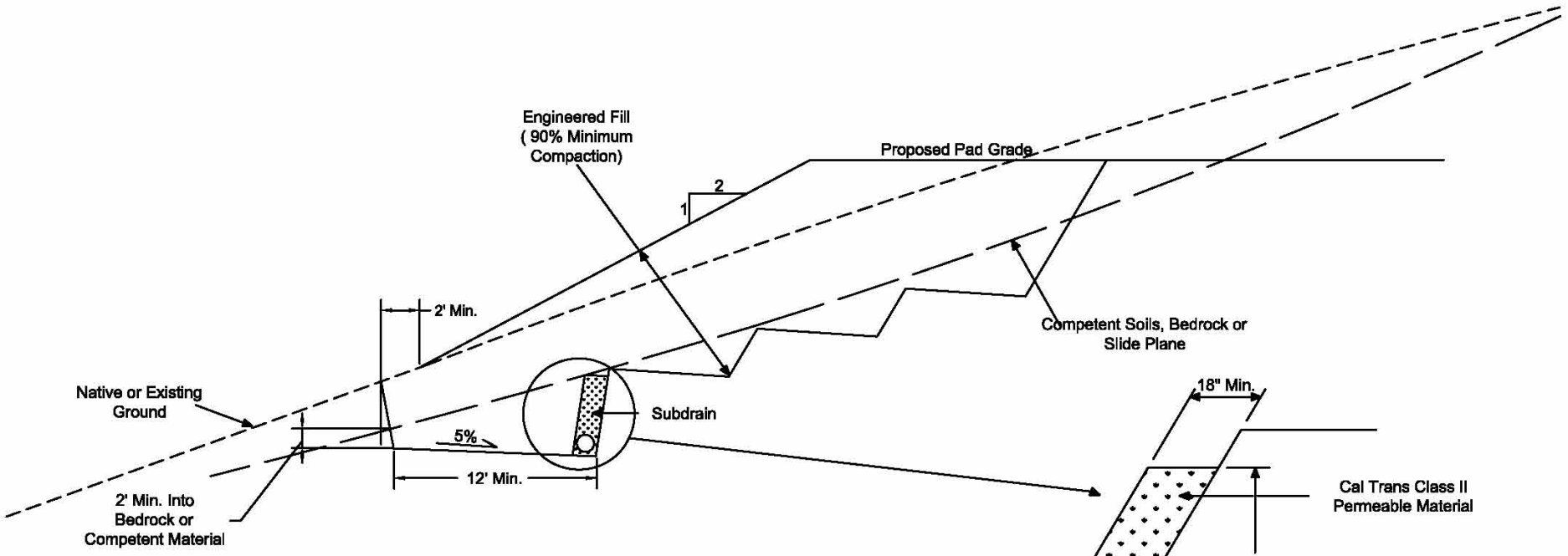
Date	4/5/2022, 3:27:42 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	C - Very Dense Soil and Soft Rock

Type	Value	Description
S_S	1.352	MCE_R ground motion. (for 0.2 second period)
S_1	0.483	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.623	Site-modified spectral acceleration value
S_{M1}	0.724	Site-modified spectral acceleration value
S_{DS}	1.082	Numeric seismic design value at 0.2 second SA
S_{D1}	0.483	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	1.5	Site amplification factor at 1.0 second
PGA	0.565	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.678	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.352	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.475	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.003	Factored deterministic acceleration value. (0.2 second)
S1RT	0.483	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.521	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.668	Factored deterministic acceleration value. (1.0 second)
PGAd	0.811	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.917	Mapped value of the risk coefficient at short periods
C_{R1}	0.926	Mapped value of the risk coefficient at a period of 1 s

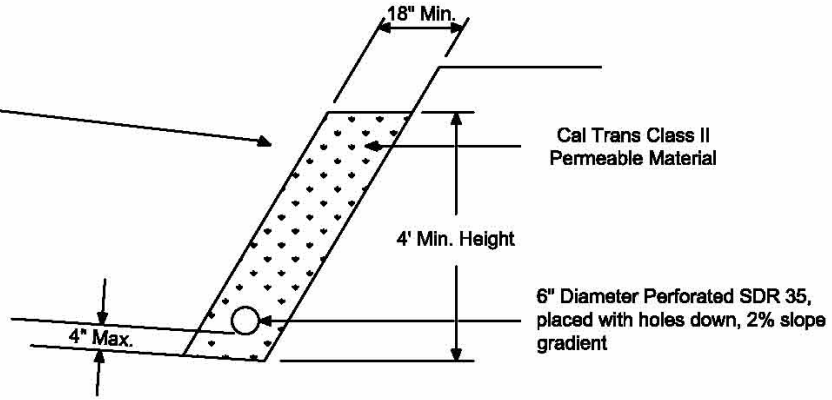
TYPICAL FILL SLOPE & SUBDRAIN DETAILS

(Not to Scale)



NOTES:

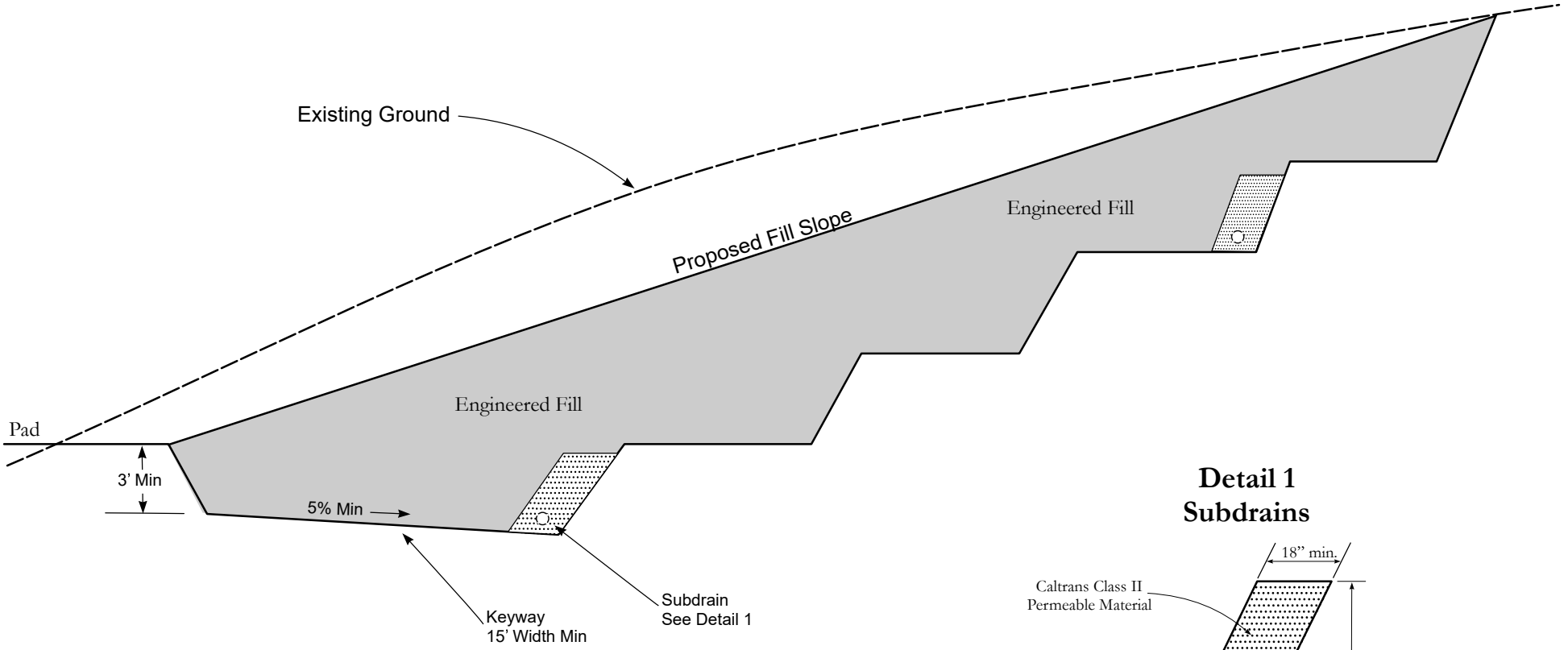
1. This is a typical cross-section for fill slope construction. Significant variations may be encountered during grading.
2. Dimensions of keyways and benches are subject to approval in the field by the Soil Engineer and Geologist.
3. The number and location of subdrains will be determined by the Soil Engineer and Geologist in the field.



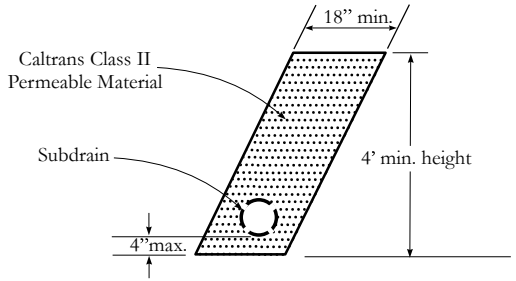
SUBDRAIN DETAIL

KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688

Proposed Hillside Fill Slope
TYPICAL FILL SLOPE, KEYWAY, BENCHING & SUBDRAIN DETAILS



Detail 1
Subdrains



Subdrain should be minimum 6" diameter, SDR 35 pipe. Pipe should have a minimum of eight 1/2" diameter holes per lineal foot of pipeline along four rows separated by 90 radial degrees. The pipe should drain with a minimum 2% slope and subdrain outlets should be to an approved drainage facility. Inlet pipelines should be capped.

Not to Scale

KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688
(707) 447-4025

Project No. VV5308
Proposed Residential Subdivision
Vacaville, California
Typical Cut Slope Buttress

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APPENDIX D

NOISE AND VIBRATION STUDY

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Noise Measurement Survey – 24 HR

Project Number: 20230997
Project Name: McMurtry Creek Estates

Test Personnel: Dana Kwan
Equipment: Spark 706RC (SN:18907)

Site Number: LT-1 Date: 4/2/24

Time: From 2:00 p.m. To 2:00 p.m.

Site Location: On a utility pole on McMurtry Lane, approximately 200 feet west of the center of the Preserve Lane cul-de-sac

Primary Noise Sources: Light suburban neighborhood noises (occasional cars, people walking dogs, children playing), birds chirping, small insect noises

Comments:

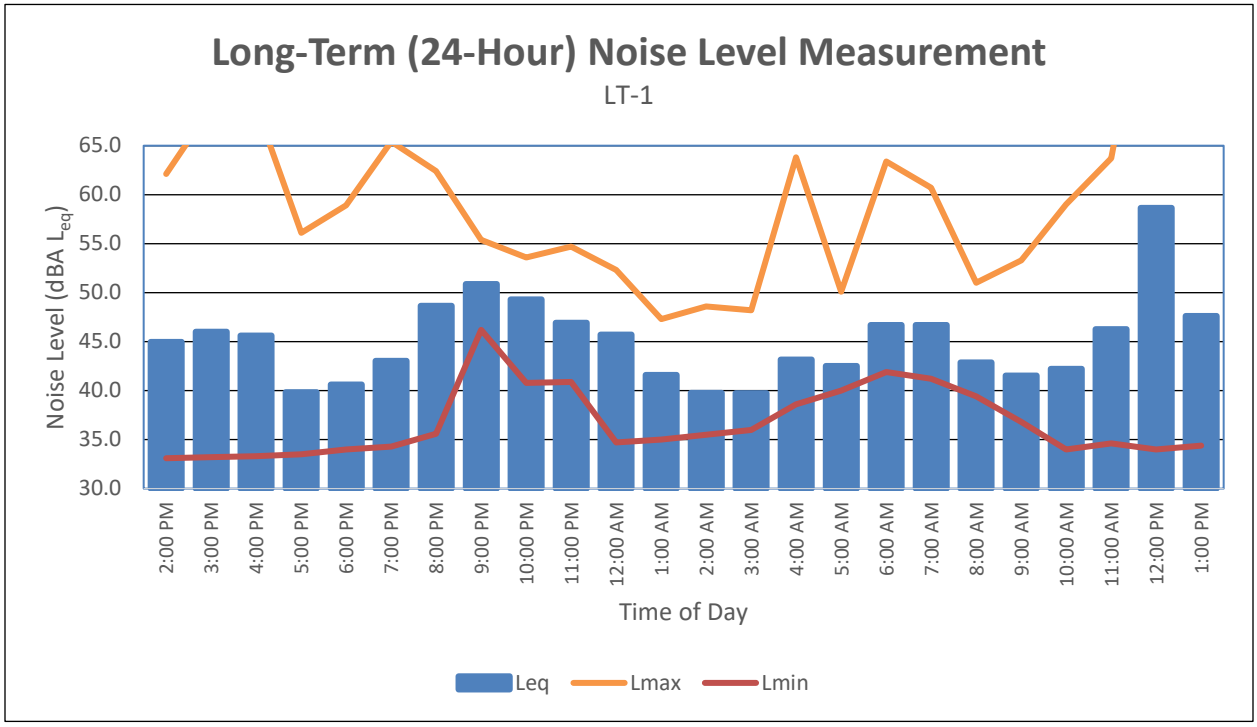
Photo:



Long-Term (24-Hour) Noise Level Measurement Results at LT-1

Start Time	Date	Noise Level (dBA)		
		L_{eq}	L_{max}	L_{min}
2:00 PM	4/2/24	45.0	62.1	33.1
3:00 PM	4/2/24	46.0	68.9	33.2
4:00 PM	4/2/24	45.6	69.0	33.3
5:00 PM	4/2/24	39.9	56.1	33.5
6:00 PM	4/2/24	40.6	58.9	34.0
7:00 PM	4/2/24	43.0	65.4	34.3
8:00 PM	4/2/24	48.7	62.4	35.6
9:00 PM	4/2/24	50.9	55.4	46.2
10:00 PM	4/2/24	49.3	53.6	40.8
11:00 PM	4/2/24	46.9	54.7	40.9
12:00 AM	4/3/24	45.7	52.3	34.7
1:00 AM	4/3/24	41.6	47.3	35.0
2:00 AM	4/3/24	39.8	48.6	35.5
3:00 AM	4/3/24	39.8	48.2	36.0
4:00 AM	4/3/24	43.2	63.8	38.6
5:00 AM	4/3/24	42.5	50.1	40.0
6:00 AM	4/3/24	46.7	63.4	41.9
7:00 AM	4/3/24	46.7	60.7	41.2
8:00 AM	4/3/24	42.9	51.0	39.4
9:00 AM	4/3/24	41.5	53.3	36.8
10:00 AM	4/3/24	42.2	59.0	34.0
11:00 AM	4/3/24	46.3	63.7	34.6
12:00 PM	4/3/24	58.6	87.9	34.0
1:00 PM	4/3/24	47.6	68.0	34.4

Source: Compiled by LSA Associates, Inc. (2024).
dBA = A-weighted decibel
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level
L_{min} = minimum measured sound level


Long-Term (24-Hour) Noise Level Measurement
LT-1
Noise Level (dBA Leq)
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
Time of Day
Leq
Lmax
Lmin

Noise Measurement Survey – 24 HR

Project Number: 20230997
Project Name: McMurtry Creek Estates

Test Personnel: Dana Kwan
Equipment: Spark 706RC (SN:18571)

Site Number: LT-2 Date: 4/2/24

Time: From 2:00 p.m. To 2:00 p.m.

Site Location: On a metal sign post on the west most end of White Stone Court, approximately 50 feet from the center of the cul-de-sac

Primary Noise Sources: Light suburban neighborhood noises (occasional cars, people walking dogs, children playing)

Comments:

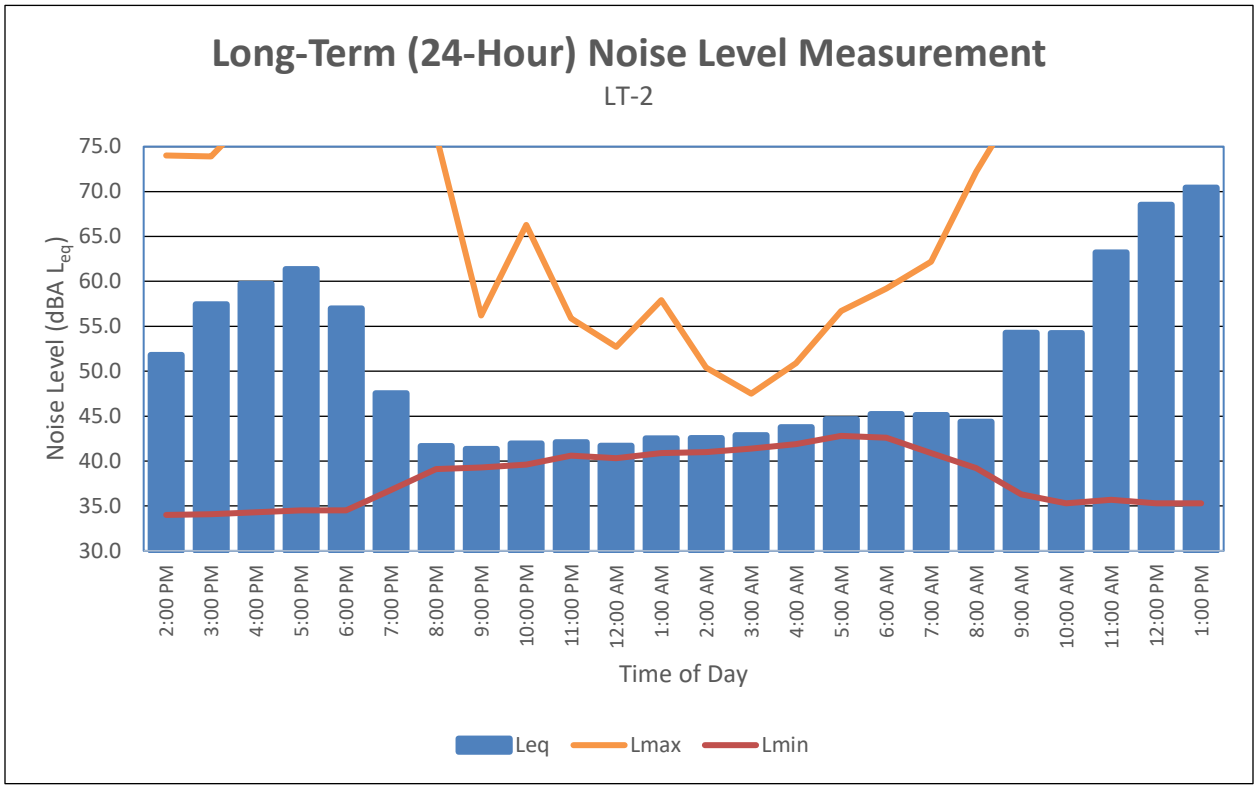
Photo:



Long-Term (24-Hour) Noise Level Measurement Results at LT-2

Start Time	Date	Noise Level (dBA)		
		L_{eq}	L_{max}	L_{min}
2:00 PM	4/2/24	51.8	74.0	34.0
3:00 PM	4/2/24	57.5	73.9	34.1
4:00 PM	4/2/24	59.7	79.1	34.3
5:00 PM	4/2/24	61.4	77.8	34.5
6:00 PM	4/2/24	57.0	76.4	34.5
7:00 PM	4/2/24	47.6	76.3	36.8
8:00 PM	4/2/24	41.7	76.3	39.1
9:00 PM	4/2/24	41.3	56.2	39.3
10:00 PM	4/2/24	42.0	66.3	39.6
11:00 PM	4/2/24	42.1	55.9	40.6
12:00 AM	4/3/24	41.7	52.7	40.3
1:00 AM	4/3/24	42.5	57.9	40.9
2:00 AM	4/3/24	42.6	50.4	41.0
3:00 AM	4/3/24	42.9	47.5	41.4
4:00 AM	4/3/24	43.8	50.9	41.9
5:00 AM	4/3/24	44.7	56.7	42.8
6:00 AM	4/3/24	45.2	59.2	42.6
7:00 AM	4/3/24	45.1	62.2	40.9
8:00 AM	4/3/24	44.4	72.2	39.2
9:00 AM	4/3/24	54.3	80.5	36.3
10:00 AM	4/3/24	54.2	76.5	35.3
11:00 AM	4/3/24	63.2	80.8	35.7
12:00 PM	4/3/24	68.5	89.0	35.3
1:00 PM	4/3/24	70.4	91.4	35.3

Source: Compiled by LSA Associates, Inc. (2024).
dBA = A-weighted decibel
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level
L_{min} = minimum measured sound level


Long-Term (24-Hour) Noise Level Measurement
LT-2
Noise Level (dBA Leq)
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
Time of Day
Leq
Lmax
Lmin

APPENDIX E

TRAFFIC TECHNICAL MEMORANDUM

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FEHR PEERS

Technical Memorandum

Date: January 26, 2024

To: Gwen Owens, City of Vacaville

From: John Gard and Adrita Islam, Fehr & Peers

Subject: McMurtry Creek Estates Rezone VMT Analysis

SA23-0233

Introduction

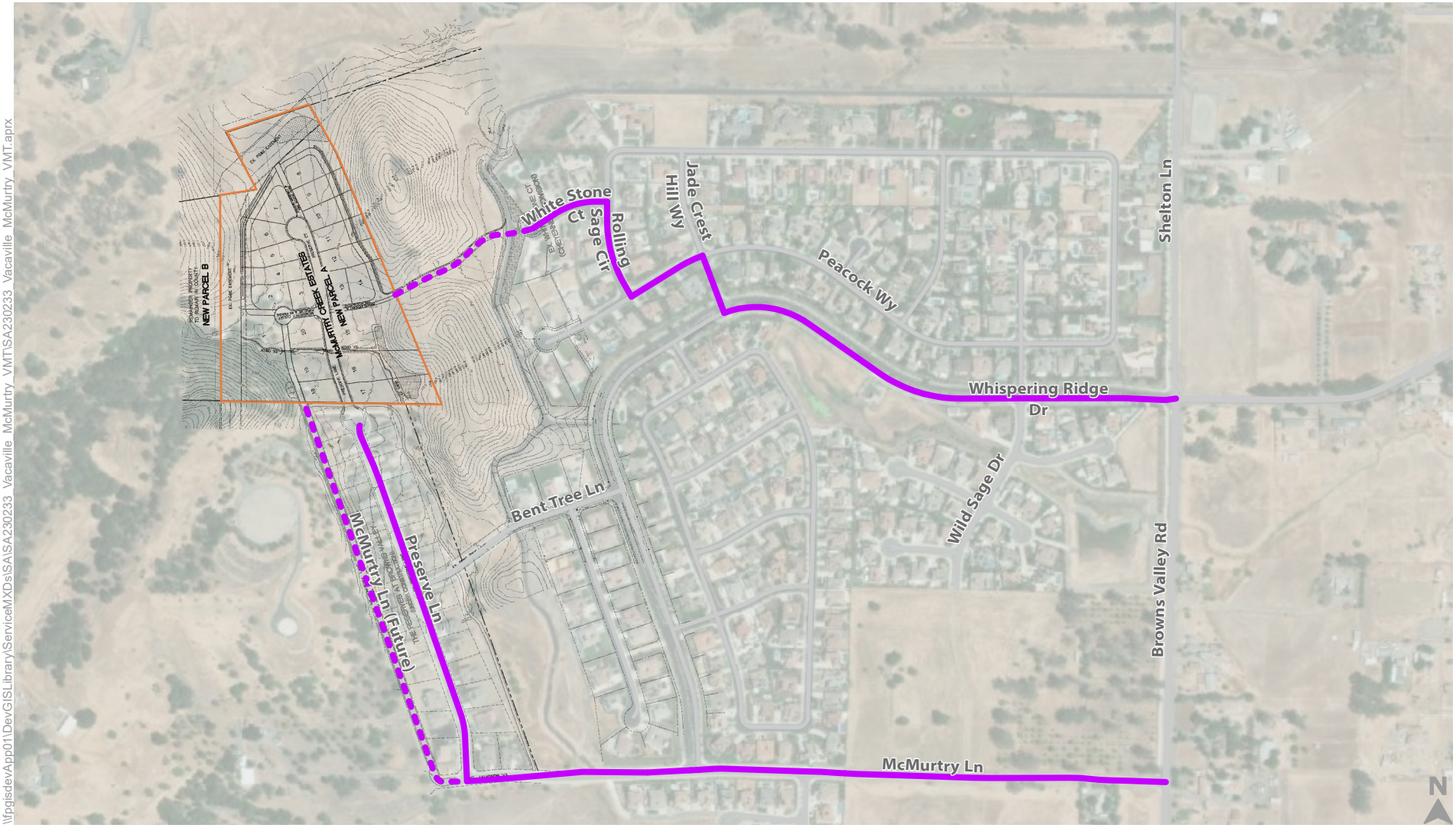
This memorandum documents the Vehicle Miles of Travel (VMT) analysis of the proposed McMurtry Creek Estates amendment to the General Plan in the City of Vacaville, California.

Senate Bill 743, which became law statewide in California in July 2020, requires that VMT be applied as the preferred metric for analyzing transportation impacts under the California Environmental Quality Act (CEQA). In accordance with this law, this study analyzes the effects of the proposed zoning change on city-wide VMT using the City of Vacaville travel demand model.

Project Description

The McMurtry Creek Estates Project consists of 20 single-family, detached dwelling units on 15.73 acres situated in the north area of the City (north of Vaca Valley Parkway. The project proposes to rezone this site from Hillside Agriculture (HA) to Residential Estates (RE-12) zoning district. **Figure 1** shows the proposed project site and access roads. As shown, the project would be accessed from the extension of Preserve Lane, a two-lane public residential street, northerly into the project site. The project site plan indicates that the following emergency vehicle access routes would be provided:

- McMurtry Lane – an existing 20-foot wide street that parallels Preserve lane to the west.
- New Easterly Emergency Access Road – would extend easterly from the project site through an open space area to connect with White Stone Court.



Existing Evacuation Route

Proposed Evacuation Route

Project Area

Figure 1

Study Area with Site Plan and Evacuation Routes

Vehicle Miles Traveled

On September 27, 2013, Governor Jerry Brown signed Senate Bill (SB) 743 into law and started a process intended to fundamentally change transportation impact analysis as part of CEQA compliance. These changes include elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts.

SB 743 contained language directing the Governor's Office of Planning and Research (OPR) to update the CEQA Guidelines to include new criteria (e.g., metrics) for determining the significance of transportation impacts. OPR selected vehicle-miles-of-travel (VMT) as the transportation impact metric, recommended its application statewide, and submitted updates to the CEQA Guidelines that were certified by the Natural Resources Agency in December 2018. To help aid lead agencies with SB 743 implementation, OPR produced the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (2018). The *Technical Advisory* helps lead agencies think about the variety of implementation questions they face with respect to shifting to a VMT metric.

This section presents VMT analysis conducted for the proposed project, employing the methodologies outlined in the *Interim SB 743 Implementation Guidelines for City of Vacaville* (2021). The calculations completed in this analysis were performed using the City of Vacaville travel demand forecasting (TDF) model.

Thresholds of Significance

Chapter III of the *Interim SB 743 Implementation Guidelines for City of Vacaville* (2021) discusses five distinct project types that could potentially be screened out from having to perform quantitative VMT analysis (i.e., any VMT impacts presumed less than significant). The proposed project would not qualify under any of these categories. Chapter III then recommends that for projects that do not meet any of the screening requirements, the following thresholds of significance should be applied when analyzing the VMT transportation impacts of residential project under CEQA.

1. The project would cause a significant transportation impact if it would generate an average VMT per dwelling unit that is greater than 85 percent of the city-wide average for that land use type.

2. If the above threshold is exceeded, the project's VMT impact could still be found to be less-than-significant if it did not cause the total VMT generated by the City of Vacaville to increase.

Methodology

This analysis is performed with the City's travel demand model for Base Year (2020) and Cumulative (2050) year conditions. The model was modified to include additional roadway and traffic analysis zone (TAZ) detail in the McMurtry Creek Estates area. The following four scenarios were analyzed for VMT comparison:

- Base Year No Project
- Base Year Plus Project
- Cumulative No Project
- Cumulative Plus Project

Average VMT Per Dwelling Unit

Table 1 shows the average VMT per dwelling unit generated by the project in comparison to the city-wide average.

Table 1: Average VMT Per Dwelling Unit Generated by City of Vacaville

Scenario	City-wide Average	Threshold[1]	Project's Average	Comparison with Threshold
Base Year	86.4	73.4	98.0	+33.4%
Cumulative Year	76.6	65.1	83.4	+28.1%

Notes: [1] Threshold is defined as 85% of City-wide average
Source: Fehr & Peers, 2023

For single-family residentials, the base year city-wide VMT is 86.4 VMT per dwelling unit. The project's single-family residential exceeds the base year threshold of 73.4 VMT per dwelling unit by 33.4%. Similarly, for single-family residentials, the cumulative city-wide VMT is 76.6 VMT per dwelling unit. The project's single-family residential exceeds the cumulative threshold of 65.1 VMT per dwelling unit by 28.1%.

Therefore, the project's VMT impact will be **significant** as described by threshold one above.

Citywide VMT Comparison

Since the project's average VMT per dwelling unit exceeds the threshold, another test was performed to determine if the project would cause the total Citywide VMT to increase, decrease, or remain unchanged. **Table 2** shows the total VMT generated by all land uses within Vacaville under base year (2020) and cumulative (2050) conditions.

Table 2: Total VMT Generated by City of Vacaville

Scenario	No Project	Plus Project	Increase
Base year	6,785,800	6,788,308	2,508
Cumulative	9,570,720	9,575,684	4,964
***Source*:** Fehr & Peers, 2023			

Table 2 indicates that the proposed rezoning would result in a net increase of 2,508 VMT in base year and 4,964 VMT in cumulative year. Since the proposed rezone would cause the total VMT generated by the City of Vacaville to increase, its VMT impact would also be ***significant*** according to threshold two above. Mitigation measures are required.

Mitigation Measures

In order to reach a less than significant conclusion, the project's VMT needs to be reduced by 33.4% in base year and 28.1% in cumulative. The City of Vacaville Draft Supplemental Environmental Impact Report for General Plan Transportation Element and Energy Conservation Action Strategy Update (2021) lists potential implementation measures in MM-TRA-1 for proposed development projects that could have a potentially significant VMT impact. These potential measures were considered for feasibility, reasonableness, and applicability to the project. **Table 3** lists the measures and their feasibility for the McMurtry Estates project.

Table 3: Review of Mitigation Measures

Mitigation Measure (MM-TRA-1)	Feasibility	Notes
Increasing project density	Potentially feasible	Would require changes to project description
Incorporating affordable housing, including low-income housing, into residential and mixed-use development	Potentially feasible	Would require changes to project description
Improving pedestrian or bicycle networks, or transit service	Potentially feasible	Minimum benefit [1]
Providing bicycle parking	Potentially feasible	Minimum benefit [1]
Orienting the project toward transit, bicycle and pedestrian facilities	Not feasible	Would require changing the project location
Increasing access to common goods and services, such as groceries, schools, and daycare	Not feasible	Would require changing the project location
Providing transit subsidies or passes	Not applicable	Minimum benefit
Improving access to transit	Potentially feasible	Minimum benefit [1]
Implementing traffic calming	Not applicable	Minimum benefit
Unbundling parking costs	Not feasible	Applies to medium-high to high density residential development
Others: • Implement employer parking cash-out programs • Implementing a commuter reduction program • Providing car-sharing, bike sharing, and ride-sharing programs • Providing ride matching services • Providing telework options • Providing incentives or subsidies that increase the use of modes other than single-occupant vehicles • Providing on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms • Providing employee transportation coordinator at employment sites • Providing a guaranteed ride home service to users of non-auto modes	Not applicable	Doesn't apply to residential projects

Notes:
[1] These would potentially replace very short trips only, and not materially decrease the frequency of longer distance trips. However, both Class I (off-street paths) and Class II (on-street lanes) are already present in the project vicinity. The nearest bus stop is over 1-mile away from the project site. Moreover, that stop serves Coach Route 2 which operate on a limited schedule (only 7 buses stop per day and no service on weekends).

Source: Draft Supplemental Environmental Impact Report - General Plan Transportation Element and Energy Conservation Action Strategy Update, March 2021
Fehr & Peers, 2023

Potentially feasible mitigation measures identified in **Table 3** were evaluated using the TDM+ tool[1]. This tool is based on the research from California Air Pollution Control Officers Association's (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity, December 2021*. The range of VMT reduction strategies for the proposed project are listed below:

- Increasing project's residential density – This would require a change in project description. A maximum of 9.9% VMT reduction can be achieved by increasing the project density from the proposed 3 DU/Acres (approximate) to an average of 9.1 DU/Acres.
- Incorporating affordable housing, including low-income housing into residential development– This would require a change in project description. A maximum of 4.29% VMT reduction can be achieved by including 15% affordable housing.
- Improving pedestrian or bicycle networks, or transit service – Although this is a potentially feasible mitigation measure, the effectiveness of this measure is very limited (<1%), especially due to the isolated nature of the project's location.
- Providing bicycle parking – Although this is a potentially feasible mitigation measure, the effectiveness of this measure is very limited, especially due to the isolated nature of the project's location.

If the maximum reductions in bullets 1 and 2 were to be applied, the project's VMT could be reduced by about 14%. This is far less than the 33.4% reduction in base year and 28.1% reduction in cumulative needed to mitigate the VMT impact to less than significant. Moreover, adding affordable housing or significantly changing the project size or layout of units could make the project potentially unviable. The VMT impact of the project will therefore be ***significant and unavoidable***.

[1] https://www.fehrandpeers.com/tdm/

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APPENDIX F

WILDFIRE EVACUATION ASSESSMENT

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FEHR PEERS

Technical Memorandum

Date: February 4, 2024

To: Gwen Owens, City of Vacaville

From: John Gard and Adrita Islam, Fehr & Peers

Subject: McMurtry Creek Estates Wildfire Evacuation Assessment

SA23-0233

Introduction

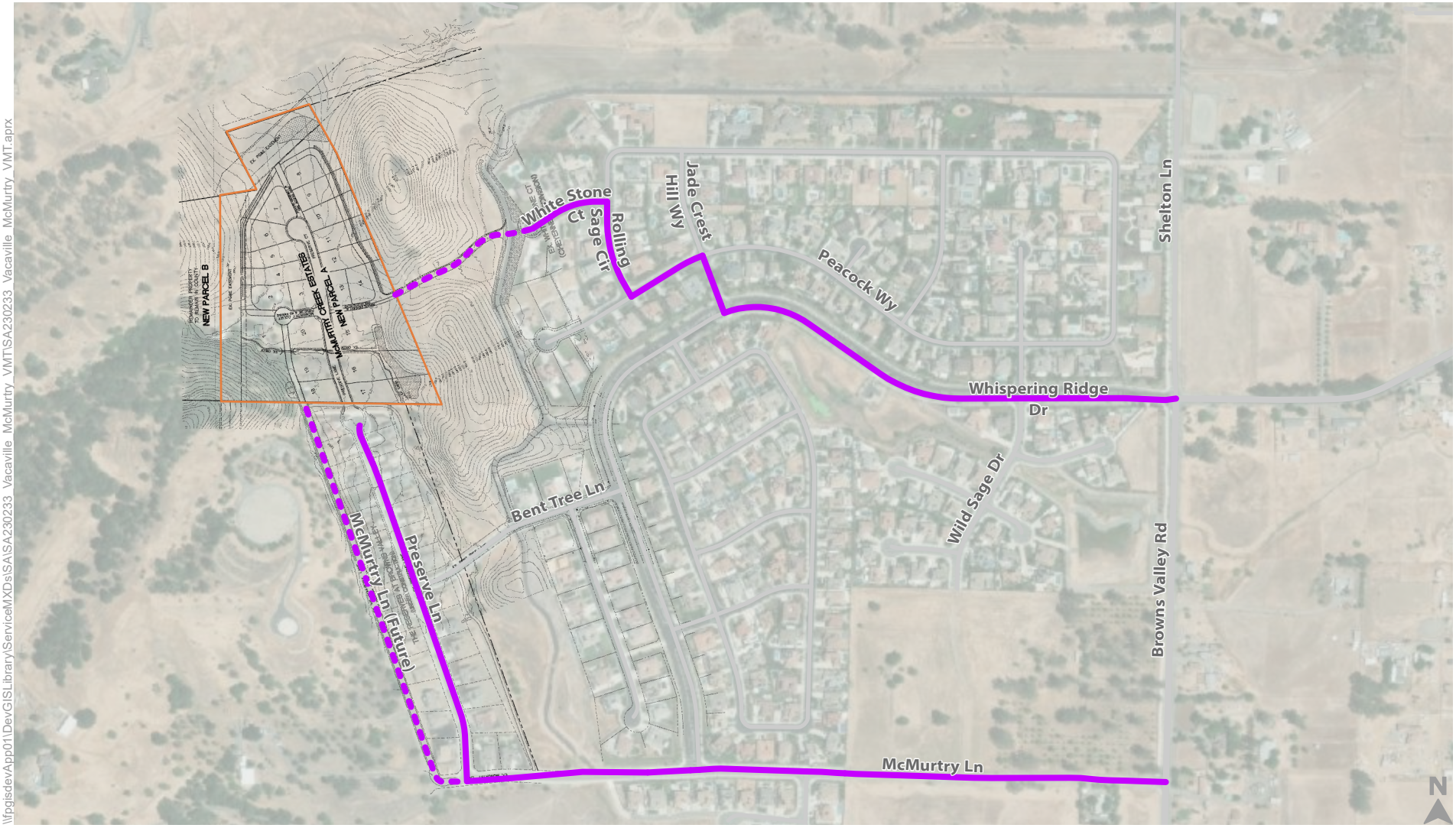
This report presents a checklist for screening the wildfire evacuation assessment for the McMurtry Creek Estates to comply with the requirements of the California Environmental Quality Act (CEQA), Senate Bill 99 and Assembly Bill 747.

The purpose of this wildfire evacuation assessment is to evaluate the project's effects on wildfire evacuation. The evaluation was performed in consideration of guidance from the Attorney General's office, which was prepared in response to recent 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, and compliance with CalFire regulations related to wildfire evacuation and emergency access.

Project Description

The McMurtry Creek Estates Project consists of 20 single-family, detached dwelling units on 15.73 acres situated in the north area of the City (north of Vaca Valley Parkway. The project proposes to rezone this site from Hillside Agriculture (HA) to Residential Estates (RE-12) zoning district. **Figure 1** shows the proposed project site and access roads. As shown, the project would be accessed from the extension of Preserve Lane, a two-lane public residential street, northerly into the project site. The project site plan indicates that the following emergency vehicle access routes would be provided:

- McMurtry Lane – an existing 20-foot wide street that parallels Preserve Lane to the west.
- New Easterly Emergency Access Road – would be constructed by the project and extend easterly from the project site through an open space area to connect with White Stone Court, which itself connects to Whispering Ridge Drive that becomes Browns Valley Road.



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Existing Evacuation Route

Proposed Evacuation Route

Project Area

Figure 1

Study Area with Site Plan and Evacuation Routes

Legislative Requirements

Recent legislation, including SB 99 and AB 747, has been passed by the state to require additional review of accessibility and evacuation routes when specific elements within the General Plan or other emergency planning documents (such as a Hazard Mitigation Plan) are completed or updated by a local agency. These two legislative requirements, described below, are specific to the transportation system:

- ***SB 99 (2019)[1] -*** Requires review and update of the safety element to include information to identify residential developments in hazard areas that do not have at least two emergency evacuation routes. In essence, this legislation assists in identifying neighborhoods and households within a hazard area that havelimited accessibility. Even though this legislative requirement applies specifically to designated hazard areas, this evacuation assessment has identified all residential developments in the City, including those that are not in a designated hazard area, that have only one emergency evacuation route. This is intended to assist the City with identifying opportunities to improve connectivity and evacuation capacity generally.
- ***AB 747 (2019)[2] -*** Requires that the safety element be reviewed and updated to identify evacuation routes and their capacity, safety, and viability under a range of emergency scenarios. This will be a requirement for all safety elements or updates to hazard mitigation plans completed after January of 2022. Although not required at the time of the 2021 General Plan Update, City and Fire District officials felt that an evacuation assessment that included the level of detail required by AB 747 would be an important complement to all the other planning documents that were either updated or created in 2021.

Attorney General Guidance

There is currently no published state or federal guidance on the most appropriate methodology for preparing wildfire evacuation assessment for CEQA documents. However, recent guidance described below from the Office of the California Attorney General is helpful in framing key considerations. On October 10, 2022, the State Attorney General's office published *Best Practices for Analyzing and Mitigating Wildfire Impacts of Development Projects Under the California Environmental Quality Act*[3]. The AG Guidance provides "suggestions for how best to comply with CEQA when analyzing and mitigating a proposed project's impacts on wildfire ignition risk, emergency access, and evacuation".

The AG Guidance describes CEQA's requirements in the following two analysis categories.

- Analyzing Impact on Wildfire Risk
- Analyzing Impact on Evacuation & Emergency Access

[1] Senate Bill No. 99, Chapter 202, Approved by Governor, August 30, 2019.
[2] Assembly Bill No. 747, Chapter 681, Approved by Governor, October 09, 2019.
[3] Available at: https://bof.fire.ca.gov/media/v1vc053c/fpc-2-b-2022-10-10-wildfire-guidance_ada.pdf

Wildfire Evacuation Assessment

As wildfires escalate in frequency and severity, ensuring resilient evacuation planning becomes essential for the sustained well-being of communities. Two primary transportation strategies have emerged for crafting evacuation plans, each with distinct benefits and drawbacks:

1. Checklist Approach – can be used as a screening criterion to determine if the project has characteristics that may lead to the conclusion that it would (or would not) cause a significant adverse wildfire evacuation impact. If the project is determined to likely not cause an adverse wildlife impact, then it may be screened out from having to perform more detailed evacuation analysis. This method is cost-effective and straightforward, making it suitable for resource-constrained areas and projects.

2. Detailed Dynamic Traffic Assignment (DTA) Approach – is used to forecast evacuation travel times using sophisticated models. Although this provides a more comprehensive understanding of evacuation dynamics, it demands substantial data, computational resources, and expertise, limiting its applicability in smaller communities.

The Wildfire Evacuation Checklist approach serves as an interim guidance for transportation practitioners and local agencies, facilitating environmental evacuation impact analysis as mandated by the California Environmental Quality Act (CEQA). This checklist was created by Fehr & Peers using the Attorney General Guidance document[3] as a basis. Other evacuation and emergency access concerns were taken into consideration for creating this checklist.

The evacuation checklist for the McMurtry Creek Estates Project is shown in Table 1. The middle column of this table provides color-coded results to 27 different evaluation questions, classified into seven different categories. The following shows the conclusion of orange versus green colored boxes:

Numerous "Yes" responses could lead to a ***significant impact conclusion***.
Numerous "No" responses could lead to a ***less-than-significant impact conclusion***.

Table 1: Wildfire Evacuation Checklist

WILDFIRE EVACUATION THRESHOLD CATEGORY/QUESTION(S)	IMPACT?	Notes
1 Proximity to Hazard		
The project is located within Cal Fire's state responsibility area (SRA) or a local responsibility area (LRA) [1] designated as a high or very high fire hazard severity zone [2].	No	Currently within SRA, moderate zone; With Project annexation, will be redesignated into LRA. However, the project area will remain a moderate zone.
The project is located in or near any other defined hazard zone (e.g., flood plain, seismic fault zone, liquefaction zone) that may affect existing evacuation routes to be used during a wildfire evacuation. [3]	No	Project is near a protected open space with no weed abatement zone. However, Vacaville Fire indicated that it is unlikely that this hazard zone would affect existing evacuation routes.
2 Project Density		
The project is characterized by low-to-intermediate density uses that are dispersed and increase the potential for wildfires to start or spread. [4] [5]	Yes	Yes. As compared to the rural development type at the site, the proposed development would introduce more residential units that would be dispersed. Technically, the proposed development would be categorized as Residential Estates Density, which permits 0.5 to 4 du/ac. However, the answer to this question is yes because density is increasing compared to the existing use, and housing would be dispersed.
3 Project Location		
The project is located at the periphery of an existing community or in the wildland urban interface (WUI). [6] [7]	Yes	The project is located at the periphery of an existing community, WUI maps are not available for this area.
The project is located on ridges, on rugged terrain, or along high wind corridors.	No	(1) No, the site is not located on a ridge. (2) The development is located near rugged terrain but is not proposed to be constructed on grades exceeding 10 percent. Please refer to Figure SAF-10 (Wildfire Risk Exposure) [8]. (3) The location is not known as a high-wind corridor, which is more prevalent in the southeast corner of the City of Vacaville (in Vanden Meadows/Southtown/Roberts' Ranch. [9]
4 Demographics		
The project population and/or surrounding community exceeds the city/county/regional average share of senior citizens (65 years of age or more) householders living alone.	No	The project is not being designed or marketed to a specific demographic. Homes will be for sale, have relatively large lot sizes, and likely cost more than the median home price in Vacaville. Given this, it is unlikely that the project's population demographic will exceed any of the demographic averages in this question. [10]
The project population and/or surrounding community exceeds the city/county/regional average share of households with adults speaking limited English.	No	
The project population and/or surrounding community exceeds the city/county/regional average share of households with limited internet access.	No	
The project population and/or surrounding community exceeds the city/county/regional average share of households with children under 5 years of age.	No	
The project population and/or surrounding community exceeds the city/county/regional average share of households with limited access to vehicles (e.g., 0-1 vehicles per household).	No	
The project population and/or surrounding community exceeds the city/county/regional average share of population with a disability that may inhibit their ability to evacuate.	No	
5 Evacuation Access		
The project only has one access route for emergency vehicles.	No	Emergency vehicles would be able to access the project via Preserve Lane (Public Street) as well as two emergency vehicle accesses (i.e., McMurtry Lane and White Stone Court).
The project generates a level of evacuation traffic that would require multiple access roads where only one is proposed.	No	The project consists of 20 units. The latest ACS data shows an average auto ownership of 2.2 cars per household [11] in the City of Vacaville. In case of an evacuation, the project is therefore expected to generate approximately 44 total trips, spread across the entire evacuation period. Hence, multiple access routes are not required based of its evacuation travel demands.

WILDFIRE EVACUATION THRESHOLD CATEGORY/QUESTION(S)	IMPACT?	Notes
The project is located in an area that is outside of the adopted fire station response time performance objective.	No	NFPA Standard 1710 establishes total response time that includes alarm answering time, alarm handling time, alarm processing time, alarm transfer time, turnout time, travel time, and initiating action/intervention time. Travel time is defined as the time interval that begins when a unit is en route to the emergency incident and end when the unit arrives at the scene. The performance objective of travel time (first arriving engine on scene) is 4 minutes. [12] Considering emergency vehicles will likely operate at a higher speed with little to no delay at intersections, there is a high likelihood that this project, will be reached within 4 minutes from the nearest fire station (City of Vacaville Fire Station 73). The project, which is 2.3 miles away from the nearest fire station. can be reached within 3.95 minutes with an average speed of 35mph and within 3.07 minutes with a speed of 45mph.
The road network and street design does NOT meet all California Fire Safe Regulation [13] (e.g., roadway surface, grade, width, length). [14]	No	All street network for the project will comply with City's standards which is consistent with California Fire Safe Regulation. [9]
The project's jurisdiction does NOT have a current safety element compliant with AB 1409 [15] and SB 99 [16].	No	AB1409 – Compliant SB99 – Compliant, City's Safety Element (Page SAF-33) [8]
6 Evacuation Egress		
The project conflicts with or removes existing or previously identified and planned community evacuation routes.	No	
Prior wildfire evacuations have resulted in fatalities and/or significant injuries in the project area.	No	
The project would substantially change the emergency response or evacuation plan for a community given its location and scale.	No	In case of an evacuation, the project is expected to generate less than 50 total evacuating vehicle trips spread across the entire evacuation period. In all but the most extreme situations, this level of traffic will not substantially change overall response and evacuation times given its location and scale.
Data indicates wildfire spread could cause closures of key evacuation routes prior to a full community evacuation.	No	
The project worsens baseline evacuation times for existing community members or employees.	No	In case of an evacuation, the project is expected to generate less than 50 total evacuating vehicle trips spread across the entire evacuation period. The existing traffic and roadway capacity indicates that this level of traffic will not worsen baseline evacuation times for existing community.
7 Consideration of Project Wildfire Risk Reduction Measure		
The project does NOT provide new firefighting facilities or staffing.	Yes	It is highly atypical for 20-unit residential subdivisions to include dedicated firefighting facilities or staffing.
The project does NOT propose wildfire fuel breaks along roads or open space areas.	No	Project would include irrigated landscaping and emergency vehicle access which would serve as a fire break.
The project does NOT include early detection and/or enhanced notification systems despite being located in a high or very high severity zone.	No	The project is not within a high enough severity zone to warrant an early detection system. Hence an early detection system is not warranted. However, residents can receive notification of evacuation through reverse 911 calls, communications through Everbridge, In-person officer warnings, and Solano County Wireless Emergency Alerts (WEA).
The project would NOT provide sufficient on-site water sources for firefighting.	No	The project will provide fire hydrants.
First responders have indicated that this project would result in an increased need for resources beyond what is available to manage evacuation traffic, e.g., contraflow travel lanes are not feasible.	No	Vacaville fire department responded that the project would not result in a increased need for resources beyond what is available. [17]
The project or jurisdiction is lacking an adequate supply of emergency evacuation buses and pickup sites (available through school district or through public transit agency resources).	No	Contingency plans exist to utilize buses to evacuate residents if needed. However, the project demographics will likely have access to personal vehicles for evacuation purposes.

Notes:

[1] State Responsibility Areas (SRA) are recognized by the Board of Forestry and Fire Protection as areas where Cal Fire is the primary emergency response agency responsible for fire suppression and prevention. Local Responsibility Area (LRA) is primarily the responsibility of the local jurisdiction, (i.e. local fire departments). https://bof.fire.ca.gov/projects-and-programs/state-responsibility-area-viewer/

[2] Fire Hazard Severity Zones Maps, CalFire. https://calfire-forestry.maps.arcgis.com/apps/webappviewer/index.html?id=988d431a42b242b29d89597ab693d008
The Fire Hazard Severity Zone (FHSZ) maps are developed using a science-based and field-tested model that assigns a hazard score based on the factors that influence fire likelihood and fire behavior. Many factors are considered such as fire history, existing and potential fuel (natural vegetation), predicted flame length, blowing embers, terrain, and typical fire weather for the area. There are three levels of hazard in the State Responsibility Areas: moderate, high, and very high.

[3] Solano County Multi-Jurisdiction Hazard Mitigation Plan, City of Vacaville Annexation https://solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=36386

[4] "Project density influences how likely a fire is to start or spread, and how likely it is that the development and its occupants will be in danger when a fire starts. Fire spread and structure loss is more likely to occur in low- to intermediate density developments. This is because there are more people present to ignite a fire (as compared to undeveloped land), and the development is not concentrated enough (as compared to high-density developments) to disrupt fire spread by removing or substantially fragmenting wildland vegetation. " - Best Practices for Analyzing and Mitigating Wildfire Impacts of Development Projects Under the California Environmental Quality Act, Page 7, Office of Attorney General. https://bof.fire.ca.gov/media/v1vc053c/fpc-2-b-2022-10-10-wildfire-guidance_ada.pdf

[5] "The arrangement and location of structures strongly affected their susceptibility to wildfire, with property loss most likely at low to intermediate structure densities and in areas with a history of frequent fire." - Housing Arrangement and Location Determine the Likelihood of Housing Loss Due to Wildfire, Syphard A. D., Keeley, J. E., Massada A. B., Brennan T. J., Radeloff V. C. https://doi.org/10.1371/journal.pone.0033954

[6] The wildland–urban interface (WUI) is the zone of transition between unoccupied land and human development. Map showing UWIs - https://www.arcgis.com/apps/mapviewer/index.html?layers=a4985d64969743db8feddf01c96c9435

[7] "One of the most widely recognized indicators of exposure to wildfire is the wildland–urban interface (WUI) which is where human communities are close to natural wildlands. Recent work has confirmed expectations that structure loss is significantly higher in the WUI than in non-WUI areas" Alexandra D. Syphard, et. al., Multiple-Scale Relationships between Vegetation, the Wildland-Urban Interface, and Structure Loss to Wildfire in California https://www.mdpi.com/2571-6255/4/1/12

[8] City of Vacaville Safety Element Update, June 2023 https://www.cityofvacaville.gov/home/showpublisheddocument/22383/638259892798370000

[9] City of Vacaville Planning Department, 12/08/2023.

[10] Project Description, Received 6/23/2023

[11] American Community Census, Table: B08201, Household Size By Vehicles Available for City of Vacaville, https://data.census.gov/table/ACSDT5Y2021.B08201?g=060XX00US0609593520

[12] First-due-engine or travel time - 240 sec (4minutes) NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, 2020 Edition, Page 29-30 https://link.nfpa.org/free-access/publications/1710/2020 (if unable to access, use this link and click Free Access. May need to sign up. https://www.nfpa.org/codes-and-standards/1/7/1/1710)

[13] https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC&sectionNum=4290.

[14] California Code of Regulations, Title 14 Fire Safe Regulations, https://rvcfire.org/pdf/fire-marshal/20210701_BOF_Fire_Safe_Regulations.pdf?v=479

[15] AB 1409, Levine. Planning and zoning: general plan: safety element. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB1409

[16] SB 99, Nielsen. General plans: safety element: emergency evacuation routes. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB99

[17] Vacaville Fire Department, 12/20/2023

Source:
Fehr & Peers, City of Vacaville Fire Department, City of Vacaville Police Department, City of Vacaville Planning Department, 2023-2024

Impact Assessment

Of the 27 questions included in Table 1, a "No" response was provided in 24 instances. Recall "No" responses could lead to a less-than-significant impact conclusion. Of the 3 "Yes" responses, the first two relate to the project's density or physical location relative to open space. Although these are important considerations, these factors alone do not constitute a reasonable basis for a significant impact. The last "Yes" response pertains to the project not providing dedicated firefighting facilities or staffing, which is highly atypical for projects this size. In light of the entirety of the data and analyses presented in this memorandum, it is reasonable and justified based on substantial evidence to conclude that the project's impact on wildfire evacuation will be ***less than significant***.

APPENDIX C

VEHICLE MILES TRAVELED ANALYSIS MEMORANDUM

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FEHR PEERS

Technical Memorandum

Date: January 26, 2024

To: Gwen Owens, City of Vacaville

From: John Gard and Adrita Islam, Fehr & Peers

Subject: McMurtry Creek Estates Rezone VMT Analysis

SA23-0233

Introduction

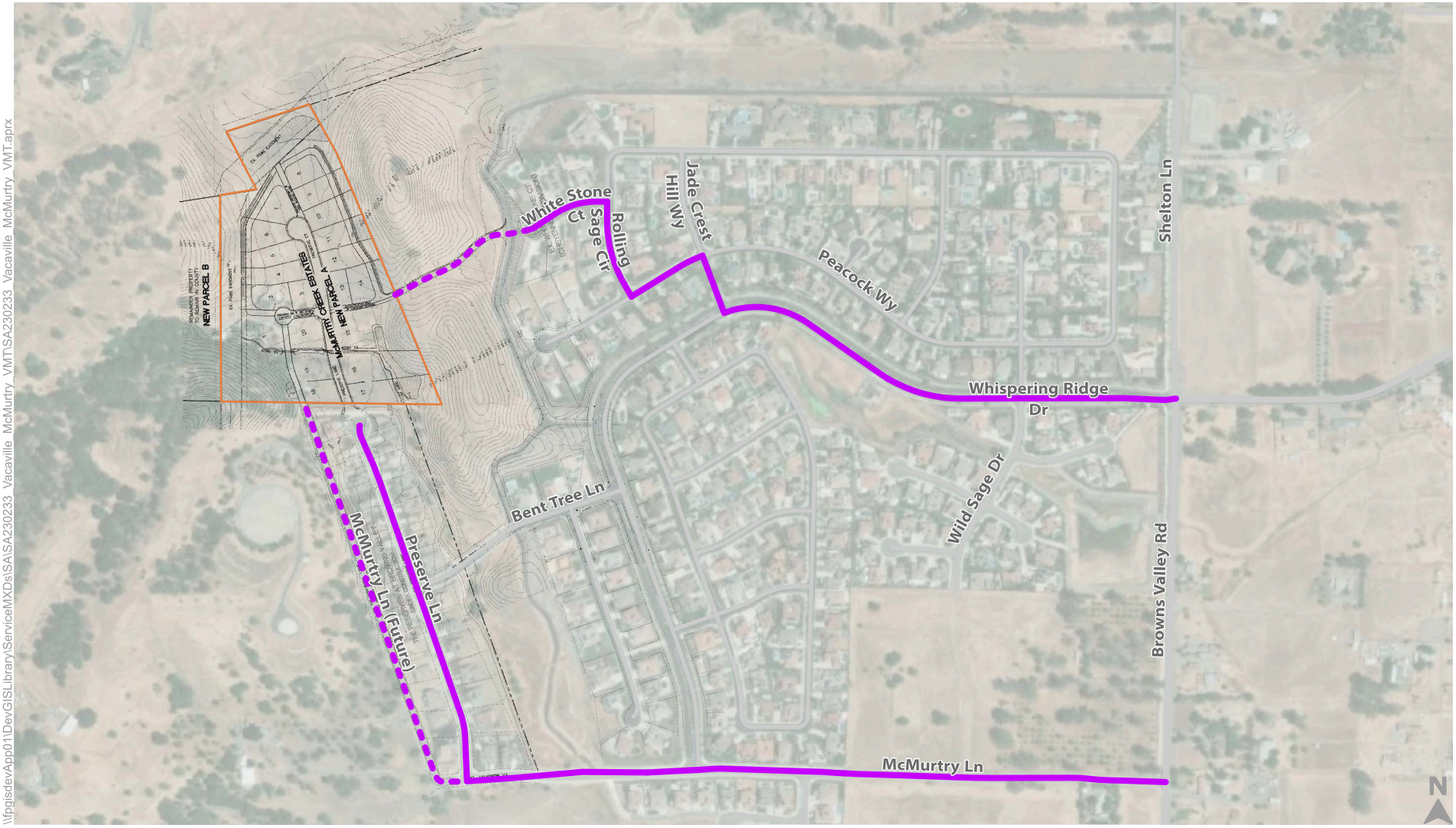
This memorandum documents the Vehicle Miles of Travel (VMT) analysis of the proposed McMurtry Creek Estates amendment to the General Plan in the City of Vacaville, California.

Senate Bill 743, which became law statewide in California in July 2020, requires that VMT be applied as the preferred metric for analyzing transportation impacts under the California Environmental Quality Act (CEQA). In accordance with this law, this study analyzes the effects of the proposed zoning change on city-wide VMT using the City of Vacaville travel demand model.

Project Description

The McMurtry Creek Estates Project consists of 20 single-family, detached dwelling units on 15.73 acres situated in the north area of the City (north of Vaca Valley Parkway. The project proposes to rezone this site from Hillside Agriculture (HA) to Residential Estates (RE-12) zoning district. **Figure 1** shows the proposed project site and access roads. As shown, the project would be accessed from the extension of Preserve Lane, a two-lane public residential street, northerly into the project site. The project site plan indicates that the following emergency vehicle access routes would be provided:

- McMurtry Lane – an existing 20-foot wide street that parallels Preserve lane to the west.
- New Easterly Emergency Access Road – would extend easterly from the project site through an open space area to connect with White Stone Court.



Existing Evacuation Route

Proposed Evacuation Route

Project Area

Figure 1

Study Area with Site Plan and Evacuation Routes

Vehicle Miles Traveled

On September 27, 2013, Governor Jerry Brown signed Senate Bill (SB) 743 into law and started a process intended to fundamentally change transportation impact analysis as part of CEQA compliance. These changes include elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts.

SB 743 contained language directing the Governor's Office of Planning and Research (OPR) to update the CEQA Guidelines to include new criteria (e.g., metrics) for determining the significance of transportation impacts. OPR selected vehicle-miles-of-travel (VMT) as the transportation impact metric, recommended its application statewide, and submitted updates to the CEQA Guidelines that were certified by the Natural Resources Agency in December 2018. To help aid lead agencies with SB 743 implementation, OPR produced the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (2018). The *Technical Advisory* helps lead agencies think about the variety of implementation questions they face with respect to shifting to a VMT metric.

This section presents VMT analysis conducted for the proposed project, employing the methodologies outlined in the *Interim SB 743 Implementation Guidelines for City of Vacaville* (2021). The calculations completed in this analysis were performed using the City of Vacaville travel demand forecasting (TDF) model.

Thresholds of Significance

Chapter III of the *Interim SB 743 Implementation Guidelines for City of Vacaville* (2021) discusses five distinct project types that could potentially be screened out from having to perform quantitative VMT analysis (i.e., any VMT impacts presumed less than significant). The proposed project would not qualify under any of these categories. Chapter III then recommends that for projects that do not meet any of the screening requirements, the following thresholds of significance should be applied when analyzing the VMT transportation impacts of residential project under CEQA.

1. The project would cause a significant transportation impact if it would generate an average VMT per dwelling unit that is greater than 85 percent of the city-wide average for that land use type.

2. If the above threshold is exceeded, the project's VMT impact could still be found to be less-than-significant if it did not cause the total VMT generated by the City of Vacaville to increase.

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Methodology

This analysis is performed with the City's travel demand model for Base Year (2020) and Cumulative (2050) year conditions. The model was modified to include additional roadway and traffic analysis zone (TAZ) detail in the McMurtry Creek Estates area. The following four scenarios were analyzed for VMT comparison:

- Base Year No Project
- Base Year Plus Project
- Cumulative No Project
- Cumulative Plus Project

Average VMT Per Dwelling Unit

Table 1 shows the average VMT per dwelling unit generated by the project in comparison to the city-wide average.

Table 1: Average VMT Per Dwelling Unit Generated by City of Vacaville

Scenario	City-wide Average	Threshold[1]	Project's Average	Comparison with Threshold
Base Year	86.4	73.4	98.0	+33.4%
Cumulative Year	76.6	65.1	83.4	+28.1%

Notes: [1] Threshold is defined as 85% of City-wide average
Source: Fehr & Peers, 2023

For single-family residentials, the base year city-wide VMT is 86.4 VMT per dwelling unit. The project's single-family residential exceeds the base year threshold of 73.4 VMT per dwelling unit by 33.4%. Similarly, for single-family residentials, the cumulative city-wide VMT is 76.6 VMT per dwelling unit. The project's single-family residential exceeds the cumulative threshold of 65.1 VMT per dwelling unit by 28.1%.

Therefore, the project's VMT impact will be **significant** as described by threshold one above.

Citywide VMT Comparison

Since the project's average VMT per dwelling unit exceeds the threshold, another test was performed to determine if the project would cause the total Citywide VMT to increase, decrease, or remain unchanged. **Table 2** shows the total VMT generated by all land uses within Vacaville under base year (2020) and cumulative (2050) conditions.

Table 2: Total VMT Generated by City of Vacaville

Scenario	No Project	Plus Project	Increase
Base year	6,785,800	6,788,308	2,508
Cumulative	9,570,720	9,575,684	4,964
***Source*:** Fehr & Peers, 2023			

Table 2 indicates that the proposed rezoning would result in a net increase of 2,508 VMT in base year and 4,964 VMT in cumulative year. Since the proposed rezone would cause the total VMT generated by the City of Vacaville to increase, its VMT impact would also be ***significant*** according to threshold two above. Mitigation measures are required.

Mitigation Measures

In order to reach a less than significant conclusion, the project's VMT needs to be reduced by 33.4% in base year and 28.1% in cumulative. The City of Vacaville Draft Supplemental Environmental Impact Report for General Plan Transportation Element and Energy Conservation Action Strategy Update (2021) lists potential implementation measures in MM-TRA-1 for proposed development projects that could have a potentially significant VMT impact. These potential measures were considered for feasibility, reasonableness, and applicability to the project. **Table 3** lists the measures and their feasibility for the McMurtry Estates project.

Table 3: Review of Mitigation Measures

Mitigation Measure (MM-TRA-1)	Feasibility	Notes
Increasing project density	Potentially feasible	Would require changes to project description
Incorporating affordable housing, including low-income housing, into residential and mixed-use development	Potentially feasible	Would require changes to project description
Improving pedestrian or bicycle networks, or transit service	Potentially feasible	Minimum benefit [1]
Providing bicycle parking	Potentially feasible	Minimum benefit [1]
Orienting the project toward transit, bicycle and pedestrian facilities	Not feasible	Would require changing the project location
Increasing access to common goods and services, such as groceries, schools, and daycare	Not feasible	Would require changing the project location
Providing transit subsidies or passes	Not applicable	Minimum benefit
Improving access to transit	Potentially feasible	Minimum benefit [1]
Implementing traffic calming	Not applicable	Minimum benefit
Unbundling parking costs	Not feasible	Applies to medium-high to high density residential development
Others: • Implement employer parking cash-out programs • Implementing a commuter reduction program • Providing car-sharing, bike sharing, and ride-sharing programs • Providing ride matching services • Providing telework options • Providing incentives or subsidies that increase the use of modes other than single-occupant vehicles • Providing on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms • Providing employee transportation coordinator at employment sites • Providing a guaranteed ride home service to users of non-auto modes	Not applicable	Doesn't apply to residential projects

Notes:
[1] These would potentially replace very short trips only, and not materially decrease the frequency of longer distance trips. However, both Class I (off-street paths) and Class II (on-street lanes) are already present in the project vicinity. The nearest bus stop is over 1-mile away from the project site. Moreover, that stop serves Coach Route 2 which operate on a limited schedule (only 7 buses stop per day and no service on weekends).

Source: Draft Supplemental Environmental Impact Report - General Plan Transportation Element and Energy Conservation Action Strategy Update, March 2021
Fehr & Peers, 2023

Potentially feasible mitigation measures identified in **Table 3** were evaluated using the TDM+ tool[1]. This tool is based on the research from California Air Pollution Control Officers Association's (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity, December 2021*. The range of VMT reduction strategies for the proposed project are listed below:

- Increasing project's residential density – This would require a change in project description. A maximum of 9.9% VMT reduction can be achieved by increasing the project density from the proposed 3 DU/Acres (approximate) to an average of 9.1 DU/Acres.
- Incorporating affordable housing, including low-income housing into residential development– This would require a change in project description. A maximum of 4.29% VMT reduction can be achieved by including 15% affordable housing.
- Improving pedestrian or bicycle networks, or transit service – Although this is a potentially feasible mitigation measure, the effectiveness of this measure is very limited (<1%), especially due to the isolated nature of the project's location.
- Providing bicycle parking – Although this is a potentially feasible mitigation measure, the effectiveness of this measure is very limited, especially due to the isolated nature of the project's location.

If the maximum reductions in bullets 1 and 2 were to be applied, the project's VMT could be reduced by about 14%. This is far less than the 33.4% reduction in base year and 28.1% reduction in cumulative needed to mitigate the VMT impact to less than significant. Moreover, adding affordable housing or significantly changing the project size or layout of units could make the project potentially unviable. The VMT impact of the project will therefore be ***significant and unavoidable***.

[1] https://www.fehrandpeers.com/tdm/

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