RESOLUTION NO. 2016-057

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ELK GROVE ADOPTING A MITIGATED NEGATIVE DECLARATION AND MITIGATION MONITORING AND REPORTING PROGRAM (MMRP) AND APPROVING A TENTATIVE SUBDIVISION MAP AND DESIGN REVIEW FOR SUBDIVISION LAYOUT FOR THE CALVINE MEADOWS PROJECT (EG-13-018) APNs: 121-0180-064 & 121-0180-052

WHEREAS, the Development Services Department of the City of Elk Grove received an application on April 1, 2013 requesting a Rezone and approval of a Tentative Subdivision Map for the Calvine Meadows Project (the "Project"); and

WHEREAS, the proposed Project is located on real property in the incorporated portions of the City of Elk Grove more particularly described as APNs: 121-0180-064 & -052; and

WHEREAS, the Project qualifies as a project under the California Environmental Quality Act (CEQA), Public Resource Code §§21000 et seq.; and

WHEREAS, the Development Services Department considered the Project request pursuant to the General Plan, Title 23 of the Elk Grove Municipal Code (Zoning Code), City's Design Guidelines, and all other applicable State and local regulations; and

WHEREAS, the City prepared an Initial Study/Mitigated Negative Declaration pursuant to CEQA, attached hereto as Exhibit A and incorporated herein by reference, evaluating the potential environmental effects of the Project; and

WHEREAS, the City determined that the mitigation measures identified in the Initial Study/Mitigated Negative Declaration would reduce environmental impacts to a less than significant level; and

WHEREAS, based on staff's review of the Project, no special circumstances exist that would create a reasonable possibility that establishing a Special Planning Area and approval of a Tentative Subdivision Map and Design Review for Subdivision Layout will have a significant effect on the environment beyond what was analyzed in the Mitigated Negative Declaration prepared for the Project and disclosed; and

WHEREAS, a Mitigation Monitoring and Reporting Program (MMRP) has been prepared in accordance with CEQA, attached hereto as Exhibit B and incorporated herein by reference, which is designed to ensure compliance with the identified mitigation measures during project implementation and operation; and

WHEREAS, the City distributed the Notice of Intent to Adopt the Mitigated Negative Declaration on October 28, 2015. It was posted at the Sacramento County Clerk's office, distributed through State Clearinghouse and at the City offices, pursuant to Section 15072 of Chapter 3 of Title 14 of the California Code of Regulations (State CEQA Guidelines). A 30-day review and comment period was opened on October 28, 2015 and closed November 30, 2015. The Mitigated Negative Declaration was made available to the public during this review period; and

WHEREAS, the City received written comment letters within the 30-day public review period and responded to those comments in the project staff report; and

WHEREAS, the City has considered the comments received during the public review period, and they do not alter the conclusions in the Initial Study and Mitigated Negative Declaration; and

WHEREAS, the City Council has considered the written and oral comments on the proposed project and the Mitigated Negative Declaration; and

WHEREAS, the City of Elk Grove, Development Services, Planning Department, located at 8401 Laguna Palms Way, Elk Grove, California 95758 is the custodian of documents and other materials that constitute the record of proceedings upon which the decision to adopt the Mitigated Negative Declaration is based; and

WHEREAS, the City Council has reviewed the Initial Study, the Mitigated Negative Declaration, and the Mitigation Monitoring and Reporting Program and find that these documents reflect their independent judgment; and

WHEREAS, the Planning Commission held a duly noticed public hearing as required by law to consider all of the information presented by staff, information presented by the Applicant, and public testimony presented in writing and at the meeting and recommended 3-2 that the City Council approve the Project; and

WHEREAS, the City Council held a duly noticed public hearing as required by law to consider all of the information presented by staff, information presented by the Applicant, and public testimony presented in writing and at the meeting.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Elk Grove hereby adopts the Mitigated Negative Declaration and the Mitigation Monitoring and Reporting Program and approves the Tentative Subdivision Map and Design Review for Subdivision Layout for the Calvine Meadows Project attached hereto and incorporated herein by this reference based on the following findings:

1) On the basis of the whole record, there is no substantial evidence that the Project as designed, conditioned and mitigated, will have a significant effect on the environment. A Mitigated Negative Declaration has been prepared and completed in accordance with the California Environmental Quality Act (CEQA). The Mitigated Negative Declaration reflects the independent judgment and analysis of the City.

2) Pursuant to Public Resources Code, Section 21081 and CEQA Guidelines, Section 15091, all of the proposed mitigation measures described in the Mitigated Negative Declaration are feasible, and therefore shall become binding upon the City and affected landowners and their assigns or successors in interest when the Project is approved.

3) To the extent that these findings conclude that various proposed mitigation measures outlined in the Mitigated Negative Declaration are feasible and have not been modified, superseded or withdrawn, the City Council hereby binds itself, all landowners within the Project area, and their assigns and successors in interest to implement those measures. These findings are not merely informational, but constitute a binding set of obligations that will come into effect when the City Council issues the Project entitlements set forth above. The actual implementation of the mitigation measures hereby adopted shall occur by having them included as conditions of approval on subsequent discretionary entitlements granted within the Project area.

4) Although the Final Negative Declaration incorporates changes to the Draft Negative Declaration, none of those changes constitutes substantial revision requiring recirculation pursuant to the criteria set forth in CEQA Guidelines Section 15073.5. The City Council has reviewed and considered the Final IS/MND. The City Council finds that the Final IS/MND provides sufficient analysis of the Calvine Meadows Project pursuant to CEQA and that although the Final IS/MND incorporates changes to the Draft IS/MND, none of those changes constitutes substantial revision requiring recirculation pursuant to the criteria set forth in CEQA Guidelines Section 15073.5.

Evidence: Pursuant to CEQA and the CEQA guidelines, staff prepared an Initial Environmental Study for the Calvine Meadows Project and mitigation measures have been developed that will reduce potential environmental impacts to less than significant levels. The Initial Environmental Study identified potentially significant adverse effects in the areas of air quality, biological resources, geology and soils, greenhouse gas emissions, and noise. Mitigation measures that avoid or mitigate the potentially significant effects to a point where no significant effects would occur were identified in the Initial Study and staff prepared a Mitigated Negative Declaration. Preparation of a Mitigation Monitoring and Reporting Program (MMRP) is required in accordance with the City of Elk Grove regulations and is designed to ensure compliance during project implementation.

The City distributed the Notice of Intent to Adopt the Mitigated Negative Declaration on October 28, 2015. It was posted at the Sacramento County Clerk's office, distributed through State Clearinghouse and at the City offices, pursuant to Section 15072 of Chapter 3 of Title 14 of the California Code of Regulations (State CEQA Guidelines). A 30-day review and comment period was opened on October 28, 2015 and closed November 30, 2015. The Mitigated Negative Declaration was made available to the public during this review period. The City received four written comment letters within the 30-day public review period. These comments do not alter the conclusions of the Initial Study/Mitigated Negative Declaration.

The Project analyzed in the October 2015 Initial Study/Mitigated Negative Declaration (Draft IS/MND) circulated for public review assumed a rezoning of the 23.3-acre site from Agricultural Residential (AR-5) to Low Density Residential (RD-4) and Open Space (O) and included a small-lot Tentative Subdivision Map (TSM; dated September 15, 2015) of 56 single-family residential lots on 11.2 net acres, 1 open space lot on 10.0 net acres, and 5 additional lots totaling 2.1 net acres for water quality, drainage, and a

landscape corridor. Since circulation of the Draft IS/MND, the Application has been amended to request rezoning of the site from Agricultural Residential (AR-5) to Special Planning Area (SPA) and Open Space (O). The SPA would allow the same number of single-family residential lots with design standards consistent with the RD-5 zoning: minimum lot size of 5,200 square feet and typical dimensions of 55' wide x 100' deep shall be allowed; and maximum allowed height for primary structures shall be thirty feet (30') and sixteen feet (16') for accessory structures. The proposed SPA zoning reflects the development shown on the September 15, 2015 TPM, and the September 15, 2015 TPM has not been amended for the Project.

The City has prepared a Final IS/MND that reflects the change in proposed zoning (Exhibit A). The MND includes revisions to the Project description and the Land Use section to describe the amended zoning proposed for the Project. The amendments did not determine any new, avoidable significant effect would occur, require any new mitigation measures, or determine previously identified mitigation measures would not reduce potential effects to a less than significant level.

Because the Draft IS/MND analyzed development as shown on the TPM, effects related to the Project footprint, such as those related to biological resources, cultural resources, flooding, or geological hazards, would not change from that disclosed in the Draft IS/MND. There were no changes made to the Final IS/MND with respect to footprint-related resources. Similarly, the intensity of the proposed development has remained consistent with that analyzed in the Draft IS/MND. Therefore, there were no changes made in the Final MND with respect to intensity-related topics, such as traffic, air quality, and public services and utilities.

Based upon analysis of the Project as currently proposed, although the Final IS/MND incorporates changes to the Draft IS/MND, those changes do not constitute substantial changes requiring recirculation pursuant to CEQA Guidelines Section 15073.5. The Project would not result in a new, avoidable significant effect such that mitigation measures or project revisions must be added in order to reduce the effect to insignificance, or a determination that the proposed mitigation measures will not reduce potential effects to less than significance and new measures or revisions must be required. No further analysis is required.

On the basis of the Mitigated Negative Declaration, environmental analysis, and the whole record, there is no substantial evidence that the project will have a significant adverse impact on the environment above those addressed within the adopted Mitigated Negative Declaration. A Mitigation Monitoring and Reporting Program (MMRP), which is incorporated herein by this reference has been prepared to ensure compliance during project implementation. A condition of approval has been imposed on the project that requires conformance with the MMRP. The City of Elk Grove, Development Services Planning Department, located at 8401 Laguna Palms Way, Elk Grove, California 95758 is the custodian of documents and other materials that constitute the record of proceedings upon which the decision to adopt the Negative Declaration is based.

AND, BE IT FURTHER RESOLVED, that the City Council of the City of Elk Grove hereby approves the Tentative Subdivision Map for the Project as illustrated in Exhibit C and Design Review for Subdivision Layout, subject to the draft conditions of approval contained in Exhibit D, based upon the following findings:

Tentative Subdivision Map

Finding: None of the findings (a) through (g) below in Section 66474 of the California Government Code that require a City to deny approval of a tentative map apply to this Project.

a. That the proposed map is not consistent with applicable general and specific plans as specified in Section 65451.
b. That the design or improvement of the proposed subdivision is not consistent with applicable general and specific plans.
c. That the site is not physically suitable for the type of development.
d. That the site is not physically suitable for the proposed density of development.
e. That the design of the subdivision or the proposed improvements is likely to cause substantial environmental damage or substantially and avoidably injure fish or wildlife or their habitat.
f. That the design of the subdivision or type of improvements is likely to cause serious public health problems.
g. That the design of the subdivision or type of improvements will conflict with easements acquired by the public at large, for access through or use of, property within the proposed subdivision.

Evidence: Findings (a) through (g) in Section 66474 of the California Government Code do not apply to the project.

a. The proposed Tentative Subdivision Map is consistent with the General Plan for the City. Specifically, the design and density of development provides, implements, and is consistent with the allowed density and intensity for the site as provided on the General Plan Land Use Map. Further, the configuration of development is supported by General Plan Policy CAQ-7, which allows for clustering of development.
b. The design and improvement is consistent with the General Plan as the density and intensity of development proposed is consistent with that specifically allowed under the General Plan Land Use Plan.
c. The Project site is physically suitable for the proposed type of development based upon the analysis presented in the Initial Study/Mitigated Negative Declaration prepared for the Project.
d. The Project proposes the development of 56 residential units, one open space/drainage parkway, one landscape corridor lot, and two water quality basin lots. The ultimate gross density of the Project is 2.4 dwelling units per area. The General Plan identified the site for future development at a density of 0.51 to 4.0 dwelling units per acre. Therefore, the Project is less dense than the maximum allowed under the General Plan. Furthermore, all proposed lots meet the

applicable development standards of the proposed SPA and will be adequately served by the proposed and conditioned public services and infrastructure.

e. The Project site is physically suitable for the proposed type of development based upon the analysis presented in the Initial Study/Mitigated Negative Declaration prepared for the Project.
f. The design of the subdivision will not cause serious public health problems based upon the analysis presented in the Initial Study/Mitigated Negative Declaration prepared for the Project including potential issues related to prior uses of the Project site.
g. The design of the subdivision will not conflict with easements acquired by the public at large as demonstrated by review of the Project by the City's Public Works Department.

Design Review for Subdivision Layout

Finding #1: The proposed Project is consistent with the objectives of the General Plan, complies with applicable zoning regulations, specific plan provisions, special planning area provisions, Citywide design guidelines, and improvement standards adopted by the City.

Evidence #1: As previously mentioned, the Project is consistent with the goals and policies of the General Plan and the proposed subdivision is consistent with the requirements of the proposed SPA. The proposed Project utilizes a modified grid street system with limited cul-de-sacs, furthering provision 3.A.2.2 of the Citywide Design Guidelines.

Finding #2: The proposed Project will not create conflicts with vehicular, bicycle, or pedestrian transportation modes of circulation.

Evidence #2: The design of the Project and resultant traffic was analyzed in the Initial Study/Mitigated Negative Declaration. The analysis states that the General Plan land use designation for the Project site allows up to 4 dwelling units per gross acre, or a total of 93 dwelling units the 23.3-acre Project site. The EIR for the City of Elk Grove General Plan assumed full buildout of the Project site. The proposed Project would create 56 new single-family residential lots. Therefore, the proposed Project would create 37 fewer units than allowed by the General Plan land use designation. Further, the Project has been designed in accordance with City road an improvement standards. The proposed Project would not result in the development of any new hazards or potential incompatibilities. The proposed subdivision and layout provides adequate off-site access and on-site circulation for vehicle, bicycle, and pedestrian modes and sufficient parking for vehicles and bicycles consistent with applicable requirements.

Finding #3: For residential subdivision design review applications, the residential subdivision is well integrated with the City's street network, creates unique neighborhood environments, reflects traditional architectural styles, and establishes a pedestrian friendly environment.

Evidence #3: The Project includes an interconnected street system as well as sufficient open space and landscaping. The Project also provides pedestrian connectivity from the neighborhood to Calvine Road to the north. The architecture of the future proposed homes will be reviewed for consistency with the City's Design Guidelines as part of subsequent Design Review.

PASSED AND ADOPTED by the City Council of the City of Elk Grove this 23rd day of March 2016.

GARY DAVIS, MAYOR of the
CITY OF ELK GROVE

ATTEST:

JASON LINDGREN, CITY CLERK

APPROVED AS TO FORM:

JONATHAN P. HOBBS,
CITY ATTORNEY

EXHIBIT A

CITY OF ELK GROVE

CALVINE MEADOWS

FINAL SUBSEQUENT INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION

Prepared for:

CITY OF ELK GROVE
8401 LAGUNA PALMS WAY
ELK GROVE, CA 95758

Prepared by:

Michael Baker
INTERNATIONAL

2729 PROSPECT PARK DRIVE, SUITE 220
RANCHO CORDOVA, CA 95670

FEBRUARY 2016

CITY OF ELK GROVE

CALVINE MEADOWS

FINAL SUBSEQUENT INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION

Prepared for:

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Prepared by:

MICHAEL BAKER INTERNATIONAL
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RANCHO CORDOVA, CA 95670

FEBRUARY 2016

1.0 INTRODUCTION

2.0 PROJECT DESCRIPTION

3.0 ENVIRONMENTAL CHECKLIST

4.0 ENVIRONMENTAL ANALYSIS

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1.0 INTRODUCTION

A. PURPOSE AND BACKGROUND OF THE INITIAL STUDY

The City of Elk Grove (City) is processing an application for the Calvine Meadows Project (proposed Project), which requests entitlements for a Rezone and Tentative Subdivision Map. The entitlements would allow the development of 56 residential units on approximately 23.3 acres located in the City. The purpose of this Subsequent Initial Study/Mitigated Negative Declaration (IS/MND) is to evaluate the potential environmental effects associated with implementation of the Project and to provide mitigation where necessary to avoid, minimize, or lessen those effects.

When an environmental impact report (EIR) has been certified or a mitigated negative declaration has already been adopted for a project, California Environmental Quality Act (CEQA) Guidelines Section 15163(a) sets forth the criteria for determining whether a supplemental MND must be prepared in support of further agency action on the project.

Pursuant to State CEQA Guidelines Section 15162(a), a subsequent mitigated negative declaration (MND) would be appropriate if the following conditions were met:

(a) When an EIR has been certified or negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alterative.

The Elk Grove General Plan EIR, certified in 2003 (SCH No. 2002062082), evaluated the environmental effects of buildout of the City, including development of the Project site under its current land use designation (Estate Residential). The proposed Calvine Meadows Project is subject to all applicable policies and implementation measures identified in the Elk Grove General Plan EIR. The Elk Grove General Plan EIR can be found at http://www.egplanning.org/gp_zoning/deir/index.asp.

As discussed in this IS/MND, the modifications proposed as part of the Calvine Meadows Project would not result in any new significant impacts, nor would any previously identified impact increase in severity from what was originally documented in the Elk Grove General Plan EIR. Additionally, no mitigation identified in the EIR and found to be infeasible has now been determined feasible, and the Project proponent has accepted all mitigation measures previously adopted. The City of Elk Grove has determined that only minor modification of the original EIR would be necessary for it to adequately address the impacts of the proposed Project. Therefore, the City has prepared this Supplemental IS/MND.

B. LEAD AGENCY

The lead agency is the public agency with primary responsibility over a proposed project. In accordance with CEQA Guidelines Section 15051(b)(1), "the lead agency will normally be the agency with general governmental powers, such as a city or county, rather than an agency with a single or limited purpose..." The City of Elk Grove will serve as the lead agency for the Calvine Meadows Project.

C. TECHNICAL STUDIES

Technical studies prepared for the proposed Project and referenced in this IS/MND are listed below. The technical studies are available at the City of Elk Grove Planning Department at 8401 Laguna Palms Way, Elk Grove, CA 95758, Monday through Friday 8:00 a.m. to 5:00 p.m.

- Biological Assessment, May 2014 – Westech Company
- Delineation of Wetlands and Waters of the United States, May 2014 – Westech Company
- Geotechnical Exploration Report, March 2013 – KC Geotechnical Engineering Consultants
- Planning Level Drainage Study, December 2013 – Guide Engineering

2.0 PROJECT DESCRIPTION

A. PROJECT LOCATION AND SETTING

The proposed Project is located in the City of Elk Grove in Sacramento County, California (**Figure 1, Regional Vicinity**). The Project site is located at 9450 Calvine Road just south of the City's northern boundary and east of the Calvine Road/Jordan Ranch Road intersection. Sheldon High School is located north of the Project site across Calvine Road. A low-density residential subdivision and a church are located directly to the west, and rural ranch properties are located to the east and south. The site consists of three parcels, identified as Assessor's Parcel Numbers (APN) 121-0180-007, 121-0180-052, and 121-0190-001 (**Figure 2, Project Location**).

The Project site has historically been used for agricultural production but is currently fallow and has not been planted in several years. A wetland delineation performed on the Project site in May 2014 identified three wetland features on the site totaling 1.03 acres, including a perennial drainage (Laguna Creek) and two adjacent depressional wetlands. The site is considered annual grassland, with the exception of a fringe of riparian habitat that occurs along parts of the drainage. A house, several associated outbuildings, and scattered vehicles and debris are located at the northwestern corner of the site.

B. PROPOSED ACTIONS ADDRESSED IN THE IS/MND

The proposed Project is requesting the following entitlements:

- Rezoning of the 23.3-acre site from Agricultural Residential (AR-5) to Special Planning Area (SPA) ~~Low-Density Residential (RD-4)~~ and Open Space (O)
- Special Planning Area (SPA) to allow 56 single-family residential lots with an overall development density consistent with RD-4 standards and lot-specific design standards consistent with the RD-5 zoning: minimum lot size of 5,200 square feet and typical dimensions of 55' wide x 100' deep shall be allowed; and maximum allowed height for primary structures shall be thirty feet (30') and sixteen feet (16') for accessory structures
- Small-lot Tentative Subdivision Map (TSM) of 56 single-family residential lots on 11.2 net acres, 1 open space lot on 10.0 net acres, and 5 additional lots totaling 2.1 net acres for water quality, drainage, and a landscape corridor (see **Figure 3**)

The residential parcels would be arranged along public roadways with sidewalks, curbs, gutters, streetlights, and other improvements consistent with Section 23.16.080 of the Elk Grove Municipal Code (Design Review).

C. REGULATORY REQUIREMENTS, PERMITS, AND APPROVALS

This Subsequent IS/MND may be used to support additional subsequent approvals and permits that may be required from local, regional, State, or federal agencies in the processing of the proposed Project including, but not limited to:

- US Army Corps of Engineers (USACE)
- California Department of Fish and Wildlife (CDFW)
- Central Valley Regional Water Quality Control Board (CVRWQCB)
- Sacramento Metropolitan Air Quality Management District (SMAQMD)

- Sacramento Regional County Sanitation District (SRCSD)
- Sacramento County Water Agency
- Cosumnes Community Services District Parks and Recreation
- Cosumnes Community Services District Fire Department

3.0 ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. Project Title:

Calvine Meadows

2. Lead Agency Name and Address:

City of Elk Grove
Development Services Department
8401 Laguna Palms Way
Elk Grove, CA 95758

3. Contact Person and Phone Number:

Nathan Anderson, Project Planner
8401 Laguna Palms Way
Elk Grove, CA 95758
(916) 478-2245

4. Project Location:

The Project site is located at 9450 Calvine Road east of the intersection of Calvine Road and Jordan Ranch Road, along the northern boundary of the City of Elk Grove. The site is identified by APN 121-0180-007, 121-0180-052, and 121-0190-001.

5. Project Sponsor's Name and Address:

York Real Estate Dev. LLC
James York
4135 Poinciana Ave.
Miami, FL 33133

6. General Plan Designation:

Estate Residential

7. Description of Project:

The proposed Project is requesting entitlements for a Rezone of the site to SPA, and Small-Lot Tentative Subdivision Map. The entitlements would allow for the development of 56 residential units on 23.3 acres.

8. Surrounding Land Uses and Setting:

The Project site is located south of Sheldon High School and Calvine Road, east of an existing low-density residential subdivision and open space, and north and west of various rural ranch properties.

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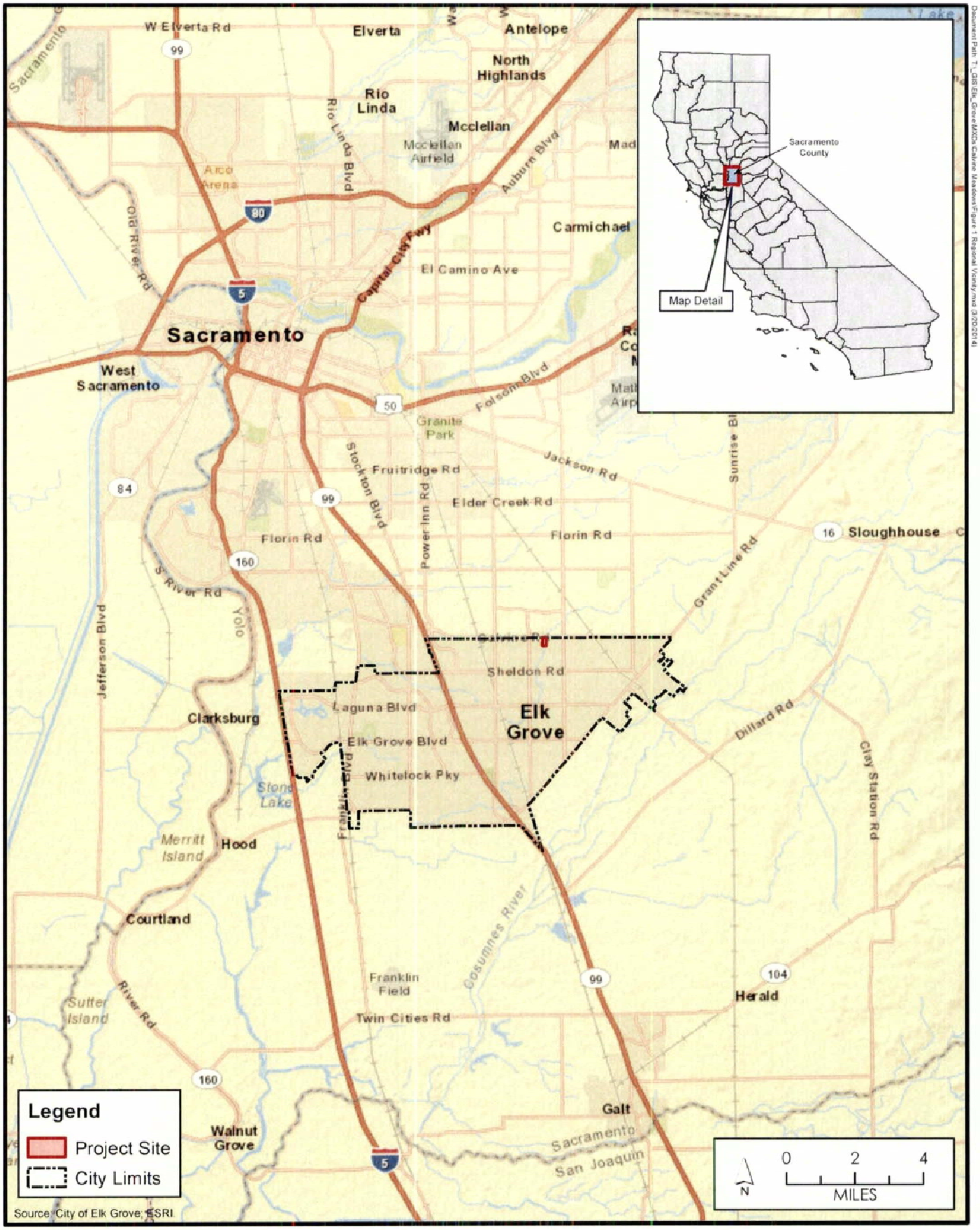


City of Elk Grove
Development Services

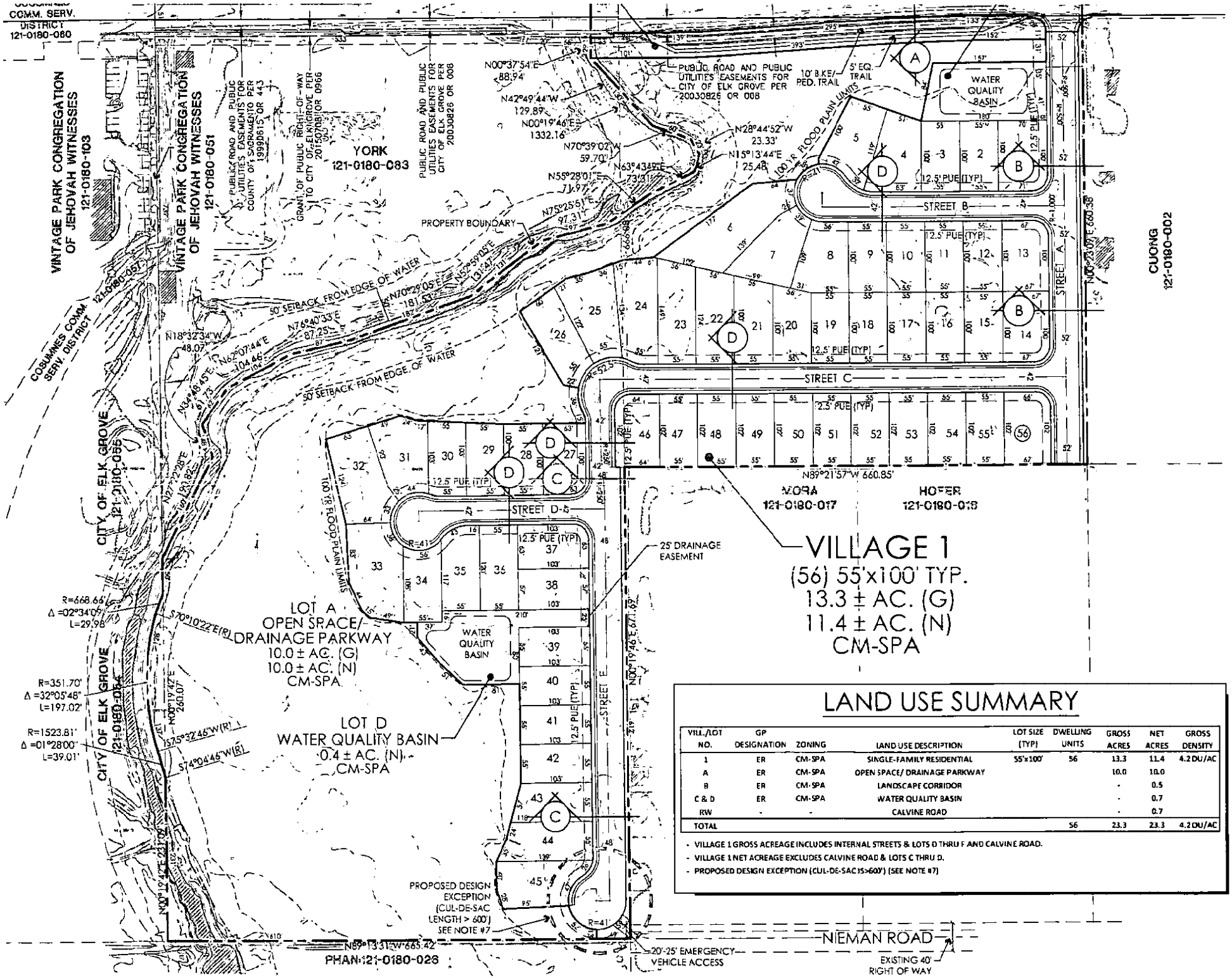
Figure 1

Regional Vicinity

City of Elk Grove
Development Services

Figure 2

Project Location



LAND USE SUMMARY

VILL./LOT NO.	GP DESIGNATION	ZONING	LAND USE DESCRIPTION	LOT SIZE (TYP)	DWELLING UNITS	GROSS ACRES	NET ACRES	GROSS DENSITY
1	ER	CM-SPA	SINGLE-FAMILY RESIDENTIAL	55'x100'	56	13.3	11.4	4.2 DU/AC
A	ER	CM-SPA	OPEN SPACE/ DRAINAGE PARKWAY			10.0	10.0	
B	ER	CM-SPA	LANDSCAPE CORRIDOR			-	0.5	
C & D	ER	CM-SPA	WATER QUALITY BASIN			-	0.7	
RW	-	-	CALVINE ROAD			-	0.7	
TOTAL					56	23.3	23.3	4.2 DU/AC

- VILLAGE 1 GROSS ACREAGE INCLUDES INTERNAL STREETS & LOTS D THRU F AND CALVINE ROAD.
- VILLAGE 1 NET ACREAGE EXCLUDES CALVINE ROAD & LOTS C THRU D.
- PROPOSED DESIGN EXCEPTION (CUL-DE-SAC IS>600') (SEE NOTE #7)

B. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below could result in potentially significant impacts if mitigation measures are not implemented. As discussed on the following pages, where potentially significant impacts are identified, feasible mitigation was identified to reduce the impacts to a less than significant level. Therefore, potentially significant impacts that are mitigated to "Less Than Significant" are shown here.

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

C. 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 of the incorporated mitigation measures and 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 EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Nathan Anderson	Project Planner
Printed Name	Title

D. EVALUATION OF ENVIRONMENTAL IMPACTS

Each of the responses in the following environmental checklist consider the whole action involved, including project-level, cumulative, on-site, off-site, indirect, construction, and operational impacts. A brief explanation is provided for all answers and supported by the information sources cited.

1. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone).

2. A "Less Than Significant Impact" applies when the proposed project would not result in a substantial and adverse change in the environment. This impact level does not require mitigation measures.

3. A "Less Than Significant Impact With Mitigation Incorporated" applies when the proposed project would not result in a substantial and adverse change in the environment after additional mitigation measures are applied.

4. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect is significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

5. "New Impact or Increase Severity of Previous Significant Impact?" This is marked "No" where the impact has been adequately addressed in the City of Elk Grove General Plan EIR and further analysis is not required. A "Yes" entry would require an EIR.

4.0 ENVIRONMENTAL ANALYSIS

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
1. **AESTHETICS.** Would the project:					
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒	No
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒	No
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐	No
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☒	☐	No

PROJECT IMPACTS AND MITIGATION MEASURES

a, b) **No Impact.** There are no scenic vistas or designated State scenic highways in the vicinity of the Project site. Therefore, there would be no impact. **There is no new or substantially more severe significant impact.**

c) **Less Than Significant Impact.** The Elk Grove General Plan EIR (Impact 4.13.1) assessed the potential for implementation of the General Plan to affect the aesthetic character of the City. The EIR disclosed that implementation of the General Plan would result in alterations to existing landscape characteristics in the City and there would be a significant change from agriculture to urban land uses in the southern portion of the City. The EIR provided a list of General Plan policies and actions that would reduce the impact but concluded that the change in visual character would be significant and unavoidable.

The Project site is largely undeveloped and covered with annual grasses. A perennial drainage meanders through the site from north to south with a narrow corridor of riparian vegetation and trees along its banks. A house, several associated outbuildings, and scattered vehicles and debris are located at the northwestern corner of the site.

A low-density residential subdivision and a church are located immediately west of the site. The existing homes are generally one- and two-story structures with sloped roofs, garages, and landscaping in the front and along public streets. The public street improvements include sidewalks, planting areas, and streetlights. North of the Project site are undeveloped lands and a stadium and playfields at Sheldon High School. East and south of the Project site are undeveloped parcels and rural ranch properties; however, these properties are planned for future low-density residential development.

The proposed Project would allow residential development on the eastern portion of the Project site, which would change the site's visual character from undeveloped grassland to a residential subdivision with houses, roadways, sidewalks, driveways, fencing, streetlights, and ornamental landscaping. Although this would represent a change to the existing visual character of this portion of the Project site, the proposed development would be a continuation of the developed nature of the areas to the west and north. The proposed residences would also be set back from Calvine Road, and a visual buffer would be provided by the proposed open space parcels, water quality basin, and landscape corridor. Furthermore, future development on the Project site would be required to comply with the City's Zoning Code and Design Guidelines. Compliance with these City standards would ensure that the proposed residential development features quality design and architecture and that it is compatible with the character of the adjacent uses.

In addition, the western portion of the Project site, including the perennial drainage and associated riparian habitat, would be preserved as an open space corridor. This corridor would provide a visual buffer between the proposed development and the existing subdivision to the west and would maintain some of the existing visual character of the site. Therefore, while the proposed Project would change the site, the change would not substantially degrade the visual character or quality of the Project site or its surroundings. This impact would be less than significant. **There is no new or substantially more severe significant impact.**

d) **Less Than Significant Impact.** The Elk Grove General Plan EIR (impacts 4.13.2 and 4.13.3) assessed the potential for implementation of the General Plan to introduce new sources of daytime glare and nighttime lighting and provided mitigation (MM 4.13.2 and MM 4.13.3) to reduce these potential impacts to less than significant levels. This mitigation required the City's Design Guidelines to include provisions to minimize the use of reflective materials in building design as well as to require outdoor light fixtures to be directed/shielded downward and to be screened to avoid lighting spillover and nighttime sky glow conditions.

The proposed Project would introduce new light sources onto the currently undeveloped Project site. Nighttime lighting levels on the Project site would increase over current lighting levels and could result in adverse effects to adjacent land uses through the "spilling over" of light into these areas and sky glow conditions. However, the proposed Project would be consistent with the land uses envisioned by the Elk Grove General Plan and with the existing and planned developed on adjacent properties. In addition, the proposed development would be subject to Elk Grove Municipal Code Section 23.56, Lighting, which provides outdoor lighting standards that include shielding requirements, maximum level of illumination, and height of outdoor light fixtures. Elk Grove Municipal Code Section 23.16.080, Design Review, establishes an expanded design review process for all development, requiring additional site and design consideration beyond conformance with minimum standards of the Zoning Code. Section 23.16.080(E)(1) requires applicable development to comply with the Citywide Design Guidelines, which include design provisions for lighting as previously described.

Compliance with applicable City regulations and Design Guidelines would ensure that Project lighting is designed in a manner which would minimize impacts to adjacent properties and the night sky. Therefore, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
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 as an optional model to use in assessing impacts on agriculture and farmland. 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 nonagricultural use?	☐	☐	☐	☒	No
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐	No
c) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526 and by Government Code Section 51104(f)), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒	No
d) Result in the loss of forestland or conversion of forestland to non-forest use?	☐	☐	☐	☒	No
e) Involve other changes in the existing environment, which due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forestland to non-forest use?	☐	☐	☐	☒	No

PROJECT IMPACTS AND MITIGATION MEASURES

a) **No Impact.** The Project site is designated by the Farmland Mapping and Monitoring Program (FMMP) as Other Land and Grazing Land (DOC 2012). Therefore, implementation of the proposed Project would not result in the conversion of any Important Farmland to a nonagricultural use, and no impact would occur. **There is no new or substantially more severe significant impact.**

b) **Less Than Significant Impact.** The Project site is currently zoned Agricultural Residential (AR-5), which is intended to accommodate very low density (minimum lot size of 5 gross acres) single-family residential uses in a rural setting with agricultural and accessory uses. However, the site does not currently contain any agricultural operations and is not designated by the FMMP as Important Farmland. Therefore, development of the site would not result in the loss of any agricultural resources. Furthermore, neither the Project site nor the surrounding properties are under a Williamson Act contract (DOC 2013). Therefore, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

c, d) **No Impact.** Neither the City of Elk Grove nor Sacramento County contains any forestland or land zoned for forestland, timberland, or timberland production. Therefore, no impact would occur. **There is no new or substantially more severe significant impact.**

e) **No Impact.** The placement of nonagricultural uses adjacent to agricultural uses can result in conflicts that place growth pressure on agricultural lands to convert to urban uses. Neither the Project site nor any surrounding properties contain Important Farmland, farmland under a Williamson Act contract, active farming operations, or forestland. Therefore, implementation of the proposed Project would have no impact on agricultural or forestry resources. **There is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
3. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:					
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐	No
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐	No
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project is nonattainment under applicable federal or state ambient air quality standards?	☐	☐	☒	☐	No
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐	No
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒	No

PROJECT IMPACTS AND MITIGATION MEASURES

a) **Less Than Significant Impact.** The Elk Grove General Plan EIR (Impact 4.7.4) assessed the potential for implementation of the General Plan to conflict with or obstruct implementation of an applicable air quality plan. The EIR disclosed that the General Plan is consistent with the applicable air quality plan for the region in terms of population and housing growth assumptions and provides an improved jobs/housing balance (which can result in reduced vehicle miles traveled and thus less air pollutant emissions).

The Sacramento Metropolitan Air Quality Management District (SMAQMD) coordinates the work of government agencies, businesses, and private citizens to achieve and maintain healthy air quality for the Sacramento area. The SMAQMD develops market-based programs to reduce emissions associated with mobile sources, processes permits, ensures compliance with permit conditions and with SMAQMD rules and regulations, and conducts long-term planning related to air quality.

Sacramento County, and thus Elk Grove, is classified as a nonattainment region for both federal and State ozone, PM_{10}, and $PM_{2.5}$ standards (CARB 2013). Since Sacramento County is classified a nonattainment area, the SMAQMD is required to submit air quality plans and rate-of-progress milestone evaluations in accordance with the federal Clean Air Act. The SMAQMD air quality attainment plans and reports, which include the *Sacramento Regional 8-Hour Ozone 2011 Reasonable Further Progress Plan* (2008) and *PM_{10} Implementation/Maintenance Plan and Re-Designation Request for Sacramento County* (2010), present comprehensive strategies to reduce the ozone precursor

pollutants, reactive organic gases (ROG) and nitrous oxides (NO_x), as well as PM emissions from stationary, area, mobile, and indirect sources. *The Sacramento Regional 8-Hour Ozone 2011 Reasonable Further Progress Plan* includes the information and analyses to fulfill Clean Air Act requirements for demonstrating reasonable further progress toward attaining the 8-hour ozone national ambient air quality standards (NAAQS) for the Sacramento region. In addition, this plan establishes an updated emissions inventory and maintains existing motor vehicle emission budgets for transportation conformity purposes. The *PM_{10} Implementation/Maintenance Plan and Re-Designation Request for Sacramento County* attempts to fulfill the requirements for the US Environmental Protection Agency (EPA) to redesignate Sacramento County from nonattainment to attainment of the PM_{10} national ambient air quality standards.

According to SMAQMD guidance (2011a), if the Project results in a change in a designated land use and corresponding substantial increases in vehicle miles traveled (VMT), the resultant increase in VMT may be unaccounted for in regional emissions inventories contained in the regional air quality control plans described above, which are based on local planning documents and general plans. Substantial increases in VMT that are not accounted for in the emissions inventories of these air quality plans may conflict with these air quality plans and therefore result in a contribution to the region's existing air quality nonattainment status.

The Project proposes to rezone the Project site from Agricultural Residential to Low Density Residential. This proposed rezone would allow the development of 56 residential units as proposed by the Project. This represents an increase of 50 residential units over the 6 units allowed under the current Agricultural Residential zoning. According to the trip generation rates identified in the air pollutant emissions software (CalEEMod version 2013.2) employed in this analysis, the additional 50 units would generate an additional 479 daily traffic trips. The SMAQMD (2008) estimates a total of 69 million VMT in Sacramento County in 2015 and 75 million VMT in Sacramento County in 2020. If each of the 479 daily traffic trips spanned 20 miles, the result would be 9,580 VMT, which is an increase of 0.01 percent of the estimated vehicle miles traveled in 2015.

Although the Project would result in an increase in the number of trips compared to that analyzed in the Elk Grove General Plan EIR, the resultant VMT from trips generated by the Project would not constitute a substantial increase in VMT from that anticipated in the applicable air quality control plans. In addition, the Project would not conflict with the *Sacramento Regional 8-Hour Ozone 2011 Reasonable Further Progress Plan* or the *PM_{10} Implementation/Maintenance Plan and Re-Designation Request for Sacramento County*. This impact is less than significant. **There is no new or substantially more severe significant impact.**

b) **Less Than Significant Impact With Mitigation Incorporated.** The Elk Grove General Plan EIR (Impacts 4.7.1 and 4.7.2) assessed the potential for implementation of the General Plan to conflict with both short-term construction standards and long-term operational standards in terms of air pollutant emissions. The EIR provides a list of General Plan policies and actions that would reduce air quality impacts, but concluded that construction and operational activity would result in significant and unavoidable air quality impacts.

Since the Project would involve construction activities and new facilities, it would contribute to regional and localized pollutant emissions during construction (short-term) and Project occupancy (long-term). The Project's potential to violate any air quality standard or contribute to an existing air quality violation is evaluated below.

Construction Emissions

Three basic sources of short-term construction emissions would be generated by the proposed Project: the operation of construction vehicles (i.e., excavators, trenchers, dump trucks), the creation of fugitive dust during clearing and grading, and the use of asphalt or other oil-based substances during paving activities. Construction activities such as excavation and grading operations, and construction vehicle traffic, as well as wind blowing over exposed soils, would generate exhaust emissions and fugitive particulate matter emissions that would affect local air quality at various times during construction. Effects would be variable depending on the weather, soil conditions, the amount of activity taking place, and the nature of dust control efforts. The dry climate of the area during the summer months creates a high potential for dust generation.

Construction activities would be subject to SMAQMD Rule 403, which requires taking reasonable precautions to prevent the emissions of fugitive dust, such as using water or chemicals for control of dust during construction operations, the construction of roadways, or the clearing of land and applying asphalt, oil, water, or suitable chemicals on dirt roads, materials, stockpiles, and other surfaces that can give rise to airborne dust. In addition, Elk Grove Municipal Code Chapter 16.44, Land Grading and Erosion Control, requires projects in the City that disturb 350 cubic yards or more of soil or 1 or more acres of land to prepare an erosion and sediment control plan specifying best management practices (BMPs) for erosion and sediment control, and provides legal authority to the City for inspections and enforcement needed to ensure compliance.

The SMAQMD has established methods to quantify air emissions associated with construction activities. Emissions would vary from day to day, depending on the level of activity, the specific type of construction activity occurring, and, for fugitive dust, prevailing weather conditions. The construction air quality emissions are summarized in **Table 1**. The Project's complete CalEEMod output spreadsheets are included in **Appendix A**.

TABLE 1
CONSTRUCTION-RELATED CRITERIA POLLUTANT AND PRECURSOR EMISSIONS – MAXIMUM POUNDS PER DAY[1]

Construction Phases	Reactive Organic Gases (ROG)	Nitrogen Oxide (NOx)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Summer Emissions – Pounds per Day (Unmitigated)						
One Year of Construction[2]	12.37	79.12	51.91	0.06	11.35	7.34
Winter Emissions – Pounds per Day (Unmitigated)						
One Year of Construction[2]	12.50	79.14	51.81	0.06	11.35	7.34
SMAQMD Potentially Significant Impact Threshold	—	85 pounds/day	—	—	—	—
Exceed SMAQMD Threshold?	—	No	—	—	—	—

Source: CalEEMod version 2013.2.
1. Modeling assumes 63 units would be constructed on 30 acres, so emissions shown are conservative for the proposed 56 units on 23.3 acres.
*2. Building construction, paving, and painting activities assumed to occur simultaneously. Emissions projections account for the component of SMAQMD Rule 403 that requires the periodic watering of exposed surfaces at construction sites. Refer to **Appendix A** for model data outputs.*

As shown in **Table 1**, Project emissions resulting from construction would not exceed the SMAQMD significance criterion of 85 pounds per day of NOx.

The proposed Project has the potential to exceed the PM_{10} standard. While construction impacts are temporary and would cease once construction is completed, they nevertheless would have an effect on particulate matter emissions during construction activities. The SMAQMD provides screening criteria that can also be used for the evaluation of construction-generated PM_{10}, based on the overall maximum daily area of disturbance associated with proposed projects. While the Project would be required to prepare an erosion and sediment control plan pursuant to Municipal Code Chapter 16.44, if Project construction would disturb 350 or more cubic yards of soil or more than 1 acre, in accordance with the SMAQMD criteria described above, areas of daily disturbance in excess of SMAQMD screening criteria (15 acres) would be considered potentially significant. While the Project site is just over 23 acres, the Project proposes 10 acres of open space; thus, it is very unlikely that 15 acres of the site would be graded in a single day. Nonetheless, mitigation measure **AIR-1** ensures that the area of disturbance for future construction does not exceed 15 acres per day.

Operational Emissions

The SMAQMD has established significance thresholds to evaluate the potential impacts associated with long-term Project operations (SMAQMD 2011a). Regional air pollutant emissions associated with Project operations include area source emissions, energy-use emissions, and mobile source emissions. Area source emissions comprise emissions from fuel combustion from space and water heating, landscape maintenance equipment, evaporative emissions from architectural coatings and consumer products, and unpermitted emissions from stationary sources. Energy-use emissions comprise emissions from on-site natural gas usage, and mobile source emissions comprise emissions from automobiles.

Operational area source emissions, energy-use emissions, and mobile source emissions (e.g., trucks, cars, parking lot sweepers) for the proposed Project were calculated using the CalEEMod air quality model (**Appendix A**). As shown in **Table 2**, the Project's net operational emissions would not exceed SMAQMD significance criteria of 65 pounds per day of NOx or ROG. Emissions rates differ from summer to winter because weather affects factors related to air quality, such as pollutant mixing/dispersion and ozone formation. Because the Project would not exceed SMAQMD thresholds for NOx or ROG, the Project's operational emissions would not result in a significant long-term regional air quality impact.

TABLE 2
OPERATIONAL-RELATED CRITERIA POLLUTANT AND PRECURSOR EMISSIONS – MAXIMUM POUNDS PER DAY[1]

Operations	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_X)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Summer Emissions – Pounds per Day (Unmitigated)						
Proposed Project	10.37	6.01	34.74	0.05	3.59	1.06
Winter Emissions – Pounds per Day (Unmitigated)						
Proposed Project	11.05	6.78	35.42	0.05	3.59	1.06
SMAQMD Potentially Significant Impact Threshold	65 pounds/day	65 pounds/day	—	—	—	—
Exceed SMAQMD Threshold?	**No**	**No**	—	—	—	—

*Source: CalEEMod version 2013.2. Refer to **Appendix A** for model data outputs.*

1. Modeling assumes 63 units, so operational emissions shown are conservative for the proposed 56 units.

The Project's net operational emissions would not exceed SMAQMD significance criteria for NO_X or ROG. Mitigation measure **AIR-1** limits construction ground disturbance to 15 acres per day, which would ensure the Project would not exceed the SMAQMD's criterion for PM_{10}. Therefore, operational-related air quality impacts would be considered less than significant. **There is no new or substantially more severe significant impact.**

Mitigation Measures

AIR-1 To ensure generation of PM_{10} does not exceed standards, ground-disturbing activities during construction shall not exceed the SMAQMD's screening criterion of 15 acres on any day.

Timing/Implementation: *During construction activities*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

c) **Less Than Significant Impact.** Due to the region's nonattainment status for ozone and PM_{10}, the SMAQMD considers projects that are consistent with all applicable air quality plans intended to bring the basin into attainment for all criteria pollutants, and below SMAQMD significance thresholds of the ozone precursor pollutants (i.e., ROG and NO_X), to have less than significant cumulative impacts. As discussed in Issue a), the proposed Project would not conflict with either the *Sacramento Regional 8-Hour Ozone 2011 Reasonable Further Progress Plan* or the *PM_{10} Implementation/Maintenance Plan and Re-Designation Request for Sacramento County* since the increase in VMT attributed to the Project represents a small percentage of the estimated vehicle miles traveled in the county. As discussed in Issue b), predicted long-term operational emissions attributable to the proposed Project would not exceed SMAQMD significance thresholds. Therefore, cumulative impacts would be less than significant per the SMAQMD significance threshold, since the Project would not conflict with applicable air quality plans or exceed SMAQMD significance thresholds. The Project's contribution would not be cumulatively considerable, and the impact would be considered less than significant. **There is no new or substantially more severe significant impact.**

d) **Less Than Significant Impact.** Sensitive land uses are generally defined as locations where people reside or where the presence of air emissions could adversely affect the use of the land. Typical sensitive receptors include residents, schoolchildren, hospital patients, and the elderly. The Elk Grove General Plan considers residences to be "sensitive receptors" in relation to air quality issues. Sheldon High School is located north of the Project site across Calvine Road. A low-density residential subdivision and a church are located directly to the west, and rural ranch properties are located to the east and south.

Air Toxics

The Project would not be a source of air toxics, as it proposes residential development, which does not generate air toxics. However, construction activities would involve the use of a variety of gasoline- and diesel-powered equipment that emits exhaust fumes. Sensitive receptors in the Project vicinity could be exposed to nuisance dust and heavy equipment emission odors (i.e., diesel exhaust) during construction. However, the duration of exposure would be short and exhaust from construction equipment dissipates rapidly. In addition, construction activities would be subject to SMAQMD Rule 403 described above, which requires taking reasonable precautions, such as using water or chemicals for control of dust during construction operations, the construction of roadways, or the clearing of land, to prevent the emissions of the air toxic fine particulate matter. Implementation of Rule 403 would ensure the Project would result in less than significant air toxics–related impacts during construction.

According to the SMAQMD, when a project includes development of new sensitive receptors, such as residential development, all sources of air toxics within a half mile (2,640 feet) of the proposed project with potential to affect the proposed development should be analyzed. According to the California Air Resources Board's (CARB) (2004) Community Health Air Pollution Information System, there are no sources of toxic air contaminants within a half mile of the proposed Project site. This search was augmented by the EPA's (2010) National Air Toxic Program Release Chemical Report, which similarly identifies no sources of air toxics within a half mile of the proposed Project site. Therefore, the Project would not locate a residential neighborhood in the vicinity of a stationary air toxic source.

Freeways and major roadways are another source of air toxics. These roadways are sources of diesel particulate matter (DPM), which CARB lists as a toxic air contaminant. The SMAQMD (2011b) has prepared the Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways. This protocol sets a screening threshold to determine whether a proposed sensitive land use would be negatively affected by its location adjacent to a freeway and/or major roadway. The protocol recommends that sensitive land uses be sited no closer than 500 feet from a high traffic roadway, defined as a freeway with greater than 100,000 vehicles per day or a roadway with greater than 50,000 vehicles per day. The Project site is approximately 17,900 feet east of State Route 99, which is greater than the SMAQMD screening distance. Based on the location of the Project site (adjacent to Calvine Road) and the anticipated peak-hour volumes (1,550 a.m. peak-hour trips) along the segment of Calvine Road from Elk Grove Florin Road to Bradshaw Road under General Plan buildout (Fehr & Peers 2013), the roadway would not exceed 50,000 daily vehicles. Therefore, there would not be a substantial risk related to air toxics from high-volume roadways.

Carbon Monoxide Hotspots

Carbon monoxide (CO) concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Given the high traffic volume potential, areas of high CO concentrations, or "hotspots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours. Modeling is therefore typically conducted for intersections that are projected to operate at unacceptable levels of service during peak commute hours.

The SMAQMD (2011a) provides a project-level screening procedure to determine whether detailed CO hotspot modeling is required for a proposed development project. This preliminary screening methodology provides lead agencies with a conservative indication as to whether project-generated vehicle trips would result in the generation of CO emissions that contribute to an exceedance of the thresholds of significance. According to the SMAQMD, the proposed Project would result in a less than significant impact to air quality for local CO if:

- Traffic generated by the proposed Project would not result in deterioration of intersection level of service (LOS) to LOS E or F;[1] or
- The Project would not contribute additional traffic to an intersection that already operates at LOS of E or F.

As stated in subsection 16, Transportation/Traffic, the proposed Project would not result in impacts associated with performance of the circulation system or conflict with applicable level of service standards beyond those addressed in the General Plan EIR [see Issue a) in subsection 16, Transportation/Traffic]. Therefore, this impact is considered less than significant since the proposed Project would not result in traffic facilities operating at poor levels of service.

The proposed Project would result in less than significant impacts concerning the exposure of people to substantial amounts of air pollutant concentrations. **There is no new or substantially more severe significant impact.**

e) **No Impact.** According to the SMAQMD, land uses commonly considered to be potential sources of odorous emissions include wastewater treatment plants, sanitary landfills, composting/green waste facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting/coating operations, rendering plants, and food packaging plants. No major sources of odors were identified in the vicinity of the Project site that could potentially affect proposed on-site residential land uses. In addition, the proposed Project would not result in the development or long-term operation of any on-site sources of odors due to its nature as a residential land use. No impact would occur. **There is no new or substantially more severe significant impact.**

[1] Level of service (LOS) is a measure used by traffic engineers to determine the effectiveness of transportation infrastructure. Level of service is most commonly used to analyze intersections by categorizing traffic flow with corresponding safe driving conditions. LOS A is considered the most efficient level of service and LOS F the least efficient.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
4. BIOLOGICAL RESOURCES. 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 US Fish and Wildlife Service?	☐	☒	☐	☐	No
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	☐	☒	No
c) Have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.), through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒	No
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?	☐	☐	☐	☒	No
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒	No
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?	☐	☐	☐	☒	No

EXISTING SETTING

Several steps were taken to characterize the environmental setting in the Project area. Project-related documentation was reviewed to collect site-specific data regarding habitat suitability for special-status species as well as the identification of potentially jurisdictional waters. Additional information was obtained from a variety of outside data sources that can be found in

the reference list. Preliminary database searches were performed on the following websites to identify special-status species with the potential to occur in the area:

- US Fish and Wildlife Service's (USFWS) Information, Planning, and Conservation System (2014a)
- USFWS Critical Habitat Portal (2014b)
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (2014a)
- California Native Plant Society (CNPS) Inventory of Rare, Threatened, and Endangered Plants of California (2014)

A search of the USFWS Sacramento Office's database was performed for the Elk Grove, Florin, Buffalo Creek, Sacramento East, Carmichael, Sloughhouse, Galt, Bruceville, and Clay, California, US Geological Survey (USGS) 7.5-minute quadrangles to identify special-status species within their jurisdiction that may be affected by the Project. The query of the USFWS Critical Habitat Portal did not identify any critical habitat within the Project area. A CNDDB database query provided a list of known occurrences for special-status species in the USGS quadrangles listed above. Lastly, the CNPS database was queried to identify special-status plant species with the potential to occur in the aforementioned quadrangles. Raw data from the database queries is provided in **Appendix B**.

The Project area is characterized primarily by annual grassland habitat with patches of oak (*Quercus* sp.) and eucalyptus trees. Laguna Creek crosses the Project area, and two small isolated seasonal wetlands lie just west of the creek. For more detailed information regarding the Project area, see the 2014 Biological Assessment by Westech Company (**Appendix B**).

PROJECT IMPACTS AND MITIGATION MEASURES

a) **Less Than Significant Impact With Mitigation Incorporated.** Database queries revealed that several special-status species have the potential to occur in the general vicinity of the Project area. Please refer to **Appendix B** for a summary of the general habitat characteristics required by each species, as well as the potential for each species to occur in the Project area. **Table 3** summarizes the potential impacts to species that may occur in the habitats within the Project area. Species with a "may affect" designation are discussed further below.

TABLE 3
SUMMARY OF SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR IN HABITATS WITHIN THE PROJECT AREA

Species	Habitat within the Project Area	Potential Impacts
Plants		
dwarf downingia *Downingia pusilla*	Seasonal wetlands	**No effect.** Minimum buffer between seasonal wetlands and lots is 250 feet.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	Seasonal wetlands	
legenere *Legenere limosa*	Seasonal wetlands	

Species	Habitat within the Project Area	Potential Impacts
saline clover *Trifolium hydrophilum*	Seasonal wetlands	
Invertebrates		
conservancy fairy shrimp *Branchinecta conservatio*	Seasonal wetlands	**No effect.** Minimum buffer between seasonal wetlands and lots is 250 feet.
vernal pool fairy shrimp *Branchinecta lynchi*	Seasonal wetlands	
vernal pool tadpole shrimp *Lepidurus packardi*	Seasonal wetlands	
Amphibians		
California tiger salamander *Ambystoma californiense*	Seasonal wetlands and adjacent uplands	**No effect.** Outside known species range. Nearest known occurrence of this species is over 15 miles east of Project area.
western spadefoot *Spea hammondii*	Seasonal wetlands and grassland	**May affect.** Suitable habitat present.
Reptiles		
western pond turtle *Emys marmorata*	Laguna Creek and adjacent uplands	**May affect.** Aquatic habitat protected by minimum 50 foot buffer; however, adjacent upland habitat may be impacted in some areas.
giant garter snake *Thamnophis gigas*	Laguna Creek and adjacent uplands	
Birds		
burrowing owl *Athene cunicularia*	Grassland and other open areas	**May affect.** Project-related activities will result in impacts to grassland.
Swainson's hawk *Buteo swainsoni*	Large trees – nesting habitat Grassland – foraging habitat	**May affect.** Project-related activities will result in loss of foraging habitat and encroachment into nesting territories.
northern harrier *Circus cyaneus*	Grassland	**May affect.** Project-related activities will result in impacts to grassland.
white-tailed kite *Elanus leucurus*	Large trees – nesting habitat Grassland – foraging habitat	**May affect.** Project-related activities will result in loss of foraging habitat and encroachment into nesting territories.
Mammals		
American badger *Taxidea taxus*	Grassland	**No effect.** Badgers are highly mobile and able to leave area with human disturbance. Open space areas to north and south of Project area provide movement corridors.

Source: CDFW 2014a, CNPS 2014, USFWS 2014a

Laguna Creek and adjacent lands may provide suitable aquatic and upland habitat for giant garter snake and western pond turtle. In addition, the seasonal wetlands and grassland habitats may provide suitable habitat for the western spadefoot. As a result, implementation of Project-related activities has the potential to result in adverse impacts to these species or their habitat should they be present in areas proposed for disturbance. There are no anticipated impacts to aquatic habitat (Laguna Creek and seasonal wetlands) as a result of Project-related activities; however, upland habitat may

be impacted by the proposed Project. Due to the work proposed to occur within 200 feet of Laguna Creek, it is recommended that the Project applicant consult with the USFWS regarding potential impacts to upland giant garter snake habitat.

A burrowing owl survey was conducted on April 28, 2014, by an RCA Associates biologist (**Appendix B**). No burrowing owls, their sign, or any suitable burrows were observed. Though no sign of burrowing owls was found during the survey, Project implementation could result in the loss of burrowing owls through destruction of active nesting sites and/or incidental burial of adults, young, and eggs, should they become established on-site.

Habitats on and adjacent to the Project area may provide suitable nesting habitat for birds and raptors, including white-tailed kites and northern harriers, protected under the Migratory Bird Treaty Act and Section 3503.5 of the California Fish and Game Code. The removal of trees/vegetation during construction activities could result in noise, dust, human disturbance, and other direct/indirect impacts to nesting birds on or in the vicinity of the Project site. None of the large trees are planned for removal; nevertheless, encroachment into nesting territories could result in abandonment of nest sites. An additional potential impact to bird species includes the loss of raptor foraging habitat. The grassland cover in the Project area provides suitable foraging habitat for Swainson's hawks.

The Elk Grove General Plan EIR (Impacts 4.10.1 through 4.10.4) assessed the potential for implementation of the General Plan to impact special-status species and their habitat. The EIR disclosed that impacts to habitat would be less than significant with mitigation; however, impacts to special-status species were determined significant and unavoidable. Project-related activities have the potential to result in loss of Swainson's hawk foraging habitat and impacts to giant garter snake, western pond turtle, burrowing owl, and other raptors and migratory birds. Potential impacts to these species would be considered significant; however, implementation of mitigation measures **BIO-1** through **BIO-8** detailed below would reduce impacts to a less than significant level. **There is no new or substantially more severe significant impact.**

Mitigation Measures

BIO-1 **Implementation of Standard Avoidance Measures for Giant Garter Snake.** The Project proponent shall implement all of the minimization and avoidance measures found in Appendix C of the 1997 *Programmatic Consultation with the US Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California* (USFWS file #1-1-F-97-149), except the restriction of construction only occurring between May 1 and October 1 (see **BIO-1(a)** below).

a) Exclusionary fencing shall be installed at the limits of the temporary construction zone to protect adjacent, undisturbed giant garter snake habitat. The exclusionary fencing shall be maintained by the construction contractor during all phases of construction. Any breaches in the fencing shall be fixed within a 24-hour period.

b) The Project proponent or contractor shall prohibit the use of plastic, monofilament, jute, or similar erosion control matting that could entangle snakes at the Project site.

c) Within 24 hours of the commencement of ground-disturbing activities, the Project site shall be inspected for giant garter snakes by a qualified biologist. The survey shall be repeated if a lapse in construction activities of two weeks or greater occurs. If a giant garter snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or until it has been determined that the snake will not be harmed. All sightings and incidental take shall be reported to the USFWS immediately via telephone at (916) 414-6600.

d) After completion of construction activities, the Project proponent or contractor shall remove any temporary fill and construction debris and restore temporarily disturbed areas to pre-Project conditions. Restoration work may include such activities as reseeding upland areas that have been disturbed.

Timing/Implementation: *Prior to construction activities*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

BIO-2 **Western Pond Turtle Preconstruction Surveys.** Prior to implementation of construction activities within 100 feet of Laguna Creek, the Project applicant shall retain qualified biologists to conduct a survey for western pond turtle no more than three days prior to initiation of construction activities. If this species is documented near any proposed construction areas, the individual(s) shall be moved at least 500 feet downstream to suitable habitat. If individuals are observed during construction activities, all construction activities shall be halted, a qualified biologist shall be notified, and the qualified biologist shall relocate the individual prior to continuing construction activities.

If active nest sites are identified during the survey, the Project applicant shall impose a limited operating period (LOP) within 100 feet of all active nest sites prior to commencement of any construction activities to avoid construction or access-related disturbances to western pond turtles. An LOP constitutes a period during which Project-related activities (i.e., vegetation removal, earth moving, and construction) shall not occur and shall be imposed within 100 feet of any active nest sites until the eggs hatch or the nest is moved to an appropriate location as authorized by the CDFW.

Timing/Implementation: *Prior to construction activities*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

BIO-3 **Western Spadefoot Preconstruction Surveys.** Prior to the start of construction activities that would disturb western spadefoot habitat (within 1,000 feet of seasonal wetlands), a biological monitor shall survey for the presence of adult spadefoots. If adult spadefoots are present, they shall be relocated prior to disturbance of habitat, if feasible. This relocation shall be done in consultation with the CDFW.

Timing/Implementation: *Prior to construction activities*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

BIO-4 **Burrowing Owl Preconstruction Surveys.** If clearing and construction activities will occur during the nesting period for burrowing owls (February 1–August 31), a qualified biologist shall conduct preconstruction surveys for burrowing owls on and adjacent to the Project site within 14 days prior to construction initiation. Surveys shall be conducted in accordance with the CDFW's *Staff Report on Burrowing Owl Mitigation* (Staff Report), published March 7, 2012. Surveys shall be repeated if Project activities are suspended or delayed for more than 15 days during nesting season.

If no burrowing owls are detected, no further mitigation is required. If active burrowing owls nest sites are detected, the Project proponent shall implement the avoidance, minimization, and mitigation methodologies outlined in the CDFW's Staff Report prior to initiating Project-related activities that may impact burrowing owls.

Timing/Implementation: *Prior to construction activities*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

BIO-5 **Raptor Surveys.** If clearing and/or construction activities will occur during the raptor nesting season (January 15–August 15), preconstruction surveys to identify active raptor nests shall be conducted by a qualified biologist within 14 days of construction initiation. Focused surveys must be performed by a qualified biologist for the purposes of determining presence/absence of active nest sites within the proposed impact area, including construction access routes and a 1,000-foot buffer (if feasible). If no active nests are found, no further mitigation is required. Surveys shall be repeated if construction activities are delayed or postponed for more than 30 days.

If active white-tailed kite or other raptor (excluding Swainson's hawk) nest sites are identified within 1,000 feet of Project activities, the applicant shall impose a 500-foot setback to all active nest sites prior to commencement of any Project construction activities to avoid construction or access-related disturbances to nesting raptors. Project-related activities (i.e., vegetation removal, earth moving, and construction) shall not occur within the setback until the nest is deemed inactive. Activities permitted within setbacks and the size of setbacks may be adjusted through consultation with the City.

If active Swainson's hawk nest sites are identified within 1,000 feet of Project activities, the applicant shall impose a 1,000-foot setback to all active nest sites prior to commencement of any construction activities to avoid construction or access-related disturbances to nesting raptors. Project-related activities (i.e., vegetation removal, earth moving, and construction) shall not occur within the setback until the nest is deemed inactive. Activities permitted within setbacks and the size of setbacks may be adjusted through consultation with the CDFW.

Timing/Implementation: *Prior to construction activities*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

BIO-6 **Nesting Bird Surveys.** If clearing and/or construction activities will occur during the migratory bird nesting season (April 15–August 15), preconstruction surveys to identify active migratory bird nests shall be conducted by a qualified biologist

within 14 days prior to construction initiation. Focused surveys must be performed by a qualified biologist for the purposes of determining the presence/absence of active nest sites within the proposed impact area, including construction access routes and a 200-foot buffer (if feasible).

If active nest sites are identified within 200 feet of Project activities, the applicant shall impose an LOP for all active nest sites prior to commencement of any Project construction activities to avoid construction- or access-related disturbances to migratory bird nesting activities. An LOP constitutes a period during which Project-related activities (i.e., vegetation removal, earth moving, and construction) shall not occur, and shall be imposed within 100 feet of any active nest sites until the nest is deemed inactive. Activities permitted within and the size (i.e., 100 feet) of LOPs may be adjusted through consultation with the City.

Timing/Implementation: *Prior to construction activities*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

BIO-7 **Swainson's Hawk Foraging Habitat.** The Project applicant shall mitigate for the loss of Swainson's hawk foraging habitat at a 1:1 ratio. Mitigation can be accomplished through the City of Elk Grove Swainson's Hawk Impact Mitigation Fees Ordinance (if applicable) or through the conservation of farmland of equal or greater forage value. A conservation easement approved by the City must be established for conserved farmlands.

Timing/Implementation: *Prior to construction activities*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

BIO-8 **Biological Monitoring and Worker Environmental Awareness Training.** A qualified biologist(s) shall monitor construction activities that could potentially cause significant impacts to sensitive biological resources. In addition, the Project proponent shall retain a qualified biologist to conduct mandatory contractor/worker awareness training for construction personnel. The awareness training shall be provided to all construction personnel to brief them on the identified location(s) of sensitive biological resources, including how to identify species with the potential to occur in the construction area and the need to avoid impacts to biological resources (e.g., wildlife and jurisdictional waters), and to brief them on the penalties for not complying with biological mitigation requirements. If new construction personnel are added to the Project, the contractor shall ensure that they receive the mandatory training before starting work.

Timing/Implementation: *Prior to and ongoing during construction*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

b) **No Impact.** Sensitive habitats include (a) areas of special concern to resource agencies; (b) areas protected under CEQA; (c) areas designated as sensitive natural communities by the CDFW; (d) areas outlined in Section 1600 of the Fish and Game Code; (e) areas regulated under Section 404 of the federal Clean Water Act; and (f) areas protected under local regulations and policies such as habitat conservation plans (HCP) or natural community conservation plans (NCCP). Sensitive natural communities that occur in the

Project area include Laguna Creek and two adjacent seasonal wetlands. These features were mapped in a wetland delineation conducted by Westech Company in May of 2014 (**Appendix B**). The minimum buffer between Laguna Creek and any constructed lots is 50 feet. The two adjacent seasonal wetlands have a minimum buffer of 250 feet from the nearest lots. Thus, there are no anticipated impacts to sensitive natural communities as a result of Project-related activities. The Elk Grove General Plan EIR (Impact 4.10.3) assessed the potential for implementation of the General Plan to impact sensitive habitats. The EIR disclosed that impacts to sensitive habitat would be less than significant with mitigation. The General Plan mitigation measure (MM 4.10.3) for this impact regarding no net loss of riparian habitat would be satisfied by the proposed Project's avoidance buffers around Laguna Creek and the seasonal wetlands. **There is no new or substantially more severe significant impact.**

c) **No Impact.** Both Laguna Creek and the two seasonal wetlands could be considered jurisdictional features. The Project proposes buffers around all features in order to avoid impacts. Furthermore, the Project will include implementation of standard best management practices to ensure the protection of water quality during construction. Thus, there would be no anticipated impacts to waters of the State or waters of the United States as a result of Project-related activities. It is recommended that the Project applicant submit a preliminary jurisdictional determination to the US Army Corps of Engineers (USACE) for verification. The Elk Grove General Plan EIR (Impact 4.10.3) assessed the potential for implementation of the General Plan to impact sensitive habitats, including waters of the United States. The EIR disclosed that impacts to sensitive habitat would be less than significant with mitigation. The General Plan mitigation measure (MM 4.10.3) for this impact regarding no net loss of riparian habitat would be satisfied by the proposed Project's avoidance buffers around Laguna Creek and the seasonal wetlands. **There is no new or substantially more severe significant impact.**

d) **No Impact.** Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas, such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors allowing animals to move between various locations within their range. Available data on movement corridors and linkages was accessed via the CDFW BIOS Viewer (2014b). Data reviewed included the Essential Connectivity Areas [ds623] layer and the Missing Linkages in California [ds420] layer. The Project area is not located within an identified corridor. Laguna Creek could be considered a wildlife movement corridor; however, the proposed Project is set back at least 50 feet from this potential corridor. As a result, no impact to the movements of any native resident or migratory fish or wildlife species, or established native resident or migratory wildlife corridors, or the use of native wildlife nursery sites would occur as a result of the proposed Project, and no mitigation is proposed. The Elk Grove General Plan EIR (Impacts 4.10.1 through 4.10.4) assessed the potential for implementation of the General Plan to impact special-status wildlife and their associated habitats, including wildlife corridors. The EIR disclosed that impacts to habitat would be less than significant with mitigation; however, impacts to special-status species, as well as cumulative impacts to species and habitat, were determined significant and unavoidable. The General Plan mitigation measures (MM 4.10.1a, MM 4.10.1b, and MM 4.10.3) for impacts to habitat require preservation, when feasible, of areas where special-status species could occur. In addition, the City requires a biological resources evaluation for development projects and has a policy related to no net loss of riparian habitat. These mitigation measures have been satisfied by previous biological

studies and reports (**Appendix B**), as well as the proposed Project's avoidance buffers around Laguna Creek and the seasonal wetlands. **There is no new or substantially more severe significant impact.**

e) **No Impact.** The City's Municipal Code includes Chapter 19.12, Tree Preservation and Protection, and Chapter 16.130, Swainson's Hawk Impact Mitigation Fee. Municipal Code Chapter 19.12 requires mitigation for impacts to trees of local importance, which include coast live oak, valley oak, blue oak, interior live oak, oracle oak, California sycamore, and California black walnut with a single trunk 6 inches diameter at breast height (dbh) or greater or a multi-trunk with a combined dbh of 6 inches or greater. Municipal Code Chapter 16.130 requires mitigation for the loss of Swainson's hawk habitat at a 1:1 ratio. Development of the Project area could result in the removal of Swainson's hawk habitat, which could conflict with the City's Municipal Code. Development of the proposed Project would be required to be consistent with all local policies and ordinances protecting biological resources. Therefore, no impact would occur with regard to consistency with local ordinances or policies protecting biological resources. The Elk Grove General Plan EIR did not assess the potential for implementation of the General Plan to conflict with local policies; however, there is no anticipated conflict with local policies as a result of the proposed project. Thus, **there is no new or substantially more severe significant impact.**

f) **No Impact.** There are currently no adopted or proposed habitat conservation plans, natural community conservation plans, or other approved local, regional, or State habitat conservation plans that are applicable to the proposed Project. Therefore, no conflict would occur, and no mitigation is proposed. The Elk Grove General Plan EIR did not assess the potential for implementation of the General Plan to conflict with a habitat conservation plan or similar plan. No habitat conservation plan has been adopted by the City; there is no conflict with a conservation plan as a result of the proposed Project. Thus, **there is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
5. **CULTURAL RESOURCES.** Would the project:					
a) Cause a substantial adverse change in the significance of a historical resource as defined in Public Resources Code Section 21084.1 and CEQA Guidelines Section 15064.5, respectively?	☐	☐	☒	☐	No
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in Public Resources Code Sections 21083.2 and 21084.1, and CEQA Guidelines Section 15064.5, respectively?	☐	☐	☒	☐	No
c) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☐	☒	☐	No
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐	No

PROJECT IMPACTS AND MITIGATION MEASURES

a, b, d) **Less Than Significant Impact.** The Elk Grove General Plan EIR (Impact 4.11.1) assessed the potential for implementation of the General Plan to result in the disturbance of known or undiscovered prehistoric and historic resources in the City. The EIR determined that the impact would be less than significant with implementation of the policies contained in the General Plan, such as Policy HR-6. Action items under this policy (HR-6-Action 1 and HR-6-Action 2) require project proponents to halt work and immediately notify the City's Planning Division if any prehistoric, archaeologic, or paleontologic artifact is uncovered during construction and to retain a qualified archaeologist to evaluate the find and recommend appropriate action. If human remains are uncovered, these actions also require the county coroner to be notified and, if the remains are determined to be Native American, the procedures outlined in CEQA Section 15064.5(d) and (e) are to be followed.

The following analysis is based on the cultural resource assessment prepared for the proposed Project by Peak & Associates, Inc. (2014) (see **Appendix C**).

Records of previously recorded cultural resources and cultural resource investigations were examined by the North Central Information Center of the California Historical Resources Information System on January 3, 2014 (NCIC File No. SAC-14-02; **Appendix C**). Laguna Creek was surveyed in 1974 by J. Johnson (NCIC Doc. No. 00088), with no sites recorded within the Project area. Calvine Road and the northern portion of the Project area were surveyed in 2006 by ECORP for the North Vineyard Station Off-Site Project (NCIC Doc. No. 08062), but the building present was not recorded and no other sites were found.

According to Peak & Associates (2014, pp. 10–11), the former residence present on the Project site is over 50 years old, but it is not associated with important events or important people in local history. It is not a unique building in any way, but is one of many post-war residential buildings built throughout California. The building has been altered to a great degree over the years with two major additions. A fire has destroyed any building integrity. The removal of whatever building was associated with the foundation makes its purpose undeterminable, and the disuse of the complex overall has led to the disintegration of the rural building complex. This remnant building complex is not an important resource under the criteria of the California Register of Historical Resources.

Peak & Associates (2014, p. 10) found no evidence of prehistoric period resources on or near the Project site. The Project site lies on a flat open plain, near Laguna Creek. Campsites and villages would more likely have been located near larger, more reliable water sources, such as the Cosumnes River. As a result, it is likely that the Native American inhabitants of the region used the Project site for collecting plant foods and for hunting, but such activities leave little physical evidence.

Although no historic or prehistoric sites were found during the survey, there is a possibility that a site may exist and be obscured by vegetation, fill, or other historic activities, leaving no surface evidence. Therefore, the cultural resource assessment recommends that, should such resources be uncovered during construction activities, an archeologist should be consulted for evaluation. If the find includes human remains, the county coroner and, if appropriate, the Native American Heritage Commission should be notified. These recommendations are consistent with General Plan Policy HR-6 and associated actions, with which the proposed Project must comply. **Therefore, there is no new or substantially more severe significant impact.**

c) **Less Than Significant Impact.** The Elk Grove General Plan EIR (Impact 4.11.2) assessed the potential for implementation of the General Plan to result in disturbance of unique paleontological resources and geologic features. The EIR determined that the impact would be less than significant with implementation of General Plan Policy HR-6. The action items under this policy (HR-6-Action 1 and HR-6-Action 2) require project proponents to halt work and immediately notify the City's Planning Department if any paleontologic artifact is uncovered during construction and to retain a qualified archaeologist to evaluate the find and recommend appropriate action.

According to the Elk Grove General Plan EIR (2003b, p. 4.11-10), Pleistocene nonmarine sedimentary rocks (Riverbank Formation) and Quaternary alluvium geologic units underlie portions of the City, primarily around the Sacramento and Cosumnes rivers. These geologic units are considered to have paleontological resource sensitivity. Similarly, the geotechnical exploration report prepared for the Project states that the geologic deposits that underlie the Project site have been mapped as the late Pleistocene aged Laguna Formation. The soils encountered during the subsurface investigation performed as part of the geotechnical exploration of the site generally agree with the geologic mapping. Therefore, there is a possibility that paleontological resources could be uncovered during Project construction. Compliance with the requirements of General Plan Policy HR-6 and associated actions would reduce this impact to less than significant level. **Therefore, there is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
6. GREENHOUSE GAS EMISSIONS. Would the project:					
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☒	☐	☐	No
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☒	☐	☐	No

PROJECT IMPACTS AND MITIGATION MEASURES

a, b) **Less Than Significant Impact With Mitigation Incorporated.** Emissions resulting from implementation of the proposed Project are presented in **Table 4**. Construction-generated greenhouse gas (GHG) emissions were amortized over the estimated life of the Project (30 years). As shown in **Table 4**, the long-term operations of the proposed 56 residential units could produce an additional 967 metric tons of carbon dioxide equivalents (CO_2e) annually. This would contribute to a net increase in GHGs from the proposed Project.

TABLE 4
OPERATIONAL GHG EMISSIONS – METRIC TONS PER YEAR[1]

Source	CO_2	CH_4	N_2O	CO_2e
Construction (amortized over 30 years of Project life)	30	0	0	30
Area	1	0	0	1
Energy	235	0	0	235
Mobile	663	0	0	663
Solid Waste	12	1	0	28
Water	10	0	0	10
Total	**951**	**1**	**0**	**967**

*Source: CalEEMod version 2013.2. Refer to **Appendix D** for model data outputs.*

1. Modeling assumes 63 units, so operational emissions shown are conservative for the proposed 56 units.

The Elk Grove Climate Action Plan (CAP) is a strategic planning document that identifies sources of GHG emissions within Elk Grove's boundary and reduces emissions through energy use, transportation, land use, water use, and solid waste strategies (referred to as "measures" in the CAP). The policy provisions contained in the CAP were prepared with the purpose of complying with the requirements of Assembly Bill (AB) 32 and achieving the goals of the AB 32 Scoping Plan. The City considers a specific project proposal consistent

with the Elk Grove CAP if it complies with the greenhouse gas reduction measures contained in the adopted CAP.

The mandatory GHG reduction measures included in the Elk Grove CAP that apply to residential development are contained in **Table 5**, which also summarizes the extent to which the Project would comply with the strategies. The strategies listed in **Table 5** are required under local or State regulations and included as mitigation measures for the Project. With implementation of these strategies/measures, the Project would be consistent with the CAP and the Project's contribution to cumulative GHG emissions would be reduced.

TABLE 5
ELK GROVE CAP COMPLIANCE

Strategy	Project Compliance
Built Environment Measures	
BE-6 – Building Stock, New Construction Adopt CALGreen Tier 1 standards to require all new construction to achieve a 15 percent improvement over minimum Title 24 CALGreen energy requirements.	**Compliant** The proposed Project shall be required to comply with the updated Title 24 standards, including the updated California Building Code (CBC), for building construction. These standards require new buildings to reduce water consumption by 20 percent, which results in less energy consumption for pumping water.
BE-10 – On-Site Renewable Energy Installations **Fourth Action Item:** Require solar photovoltaic prewiring in all new residential development.	**Compliant** The Project shall be required to install solar-ready rooftops on each residential unit.
Resource Conservation Measures	
RC-1 – Waste Reduction **Fourth Action Item:** Expand the current construction and demolition ordinance to require 65 percent waste diversion (Tier 1 CALGreen).	**Compliant** The Project shall be required to achieve a 65 percent waste diversion rate during construction activities.
Transportation Alternative and Congestion Management	
TACM-9. Efficient and Alternative Vehicles **Second Action Item:** Require new commercial construction over a certain size to be determined by City staff to provide an electric vehicle charging station and new residential construction to pre-wire for plug-in electric vehicles.	**Compliant** The Project shall be required to pre-wire for plug-in electric vehicles.

Table 6 provides a summary of Project GHG emissions after implementation of all the required CAP measures shown in **Table 6**. In addition to compliance with the mandatory GHG reduction measures included in the Elk Grove CAP that apply to residential development, the proposed Project is also required to adhere to Chapters 14.10 and 23.54 of the Elk Grove Municipal Code, which mandate low-water-use landscaping (i.e., drought-tolerant plants and drip irrigation). As shown in **Table 6**, compliance with the mandatory residential GHG reduction measures in the CAP and the City Municipal Code would reduce emissions by 17 metric tons annually.

TABLE 6
OPERATIONAL GHG EMISSIONS (AFTER COMPLIANCE WITH CAP) – METRIC TONS PER YEAR[1]

Source	CO_2	CH_4	N_2O	CO_2e
Construction (amortized over 30 years of Project life)	30	0	0	30
Area	1	0	0	1
Energy	218	0	0	218
Mobile	663	0	0	663
Solid Waste	12	1	0	28
Water	10	0	0	10
Total	**934**	**1**	**0**	**950**

Source: CalEEMod version 2013.2. Emissions estimates account for exceeding Tier 1 Title 24 standards consistent with the Climate Action Plan and outdoor water conservation measures consistent with Chapters 14.10 and 23.54 of the Elk Grove Municipal Code. Refer to ***Appendix D*** *for model data outputs.*
1. Modeling assumes 63 units, so operational emissions shown are conservative for the proposed 56 units.

The proposed Project would comply with the GHG reduction measures included in the Elk Grove CAP that apply to residential development (see mitigation measure **GHG-1**). As a result, the Project would be consistent with the AB 32 strategies to help California reach the emissions reduction targets. Therefore, this impact is less than significant. **There is no new or substantially more severe significant impact.**

Mitigation Measures

GHG-1 Prior to building permit approval, the City of Elk Grove Planning Department shall require that the Project implement the following to reduce GHG emissions, based on the referenced measures from the City's Climate Action Plan:

a. All buildings shall achieve Tier 1 of Title 24, Part 1 green building standards to exceed minimum Title 24 energy efficiency standards by 15 percent, consistent with CAP Measure BE-6.

b. All buildings shall achieve Tier 1 of Title 24, Part 1 green building standards to required 65 percent waste diversion, consistent with CAP Measure RC-1.

c. All buildings shall include prewiring for solar photovoltaic (PV), consistent with CAP Measure BE-10. The intent of prewiring for solar PV systems is to reduce barriers to later installation of on-site solar PVs. Future development under the proposed Project may also satisfy the intent of this mitigation by installing on-site solar PV systems.

Timing/Implementation: *Prior to final design, building permit issuance*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
7. **GEOLOGY AND SOILS.** Would the project:					
a) Expose people or structures to 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.	☐	☐	☐	☒	No
ii) Strong seismic ground shaking?	☐	☐	☒	☐	No
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐	No
iv) Landslides?	☐	☐	☐	☒	No
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐	No
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the projects, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☒	☐	☐	No
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☒	☐	☐	No
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒	No

PROJECT IMPACTS AND MITIGATION MEASURES

a i) **No Impact.** The Project site is not located within an Alquist-Priolo Special Studies Zone. There are no known active or inactive faults crossing the site as mapped and/or recognized by the State of California (CGS 2014).[2] Therefore, there would be no impact associated with surface rupture of a fault. **There is no new or substantially more severe significant impact.**

ii) **Less Than Significant Impact.** The General Plan EIR (Impact 4.9.4) found that impacts associated with seismic hazards would be less than significant. As discussed under Issue a, i) above, the Project site is not located in the vicinity of any active faults. However, earthquake-related ground shaking can be expected during the design life of structures constructed on the site from earthquakes along active faults located outside the region. According to the geotechnical exploration report prepared for the proposed Project (KC Geotechnical Engineering Consultants 2013, p. 7), the nearest active faults are the Foothills Fault System and the Great Valley Fault Zones, located approximately 17.6 miles east and 31.5 miles west of the site, respectively. Therefore, proposed structures must be designed to withstand the anticipated ground accelerations.

The State of California provides minimum standards for structural design and site development through the California Building Code (CBC) (California Code of Regulations [CCR], Title 24, Part 2). The City of Elk Grove adopted the 2013 CBC as the basis for the City Building Code (Elk Grove Municipal Code Section 16.04.010). The City's enforcement of its Building Code ensures the Project would be consistent with the CBC. All buildings constructed in the City, including those that would be developed under the proposed Project, would be required to comply with the CBC, which includes special design requirements for building and foundation capabilities, masonry and concrete reinforcement, and building spacing to accommodate moderate earthquake shaking. It has been shown that compliance with modern building codes can greatly reduce risks associated with ground shaking. The CBC design requirements reduce impacts associated with seismic ground shaking by preparing structures to accommodate moderate earthquake-related ground movement. Compliance with these seismic design parameters would ensure that impacts resulting from seismic ground shaking at the Project site would be less than significant. **There is no new or substantially more severe significant impact.**

iii) **Less Than Significant Impact.** Liquefaction is the transformation of loose saturated silts and sands with less than 15 percent clay-sized particles from a solid state to a semi-liquid state. This occurs under vibratory conditions such as those induced by a seismic event. The potential for liquefaction is dependent on soil types and density, the groundwater table, and the duration and intensity of ground shaking.

The General Plan EIR (Impact 4.9.4) found that impacts associated with seismic hazards would be less than significant. According to the geotechnical exploration report prepared for the proposed Project (KC Geotechnical Engineering Consultants 2013, p. 9), the sandy deposits on the Project site are variable in depth and thickness and are considered dense. Based on the dense condition of the granular materials and the hard silts and clays encountered, the liquefaction potential at the Project site was determined

[2] The California Geological Survey (CGS) has defined an active fault as one that has had surface displacement in the last 11,000 years (i.e., Holocene epoch) or has experienced earthquakes in recorded history.

to be very low. Therefore, there would a less than significant impact related to seismic-related ground failure. **There is no new or substantially more severe significant impact.**

iv) **No Impact.** The Project site is topographically flat; therefore, the likelihood of landslides is minimal. Furthermore, the City of Elk Grove General Plan Draft EIR confirms that there is little potential for landslides to occur anywhere in the City, as the maximum land surface slope in the City is 3 percent. Therefore, no impact associated with landslides is expected to occur. **There is no new or substantially more severe significant impact.**

b) **Less Than Significant Impact.** The Elk Grove General Plan EIR (Impact 4.9.1) assessed the potential for implementation of the General Plan to result in soil erosion and the loss of topsoil. The EIR disclosed that implementation of the General Plan would involve construction activities that could expose soils to erosion. However, the EIR concluded that compliance with Municipal Code Chapter 16.44, Land Grading and Erosion Control, and General Plan Policy CAQ-6 would minimize erosion during construction, and the impact was determined to be less than significant.

Construction activities associated with development of the proposed Project, including land clearing, grading, and excavations, would disturb site soils, temporarily exposing them to wind and water erosion. City Elk Grove General Plan Policy CAQ-6 states that "roads and structures shall be designed, built and landscaped so as to minimize erosion during and after construction." Procedures have been established to minimize erosion and sedimentation during construction activities in Municipal Code Chapter 16.44, Land Grading and Erosion Control. Compliance with Policy CAQ-5 and Chapter 16.44 would reduce impacts associated with soil erosion during construction and operation. Therefore, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

c, d) **Less Than Significant Impact With Mitigation Incorporated.** The Elk Grove General Plan EIR (Impact 4.9.2) assessed the potential for implementation of the General Plan to expose buildings and utilities to damage resulting from expansive or unstable soils. The EIR disclosed that the soil types found in the City contain a high shrink-swell potential and included mitigation measure MM 4.9.2 to reduce the impact to a less than significant level. This measure required the addition of an action item under General Plan Policy SA-23 requiring preparation of a geotechnical report to determine the shrink-swell potential and the stability of soil for public and private construction projects and the identification of measures necessary to ensure stable soil conditions.

According to the geotechnical exploration report prepared for the proposed Project (KC Geotechnical Engineering Consultants 2013, p. 10), the primary geotechnical consideration for the Project site is the presence of near-surface, highly expansive clays. The near-surface soil is prone to heave and shrink movements with changes in moisture content and consequently must be carefully considered in the design of grading, foundations, drainage, and landscaping. This impact would be potentially significant. Mitigation measure **GEO-1** requiring implementation of the recommendations provided in the geotechnical exploration report (KC Geotechnical Engineering Consultants 2013, pp. 10–20) would minimize the detrimental effects of expansive and unstable soil movement.

Mitigation Measures

GEO-1 Prior to issuance of a grading permit, the final construction plans shall be designed in accordance with the recommendations of the geotechnical exploration report prepared by KC Geotechnical Engineering Consultants on March 5, 2013 (**Appendix E**), such as stripping of surface soils and recompacting in accordance with accepted standards.

Timing/Implementation: *Prior to issuance of a grading permit*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

Implementation of mitigation measure **GEO-1** would ensure the proposed structures are properly designed and constructed to minimize potential risks associated with expansive soils. With mitigation, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

e) **No Impact.** The Project will connect to the Sacramento Regional County Sanitation District (SRCSD) and Sacramento Area Sewer District (SASD) sewer system. The Project does not propose the use or construction of septic tanks or alternative wastewater disposal systems; therefore, no impact would occur. **There is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
8. HAZARDS AND HAZARDOUS MATERIALS. Would the project:					
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐	No
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?	☐	☐	☒	☐	No
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐	No
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, create a significant hazard to the public or the environment?	☐	☐	☐	☒	No
e) For a project located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or a public use airport, result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒	No
f) For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒	No
g) Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒	No
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐	No

PROJECT IMPACTS AND MITIGATION MEASURES

a–c) **Less Than Significant Impact.** The Elk Grove General Plan EIR (Impact 4.4.3) assessed the potential for implementation of the General Plan to result in exposure to hazardous materials through accidents or intentional acts and determined the risk was less than significant. The proposed Project would develop housing in an area that is currently undeveloped. Residential uses, like those proposed for the site, do not typically use, store, or transport hazardous materials beyond small quantities of common household materials such as paints, pesticides, gasoline, and oil. Residents would be required by law to use and store these materials in accordance with the product labels, and the City provides a special waste collection center for the proper disposal of household hazardous wastes. Diesel, gasoline, oil, and paints would be used during construction on the Project site. Contractors would also be required to use, store, and dispose of any hazardous materials in accordance with all applicable federal, State, and local regulations. As such, it is assumed that the presence of these materials on the Project site would not create hazardous conditions or a risk of upset at the site or the surrounding area, including at the school site located north of the Project site. This impact would be less than significant. **There is no new or substantially more severe significant impact.**

d) **No Impact.** The Elk Grove General Plan EIR (Impact 4.4.3) assessed the potential for implementation of the General Plan to result in exposure to hazardous materials due to past contamination. The impact was determined to be less than significant with implementation of mitigation measure MM 4.4.1, which requires testing for any sites listed on a hazardous material/waste database as containing hazardous materials. The Project site is not located on a list of hazardous materials sites compiled by the California Department of Toxic Substances Control (DTSC) or the State Water Resources Control Board (SWRCB) pursuant to Government Code Section 65962.5 as of September 2015, and there are no such sites in the vicinity (DTSC 2015; SWRCB 2015). Therefore, there would be no significant hazards to the public and no impact would occur. **There is no new or substantially more severe significant impact.**

e, f) **No Impact**. The Project site is not located in an airport land use plan or within 2 miles of an active public airport or a private airstrip, so there would be no safety hazard to people working in the Project area. Therefore, there would be no impact. **There is no new or substantially more severe significant impact.**

g) **No Impact**. The proposed Project does not include any components that would impair implementation of or physically interfere with either the Sacramento County Multi-Hazard Plan or the Sacramento County Area Plan, both of which address plans for incidents involving hazardous materials or conditions, including evacuation plans. Therefore, there would be no impact. **There is no new or substantially more severe significant impact.**

h) **Less Than Significant Impact**. The Project site is located in an area that is partially developed with several large, rural properties to the north, east, and south. While fire on rural lands is a possibility, the site is not remote and is within the service area of the Cosumnes Community Services District (CCSD) Fire Department, which is able to respond to incidents in the area, such as grassfires that could occur on adjacent rural properties. Therefore, there would not be a substantial risk related to wildland fire, and this impact would be less than significant. **There is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
9. HYDROLOGY AND WATER QUALITY. Would the project:					
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐	No
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?	☐	☐	☒	☐	No
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐	No
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☐	☐	☒	☐	No
e) 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?	☐	☐	☒	☐	No
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐	No
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☒	☐	No
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☒	☐	No
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of a failure of a levee or dam?	☐	☐	☐	☒	No

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒	No

PROJECT IMPACTS AND MITIGATION MEASURES

a, f) **Less Than Significant Impact.** The Elk Grove General Plan EIR (Impacts 4.8.1, 4.8.2, and 4.8.3) assessed the potential for implementation of the General Plan to degrade surface water and groundwater quality. The General Plan EIR determined that construction and operation of the land uses designated in the General Plan could result in the introduction of sediment and other pollutants into stormwater runoff discharging to downstream surface water bodies and the underlying groundwater aquifer. The EIR concluded that compliance with existing regulations, including Municipal Code Chapter 16.44, Land Grading and Erosion Control, the Stormwater Management and Discharge Control Ordinance, California's statewide General Construction National Pollutant Discharge Elimination System (NPDES) permit, the City's stormwater NPDES permit, applicable General Plan policies, and mitigation measure MM 4.8.3 would reduce these impacts to less than significant levels. Mitigation measure MM 4.8.3 requires that land uses anticipated to utilize hazardous materials or waste provide adequate containment facilities to ensure surface water and groundwater resources are protected from accidental releases. The proposed Project would not use or generate substantial amounts of hazardous materials or waste, so this measure would not apply to the Project.

implementation of the proposed Project could result in water quality degradation during construction and operation. Construction activities associated with development of the Project site would include grading, demolition, and vegetation removal, which would disturb and expose soils to water erosion, potentially increasing the amount of silt and debris entering Laguna Creek and other downstream waterways. In addition, refueling and parking of construction equipment and other vehicles on-site during construction could result in oil, grease, and other related pollutant leaks and spills that could enter runoff. However, the Project would be required to comply with Municipal Code Chapter 16.44, Land Grading and Erosion Control, which requires implementation of measures to minimize erosion, sediment, dust, and other pollutant runoff created by improvement activities. In addition, the Project would be required to obtain coverage under the State's General Construction NPDES permit, which requires projects to develop and implement a stormwater pollutant prevention plan (SWPPP) that includes best management practices (BMPs) and requires inspections of stormwater control structures and pollution prevention measures. Examples of typical construction best management practices in SWPPPs include using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and using barriers, such as straw bales or plastic, to minimize the amount of uncontrolled runoff that could enter drainages and surface waters. The discharger must also install structural controls, such as sediment control, as necessary, which would constitute Best Available Technologies (BAT) to achieve compliance with water quality standards.

Compliance with these requirements would ensure that site development activities do not result in the movement of unwanted material into waters on or off the Project site.

Once the Project is occupied, runoff from the Project site would likely contain oils, grease, fuel, antifreeze, and byproducts of combustion (such as lead, cadmium, nickel, and other metals), as well as nutrients, sediments, and other pollutants. Additionally, animal waste from pets (e.g., dogs and cats) could lead to fecal contamination of water sources. Development of the Project site would increase the impervious surface area, thus increasing runoff flow rates, which could result in an increase of urban runoff pollutants degrading water quality in on- and off-site drainage flows to area waterways. According to the planning-level drainage study prepared for the proposed Project (Guide Engineering 2013; **Appendix F**), site drainage would be routed to one of six proposed on-site infiltration basins prior to being released overland into Laguna Creek. Infiltration basins are believed to have a high pollutant removal efficiency and can also help recharge groundwater (EPA 2014), which would minimize potential impacts to Laguna Creek and other downstream waterways. The City would provide long-term maintenance of the proposed infiltration basins to ensure they are operating properly. Therefore, the proposed Project would not result in any new or more severe impacts to water quality than those previously disclosed in the Elk Grove General Plan EIR, and this impact would be less than significant. **There is no new or substantially more severe significant impact.**

b) **Less Than Significant Impact.** The Elk Grove General Plan EIR (Impact 4.8.5) assessed the potential impacts of increased water demand associated with implementation of the General Plan. The EIR determined that this would be a significant and unavoidable impact.

The proposed Project would receive domestic water supplies from the Elk Grove Water District (EGWD). The Project's water demand, as part of the Zone 40 water demand, would be met by conjunctive use of groundwater and surface water. Groundwater would be pumped from the South American Subbasin of the Central Basin as defined by California Department of Water Resources (DWR) Bulletin 118 (DWR 2003).

The estimated long-term annual sustainable yield of groundwater from the Central Basin is 273,000 acre-feet per year (AFY). Groundwater extractions are estimated to be 235,000 AFY (excluding remediation). In addition, the Sacramento County Water Agency (SCWA), as a member of the Sacramento Central Groundwater Authority, actively participates in the implementation of the adopted Groundwater Management Plan, which was developed to maintain a safe and sustainable groundwater resource in the Central Basin. Some of the objectives of the Groundwater Management Plan are to maintain a long-term average extraction rate at or below the sustainable yield, maintain groundwater elevations, and protect against land surface subsidence. Based on the City's base daily per capita water use rate of 253 gallons per capita per day (gpcd) provided in the EGWD's 2010 Urban Water Management Plan, the projected annual water demand for the Project is 51.0 AFY. This increase in water demand would not result in the exceedance of the basin's sustainable yield or the agency's groundwater allocation per the Water Forum Agreement. Therefore, implementation of the proposed Project would not result in the substantial depletion of groundwater supplies, and this impact would be less than significant.

Recharge to the local aquifer system primarily occurs along active river and stream channels where extensive sand and gravel deposits exist. Although the proposed Project

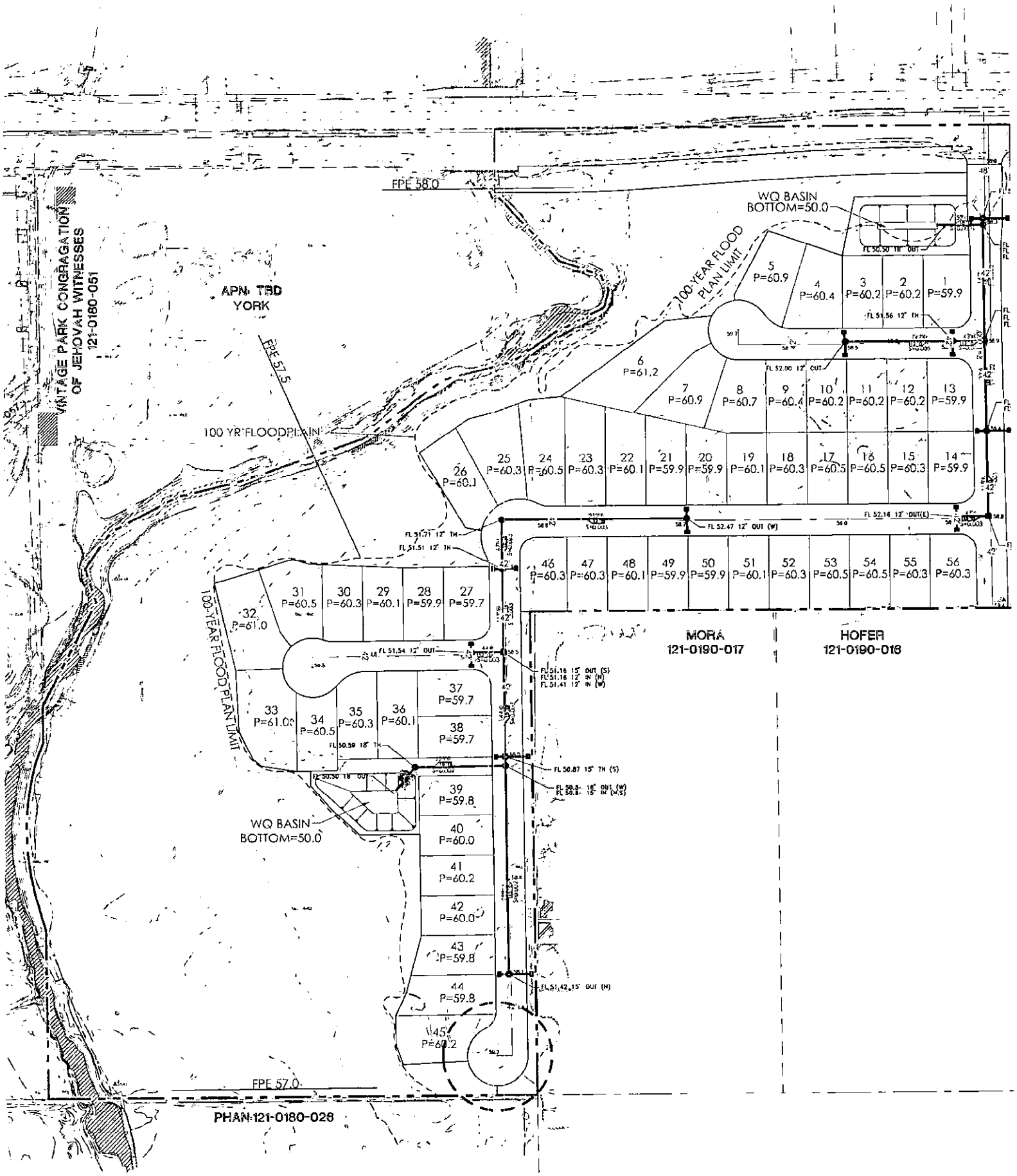
would result in the creation of impervious surfaces on the eastern portion of the Project site, the western portion of the site, which includes Laguna Creek, would remain undeveloped open space. In addition, on-site runoff would be allowed to infiltrate into the soil and recharge the underlying aquifer. Therefore, the proposed Project would have a less than significant impact on groundwater recharge. **There is no new or substantially more severe significant impact.**

c–e) **Less Than Significant Impact.** The Project site is relatively flat and currently drains overland from northeast to southwest into Laguna Creek. According to the grading plan for the proposed Project (see **Figure 4**), runoff from the proposed Project would be routed via drainage ditches, inlets, and pipelines adjacent to and within proposed roadways to one of two on-site water quality basins, and ultimately to Laguna Creek. The creek itself would not be altered, and a minimum 50-foot stream buffer zone would be provided. The use of basins would slow and reduce runoff flows entering the creek overland, thereby minimizing the risk of erosion and downstream flooding. The basins have been designed to provide sufficient capacity to receive, hold, and treat Project runoff flows. Therefore, Project runoff would not exceed the capacity of existing or planned drainage facilities. This impact would be less than significant. **There is no new or substantially more severe significant impact.**

g, h) **Less Than Significant Impact.** A portion of the Project site is designated by the Federal Emergency Management Agency (FEMA) as being within the 100-year flood zone. However, this portion of the Project site would be retained in open space. All proposed housing would be developed on the eastern portion of the site outside of the flood zone. Therefore, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

i) **No Impact.** The dam nearest to the Project site is the Folsom Dam. The Project site is not located in the Folsom Dam Failure Flood Area. Therefore, the Project would not expose people or structures to a significant risk of loss, injury, or death involving flooding as a result of a failure of a levee or dam, and there would be no impact. **There is no new or substantially more severe significant impact.**

j) **No Impact**. The Project site is located adjacent to Laguna Creek, but it is not located near any water bodies large enough to pose a risk of tsunami or seiche waves. The Project site and adjacent properties are relatively flat and not at risk of mudflow. Therefore, the proposed Project would not expose people to potential impacts involving seiche, tsunami, or mudflow. There would be no impact. **There is no new or substantially more severe significant impact.**


VINTAGE PARK CONGREGATION OF JEHOVAH WITNESSES
121-0180-051
APN: TBD
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FPE 57.5
100 YR FLOODPLAIN
100-YEAR FLOOD PLAIN LIMIT
WQ BASIN BOTTOM=50.0
WQ BASIN BOTTOM=50.0
FPE 57.0
PHAN-121-0180-026
MORA
121-0190-017
HOFER
121-0190-018
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56 P=60.3

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
10. LAND USE AND PLANNING. Would the project:					
a) Physically divide an existing community?	☐	☐	☐	☒	No
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐	No
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒	No

PROJECT IMPACTS AND MITIGATION MEASURES

b) **Less Than Significant Impact.** The Project site has a General Plan land use designation of Estate Residential (ER), which allows residential development of up to 4 dwelling units per acre. The density under the proposed Project is approximately 2.4 dwelling units per gross acre, so the Project is consistent with this designation. The proposed Project includes a request to rezone the property from AR-5 to ~~RD-4~~ SPA. The SPA is an implementing zone, which does not alter the density range allowed by ER under the General Plan. The purpose of an SPA under Elk Grove Municipal Code Section 23.40.020 is to allow for unique Planning standards and requirements not provided for in standard zoning districts. This Project's lot sizes are approximately 38 percent smaller than the 8,500 minimum lot areas allowed in the RD-4 Zoning District. These smaller lot sizes, which are consistent with typical development standards of the RD-5 Zoning District, would allow the proposed 56-lot development to be clustered within a smaller area in order to preserve unique features surrounding Laguna Creek. The SPA includes a minimum lot size of 5,200 square feet, with typical dimensions of 55 feet wide by 100 feet deep, and allows for a maximum height of 30 feet for primary structures and 16 feet for accessory structures. These height limits are the same which are required within RD-4/5/6 Zoning Districts. The density and allowed uses of the proposed ~~zoning~~ SPA would be compatible with the existing and planned uses on adjacent properties. The Project would not result in significant environmental impacts and would not conflict with plans, policies, or regulations intended to reduce or avoid environmental effects. Therefore, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

c) **No Impact.** The City does not have an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan. The South Sacramento County Habitat Conservation Plan is in the process of being prepared but has not yet been adopted. Therefore, there would be no impact. **There is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
11. MINERAL RESOURCES. 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?	☐	☐	☐	☒	No
b) Result in the loss of availability of a locally important mineral resource recovery site delineated in a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒	No

PROJECT IMPACTS AND MITIGATION MEASURES

a, b) **No Impact.** No known significant mineral resources have been identified in the City, so implementation of the proposed Project would not result in the loss of availability of a known mineral resource or a resource delineated in a local general plan, specific plan, or other land use plan. No impact would occur. **There is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
12. NOISE. Would the project result in:					
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or of applicable standards of other agencies?	☐	☒	☐	☐	No
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐	No
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐	No
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐	No
e) For a project located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or a public use airport, expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒	No
f) For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒	No

PROJECT IMPACTS AND MITIGATION MEASURES

a, c) **Less Than Significant Impact With Mitigation Incorporated.** The Elk Grove General Plan EIR (Impact 4.6.2) assessed the potential for implementation of the General Plan to result in permanent traffic noise levels that would exceed City noise standards. The EIR determined that the impact would be significant, and no feasible mitigation measures were available to reduce the impact. Therefore, the impact remained significant and unavoidable.

General Plan EIR Table 4.6-13 indicates that with full buildout of the General Plan, traffic noise levels along the segment of Calvine Road near the Project site would increase by approximately 3.1 dBA L_{dn}, from 64.4 dB L_{dn} to 67.5 dB L_{dn} at 100 feet. The City's General Plan Noise Element identifies compatible noise environments for different types of land uses. For the purposes of land use planning, the Noise Element designates noise level goals to be achieved, when feasible, for specific land uses. Policy NO-1 states, "New development of the uses listed in Table NO-C shall conform with the noise levels contained in that table. All indoor and outdoor areas shall be located, constructed, and/or shielded from noise sources in order to achieve compliance with the City's noise standards." The noise thresholds are 60 dB for outdoor activity areas and 45 dB for indoor spaces.

Motor vehicle traffic is the major contributor to the existing noise environment in the City and is the primary noise source in the vicinity of the Project site. Vehicular noise in the Project vicinity occurs primarily along Calvine Road. The residential lot nearest Calvine Road (Lot 5) would be approximately 120 feet from Calvine Road, and Lots 1 through 4 would be approximately 160 feet from the roadway. Typical construction methods used for residential development achieve an exterior to interior noise reduction of approximately 25 dB, which would reduce interior levels to within the interior standard of 45 dB. However, these lots could be exposed to exterior traffic noise levels that exceed City standards at buildout of the General Plan. This is a potentially significant impact. An 8-foot sound wall can achieve noise reductions of 6 to 8 dB, which would reduce noise levels under worst-case conditions to 61.5 db L_{dn}. The General Plan allows that, where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with General Plan Table NO-C. Mitigation measure **NOI-1** would reduce this potential impact to a less than significant level.

Mitigation Measures

NOI-1 The Project shall include a sound wall to reduce exterior noise levels in outdoor activity areas of Lots 1 through 5. The height of the wall shall be determined by a qualified acoustical professional, to achieve a 60 dB L_{dn} exterior noise level, if feasible, in outdoor activity areas. If a 60 dB L_{dn} exterior noise level is not feasible with a wall height that is consistent with applicable design standards, a wall that achieves up to a maximum of 65 dB L_{dn}, as determined by an acoustical engineer, may be installed.

Timing/Implementation: *Prior to issuance of building permit*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

Implementation of mitigation measure **NOI-1** would ensure that the City's noise standards are not exceeded at any of the proposed residences on the Project site and that this impact would be less than significant. **There is no new or substantially more severe significant impact.**

b) **Less Than Significant Impact.** The Project does not include any components that would result in vibration during occupation of the Project site. However, vibration could occur during construction activities. The primary construction activities associated with the Project would occur when infrastructure and structures are constructed. Construction

would occur at considerable distances from the existing residential uses west of the Project site, as they would separated by the proposed open space parcels. One existing residential unit located adjacent to the southeastern corner of the site could be affected by groundborne vibration during construction. However, a vibratory compactor is the only piece of equipment likely to be used during Project construction that would be expected to exceed 0.1 inch per second peak particle velocity (ppv), which is the threshold for annoyance, and is well below the 1.0 inch per second ppv that is the threshold for structural damage. These levels are based on a reference distance of 25 feet. The existing unit at the site's northeastern corner is nearly 50 feet from the property boundary. Therefore, it is not expected that vibration impacts would occur which would cause any structural damage or potential for annoyance. This impact would be less than significant. **There is no new or substantially more severe significant impact.**

d) **Less Than Significant Impact.** The Elk Grove General Plan EIR (Impact 4.6.1) assessed the potential for implementation of the General Plan to result in temporary construction noise levels that would exceed City noise standards. The EIR provided mitigation measure MM 4.6.1 to reduce this impact, but concluded that the impact would remain significant and unavoidable. Mitigation measure MM 4.6.1 required the addition of an action item under Goal 1 of the Noise Element requiring all stationary construction equipment and construction staging areas to be set back from existing noise-sensitive uses, with the appropriate distance to be determined on a case-by-case basis. This requirement has been incorporated into the General Plan as NO-3-Action 3.

Construction of the proposed Project would temporarily increase noise levels on the Project site. Activities involved in typical construction would generate maximum noise levels ranging from 85 to 95 dB at a distance of 50 feet. Noise would also be generated during the construction phase by increased truck traffic on area roadways. This noise increase would be of short duration and would likely occur primarily during daytime hours.

Chapter 6.32, Noise Control, of the Elk Grove Municipal Code exempts construction activities from the specified noise ordinance standards during the hours between 6:00 a.m. and 8:00 p.m. Monday through Friday and between 7:00 a.m. and 8:00 p.m. on Saturday and Sunday. If a construction project adheres to the construction times identified in the Chapter 6.32, construction noise is exempted. The General Plan Noise Element includes action items specific to construction activities under Policy NO-3 due to the loud nature of some construction activities. These actions include the following: construction activity must be limited to the hours of 7 a.m. to 7 p.m. whenever such activity is adjacent to residential uses; and stationary construction equipment and construction staging areas must be set back from existing noise-sensitive land uses. Because construction activities on the project site would be limited to the daytime hours and would be temporary, this impact would be less than significant and would not exceed the assumptions in the General Plan EIR. **There is no new or substantially more severe significant impact.**

e, f) **No impact.** The Project site is not in an airport land use plan or within 2 miles of a public airport. Therefore, future residents of the Project site would not be exposed to excessive noise levels from either public or private airport operations. There would be no impact. **There is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
13. POPULATION AND HOUSING. Would the project:					
a) Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☒	☐	No
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐	No
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐	No

PROJECT IMPACTS AND MITIGATION MEASURES

a) **Less Than Significant Impact.** The proposed Project would allow the future development of 56 residential units on the Project site. According to the American Community Survey for 2012, the average household size in Elk Grove included 3.22 persons (US Census Bureau 2013). Assuming 3.22 persons per household, the Project would generate a population increase of 180. The General Plan EIR assumed buildout would result in approximately 63,340 dwelling units and a population of approximately 194,453 within the City limits. While the proposed Project would increase the population on the Project site, it would not result in a substantial change in the City's population. Therefore, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

b, c) **Less Than Significant Impact.** The Project site currently contains one house and several outbuildings that would be demolished as part of the proposed Project. The demolition of one residential unit would not be considered substantial and would not require the construction of replacement housing elsewhere. Therefore, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
14. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the 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 following public services:					
a) Fire protection?	☐	☐	☒	☐	No
b) Police protection?	☐	☐	☒	☐	No
c) Schools?	☐	☐	☒	☐	No
d) Parks?	☐	☐	☒	☐	No
e) Other public facilities?	☐	☐	☒	☐	No

PROJECT IMPACTS AND MITIGATION MEASURES

a) **Less Than Significant Impact.** The Project site is provided fire protection services by the Cosumnes Community Services District (CCSD) Fire Department. The CCSD operates eight fire stations serving the cities of Elk Grove and Galt, as well as areas of unincorporated Sacramento County. The nearest fire station to the Project site is Station 73 located at 9607 Bond Road, approximately 2 miles to the south. The addition of 56 residential units in the City would not generate a significant increase in calls for fire protection services and would not trigger the need for additional fire protection facilities, the construction of which could result in impact on the environment. Therefore, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

b) **Less Than Significant Impact**. The Project site is provided law enforcement services by the Elk Grove Police Department. The Police Department operates primarily out of two facilities located in the City Hall complex at 8380 and 8400 Laguna Palms Way, approximately 3.5 miles southwest of the Project site. The addition of 56 residential units in the City would not generate a significant increase in calls for law enforcement services and would not trigger the need for additional police protection facilities, the construction of which could result in impacts on the environment. Therefore, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

c) **Less Than Significant Impact.** The Project site is located within the boundaries of the Elk Grove Unified School District (EGUSD), which is one of the largest school districts in California with a rapidly growing student population. The district is impacted, and many schools are overcrowded. As such, essentially all new development within the EGUSD boundaries contributes to the need for additional school facilities.

The proposed Project would allow the development of 56 new residential units, generating additional students who would attend EGUSD schools. However, the Project alone would not trigger the need for additional school facilities, and exceeding school capacity is not considered a physical impact under CEQA. California Government Code Section 65995(h) states that "the payment or satisfaction of a fee, charge or other requirement levied or

imposed... [is] deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or reorganization as defined in Section 56021 or 56073, on the provision of adequate school facilities." The proposed Project would be subject to the EGUSD residential fee in place at the time an application is submitted for a building permit. Under CEQA, payment of EGUSD residential development fees is considered to mitigate the need for school facilities generated by Project implementation. Therefore, anticipated impacts to schools would be considered less than significant. **There is no new or substantially more severe significant impact.**

d) **Less Than Significant Impact.** The City requires the dedication of land or payment of in-lieu fees equivalent to 5 acres of developed parkland per 1,000 residents in order to meet the demand for additional parks and recreational facilities generated by development projects. The Project includes open space, but no developed parkland. The proposed Project would generate approximately 180 new residents, requiring the dedication of approximately 1 acre of land for development of a park or the payment of an equivalent in-lieu fee. Compliance with this City standard would ensure that adequate parks and recreational facilities are provided to future residents of the Project site. This impact would be less than significant. **There is no new or substantially more severe significant impact.**

e) **Less Than Significant Impact.** The proposed Project would result in a negligible increase in the City's overall population and would not be expected to generate a significant increase in demand for any other public services. This impact would be less than significant. **There is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporation	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
15. RECREATION					
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?	☐	☐	☒	☐	No
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

PROJECT IMPACTS AND MITIGATION MEASURES

a, b) **Less Than Significant Impact.** See Issue d) in subsection 14, Public Services. With the payment of the City's in-lieu park impact fee, these impacts would be less than significant. **There is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
16. TRANSPORTATION/TRAFFIC. Would the project:					
a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐	No
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐	No
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒	No
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒	No
e) Result in inadequate emergency access?	☐	☐	☒	☐	No
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒	No

PROJECT IMPACTS AND MITIGATION MEASURES

a, b) **Less Than Significant Impact.** The Elk Grove General Plan EIR (Impact 4.5.1) assessed the potential for implementation of the General Plan to result in increase traffic volumes and decrease levels of service on the local roadway system. The EIR listed numerous General Plan policies and provided mitigation measure MM 4.5.1 to reduce the impact, but determined that the impact would remain significant and unavoidable. Transportation and circulation impacts addressed in the General Plan EIR are summarized below.

- **Local Roadway System (Impact 4.5.1):** Implementation of the General Plan would result in increased traffic volumes, volume-to-capacity (V/C) ratios, and a decrease in level of service on area roadways during the a.m. and p.m. peak hours. Impacts in the Project vicinity include:

  - Calvine Road between Elk Grove Florin Road and Bradshaw Road during the a.m. peak hour would experience LOS A (westbound and eastbound) and during the p.m. peak hour would experience LOS B (eastbound) and LOS A (westbound)

  - Waterman Road between Vintage Park Road and Calvine Road during the a.m. and p.m. peak hours would experience LOS A (northbound and southbound)

  - Waterman Road between Calvine Road and Bond Road during the a.m. peak hour would experience LOS A (northbound and southbound) and during the p.m. peak hour would experience LOS C (northbound) and LOS B (southbound)

  - Bradshaw Road between Vintage Park Road and Calvine Road during the a.m. peak hour would experience LOS A (northbound) and LOS C (southbound) and during the p.m. peak hour would experience LOS C (northbound) and LOS B (southbound)

  - Bradshaw Road between Calvine Road and Bond Road during the a.m. peak hour would experience LOS A (northbound) and LOS D (southbound) and during the p.m. peak hour would experience LOS D (northbound) and LOS B (southbound)

- **State Highways (Impact 4.5.2):** Implementation of the proposed General Plan would result in increased traffic volumes, V/C ratios, and a decrease in level of service on State highways during the a.m. and p.m. peak hours. This is considered a significant impact.

  Mitigation measure MM 4.5.1 was identified to mitigate this impact and was implemented by revising the General Plan to include Policy CI-2. While improvements to State highway facilities were considered a viable mitigation measure, the proposal and timing of needed improvements was not known and depended on if and when the California Department of Transportation (Caltrans) (acting as the lead agency) submits the projects for inclusion into the metropolitan transportation plan. Because it is outside the City's jurisdiction to implement improvements to State highways, the General Plan's impact on State highways was considered to be significant and unavoidable.

- **Transit System (Impact 4.5.3):** Implementation of the General Plan would result in an increase in the demand for transit service. Implementation of General Plan Policies CI-3, CI-4, CI-5, CI-6, CI-7, CI-8, and CI-9 and associated action items reduced the potential impact to less than significant.

- **Bicycle and Pedestrian Facilities (Impact 4.5.4):** Implementation of the General Plan would result in an increased demand for bicycle and pedestrian facilities. Implementation of General Plan Policies CI-3, CI-4, and CI-5 and associated action items reduced the potential impact to less than significant.

- **Roadway Safety (Impact 4.5.5):** Implementation of the General Plan would result in an increase in traffic volumes, which would increase the potential opportunities for safety conflicts. While implementation of the proposed General Plan would increase the amount of vehicle traffic and the number of potential safety conflicts, implementation of the General Plan (specific Policies CI-3, CI-4, CI-17, CI-18, CI-19, CI-20, CI-21, and CI-23 and associated action items) and modern construction design standards would also result in the provision of facilities without unacceptable safety conflicts. The impact is considered less than significant.

- **Cumulative Traffic Impacts on Local Roadways and State Highways (Impact 4.5.6):** Implementation of the General Plan, as well as potential development of the Urban Study Areas, would contribute to significant impacts on local roadways and State highways under cumulative conditions. This was considered a cumulative significant impact. Mitigation measure MM 4.5.1 was identified to mitigate this impact and was implemented by revising the General Plan to include Policy CI-2. Implementation of General Plan Policies CI-2 through CI-10 and CI-13 through CI-18 and associated action items would assist in reducing cumulative impacts on local roadways and State Route (SR) 99. However, the General Plan EIR identified that since some local roadways would not attain LOS D even with improvements, impacts to these roadways are significant and unavoidable (see General Plan DEIR Tables 4.5-7 and 4.5-8). Further improvement of these impacted roadways is considered infeasible given that the necessary right-of-way is not available as a result of extensive residential and commercial development immediately adjacent to these roadways. In addition, the City does not have jurisdiction to improve SR 99, which is a State highway. Thus, impacts to SR 99 were also considered significant and unavoidable.

Roadway Facilities in the Project Vicinity

The Project site is located on Calvine Road east of its intersection with Waterman Road and west of its intersection with Bradshaw Road and would be accessed via Calvine Road. Internal circulation would be provided by a network of residential streets.

- **Calvine Road** is an east–west arterial that connects Stockton Boulevard to Grant Line Road. Near the Project site, Calvine Road has three westbound travel lanes and two eastbound travel lanes and is separated by either a landscaping strip or a center turn lane. It is ultimately planned to be a six-lane arterial, extending to Interstate 5.

- **Waterman Road** is a north–south arterial roadway extending from north of Vintage Park Drive in Sacramento County to Grant Line Road. Waterman Road is two lanes near the Project site.

- **Bradshaw Road** is a two-lane rural roadway that runs north–south through the existing City limits and into the unincorporated county. It provides local access to residential neighborhoods and agricultural and industrial land uses. Bradshaw Road is four lanes near the Project site.

Level of Service

Level of service is a qualitative measure of traffic operating conditions whereby a letter grade, from A to F, is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. In general, LOS A represents free-flow conditions with no congestion, and LOS F represents severe congestion and delay under stop-and-go conditions. **Table 7** identifies the volume-to-capacity thresholds for roadway LOS and the amount of delay associated with intersection level of service.

TABLE 7
LEVEL OF SERVICE – ROADWAY AND INTERSECTIONS

	A	B	C	D	E	F
Volume-to-Capacity Threshold[1]	≤0.6	0.61–0.70	0.71–0.80	0.81–0.90	0.91–1.00	>1.00
Delay (seconds/vehicle)[2]	≤10.0	10.1–15.0	15.1–25.0	25.1–35.0	35.1–50.0	>50.0

Source: City of Elk Grove 2000; Transportation Research Board 2010
Notes:
1. Thresholds apply to arterial roadways with moderate access control.
2. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay.

Existing Traffic Conditions

According to the traffic study prepared for the City's Housing Element update (Fehr & Peers 2013), Calvine Road operates at LOS A from Elk Grove Florin Road to Bradshaw Road in the eastbound and westbound directions during the a.m. and p.m. peak hours. Waterman Road also operates at LOS A from Calvine Road to Vintage Park Road and from Calvine Road to Bond Road in the northbound and southbound directions during the a.m. and p.m. peak hours. Bradshaw Road operates at LOS A from Calvine Road to Bond Road in both the northbound and southbound directions during the a.m. and p.m. peak hours. In the a.m. peak hour, Bradshaw Road operates at LOS B from Vintage Park Road to Calvine Road in both directions. In the p.m. peak hour, this segment of Calvine Road operates at LOS A in the northbound direction and LOS C southbound.

Proposed Project

According to the Institute of Transportation Engineers (2004) Trip Generation Handbook, the proposed Project would generate a total of 533 daily trips including 42 during the a.m. peak hour and 56 during the p.m. peak hour (see **Table 8**).

TABLE 8
ESTIMATED PEAK-HOUR VEHICLE TRIPS

Land Use	Number of Units	Trip Generation Rate			Project Trips		
		Daily	AM Peak Hour	PM Peak Hour	Daily	AM Peak Hour	PM Peak Hour
Single Family Detached Residential	56	9.52	0.75	1	533	42	56

Source: ITE 2004 (residential single-family detached, average, weekday peak-hour rates)

The General Plan land use designation for the Project site allows up to 4 dwelling units per gross acre, or a total of 93 dwelling units on the 23.3-acre Project site. The EIR for the City of Elk Grove General Plan assumed full buildout of the Project site. The proposed Project would create 56 new single-family residential lots. Therefore, the Project would result in 37 fewer units (93 units minus 56 total Project units = 37 units) than allowed by the General Plan land use designation.

As shown in **Table 8**, the Project would generate approximately 533 trips per day, compared to 885 trips per day based on the site's General Plan land use designation. Under both Project-level and cumulative conditions, the Project would result in less traffic than anticipated in the General Plan EIR. Therefore, the Project is consistent with the environmental analysis and conclusions of the General Plan EIR. The Project would not result in impacts associated with performance of the circulation system and conflicts with applicable level of service standards beyond those addressed in the General Plan EIR. Therefore, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

c) **No Impact.** There are no public airports in the City of Elk Grove. The only private airport in the area is the Sunset Skyranch Airport, located just under 4 miles south of the Project site. However, the airport has lost its use permit and is not anticipated to resume operation in the future. Furthermore, the Project does not propose any tall structures that could interfere with aircraft operation. Therefore, no impact would occur. **There is no new or substantially more severe significant impact.**

d) **No Impact.** The Project has been designed in accordance with City road and improvement standards. The proposed Project would not result in the development of any new hazards or potential incompatibilities. Therefore, the Project would have no impact associated with hazards due to roadway design features. **There is no new or substantially more severe significant impact.**

e) **Less Than Significant Impact.** As described under Issue d) above, the Project has been designed in accordance with City road and improvement standards. An emergency vehicle access road would be provided at the southern Project boundary to ensure adequate access and turning radius for emergency vehicles. This impact would be less than significant. **There is no new or substantially more severe significant impact.**

f) **No Impact.** The Project does not propose any uses that would interfere with policies, plans, or programs for public transit, bicycle, or pedestrian facilities. There would be no impact. **There is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
17. UTILITIES AND SERVICE SYSTEMS. Would the project:					
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐	No
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐	No
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐	No
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐	No
e) Result in a determination by the wastewater treatment provider that 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?	☐	☐	☒	☐	No
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐	No
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐	No

PROJECT IMPACTS AND MITIGATION MEASURES

a, b, e) **Less Than Significant Impact.** Wastewater treatment for the Project site is provided by the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD). The SASD provides local wastewater collection and conveyance services, while the SRCSD owns and operates the regional wastewater conveyance system and the Sacramento Regional Wastewater Treatment Plant (SRWTP). The SRWTP

treats an average 150 million gallons of wastewater per day and is capable of treating up to 400 million gallons per day (mgd) during peak wet weather flow. Wastewater is treated by accelerated physical and natural biological processes before it is discharged to the Sacramento River.

Assuming 3.22 persons per household, the Project would generate a population increase of approximately 180. Based on an average wastewater generation rate of 132.4 gallons per capita per day, as provided in the Elk Grove General Plan EIR, the Project would generate approximately 23,832 gallons of wastewater per day (or 0.024 mgd).

The SRWTP's reliable capacity is currently limited, based on hydraulic considerations, to an equivalent 207 mgd average dry weather flow (ADWF). This existing capacity falls short of the projected 218 mgd ADWF in 2020. However, the SRWTP has been master planned to accommodate 350 mgd ADWF in response to anticipated growth in the region, including buildout of the Elk Grove General Plan, through a phased program of recommended facilities and management programs (SRCSD 2008, p. 15). The Project proposes development of the site at a lesser density than that planned for the site in the General Plan and assessed in the General Plan EIR and would generate less wastewater. Therefore, the SRWTP would have sufficient capacity to serve the proposed Project, and the proposed Project would not result in any additional impacts related to wastewater than those identified in the Elk Grove General Plan EIR.

The SRWTP currently operates in compliance with all applicable existing regulatory requirements. In addition, the SRWTP 2020 Master Plan includes recommended facility and management program upgrades to ensure compliance with anticipated future regulatory requirements (SRCSD 2008). Therefore, the proposed Project would not result in the exceedance of any wastewater treatment requirements of the Central Valley Regional Water Quality Control Board. This impact would be less than significant. **There is no new or substantially more severe significant impact.**

b, d) **Less Than Significant Impact.** Domestic water service is provided to the Project site by the Sacramento County Water Agency (SCWA). The Project site is located in the SCWA's Central Service Area (CSA). According to the SCWA's 2010 Urban Water Management Plan (UWMP), the CSA is supplied solely by groundwater wells and consists of one pressure zone. The UWMP determined that water supplies would be adequate to serve customers in the SCWA service area through 2035. Specifically, the SCWA predicted a surplus of 33,131 acre-feet per year (AFY) in 2035 during a normal water year and a surplus of 31,788 AFY in 2035 during multiple dry years (SCWA 2011, p. 7-3). Demand from the Project site would have been considered in the UWMP.

Based on the daily per capita water use rate of 253 gallons per capita per day reported in the Elk Grove Water District's 2010 UWMP, the proposed Project is anticipated to require 45,540 gallons per day or 50.59 acre-feet per year.

Much of the predicted water supply surplus would be provided by improvements to the Vineyard Surface Water Treatment Plant and development of new groundwater water treatment plants, which are planned to increase the SCWA's total water supply and to provide water supply reliability. These water supply improvement projects will be developed independent of the proposed Project. Aside from the water supply infrastructure that would be constructed within the Project site to provide individual connections to the water system and to connect to the existing water delivery lines, no additional infrastructure would be needed for water delivery or water supply. Impacts

associated with the construction of individual water connections are a part of the Project and are assumed in the analysis throughout this initial study. Therefore, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

c) **Less Than Significant Impact.** The Project includes development of a drainage system to serve the proposed residential uses that would consist of drainage inlets and pipelines in on-site roadways conveying runoff to infiltration basins. Impacts associated with construction of the planned drainage facilities are assumed as part of the Project and are addressed throughout this Initial Study. Potential impacts include disturbance of biological and/or cultural resources, temporary air emissions, soil erosion and water quality degradation, handling of hazardous materials, temporary construction noise, and temporary construction traffic. This impact would be less than significant. **There is no new or substantially more severe significant impact.**

f, g) **Less Than Significant Impact.** The proposed Project would allow the development of 56 residential units, the construction and operation of which would generate solid waste and recyclable materials. According to the California Department of Resources Recycling and Recovery (CalRecycle) (2014), California's 2012 statewide per resident disposal rate was 4.3 pounds per resident per day. Based on this statewide disposal rate, the Project would generate approximately 141.3 tons of solid waste and recyclable materials annually (180 residents x 4.3 lbs/person/day = 774 lbs/day x 365 days/year = 282,510 lbs/yr/2,000 lb = 141.3 tons/year). However, the City achieved a per person disposal rate in 2012 of 2.5 pounds per person per day (City of Elk Grove 2014b, p. 5.12-27). This rate far exceeded the State's diversion requirement for the City of 5.9 pounds per person per day. Therefore, with implementation of the City's recycling program, actual total solid waste generated by the proposed Project would be significantly less (approximately 82.1 tons per year).

Construction of the proposed development would also generate construction and demolition debris. However, the City's construction diversion rate is estimated at over 70 percent. Therefore, implementation of the City's existing recycling programs and associated regulations would significantly reduce the volume of generated wastes that would be disposed of in landfills.

Solid waste generated by the proposed residential uses would be hauled by Republic Services to a variety of permitted landfills for disposal. Republic Services would expand services to meet the Project's future demand funded by the increase in service fees collected. Many of the landfills that could serve the Project have over 70 percent remaining capacity and have a combined remaining capacity of more than 73 percent. Therefore, the proposed Project would be served by a solid waste management company and landfills with sufficient capacity to serve the future development.

In addition, the Project would comply with all applicable solid waste regulations, including the City's Space Allocation and Enclosure Design Guidelines for Trash and Recycling. Therefore, this impact would be less than significant. **There is no new or substantially more severe significant impact.**

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact	New Impact or Increase Severity of Previous Significant Impact?
18. MANDATORY FINDINGS OF SIGNIFICANCE:					
a) Does the project have the potential to 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 rare or endangered plants or animals, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐	No
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.	☐	☒	☐	☐	No
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐	No

DISCUSSION

The following are Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.

a) **Less Than Significant Impact With Mitigation Incorporated.** The Elk Grove General Plan EIR found that there is potential for special-status plant and wildlife species as well as sensitive habitats and locally important biological resources in the General Plan study area. However, General Plan policies and mitigation measures identified in the EIR were found to reduce impacts to special-status plant species and sensitive habitats and locally important resources. With implementation of the policies and measures identified in the EIR and mitigation measures identified in the Initial Study, the proposed Project would not have significant impacts to the environment beyond what was considered in the Elk Grove General Plan EIR.

Impacts to special-status wildlife species as well as cumulative impacts to biological resources were found to be significant and unavoidable even with implementation of the identified policies and measures. However, with implementation of the policies and measures identified in the EIR and in this document, the proposed Project would not result in a more severe impact to these resources beyond what was considered in the Elk Grove General Plan EIR.

The Elk Grove General Plan also identified the potential for disturbance of previously unknown prehistoric and historic resources, as well as human remains, but these impacts were reduced to less than significant with the General Plan policies identified in the EIR. With implementation of these policies, the proposed Project would not have significant impacts to the environment beyond what was considered in the Elk Grove General Plan EIR in the area of cultural resources.

Therefore, significant adverse impacts to fish, wildlife, or plant species, including special-status species, and to examples of the major periods of California history or prehistory would not exceed what was considered in the Elk Grove General Plan EIR.

b) **Less Than Significant Impact With Mitigation Incorporated.** The proposed Project would contribute to cumulative greenhouse gas emissions. However, the Project's contribution to this cumulative impact was determined to be less than significant with implementation of mitigation measure **GHG-1**.

c) **Less Than Significant Impact With Mitigation Incorporated.** The proposed Project could result in the exposure of people to excessive construction noise and traffic-related noise. However, by implementing basic regulatory requirements and mitigation measure **NOI-1**, these impacts would be effectively mitigated to a less than significant level. Therefore, with implementation of mitigation measure **NOI-1**, the proposed Project would not have any direct or indirect adverse impacts on humans beyond what was considered in the Elk Grove General Plan EIR.

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APPENDICES

A. Air Quality

Calvine Meadows

Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	63.00	Dwelling Unit	16.58	113,400.00	168

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2015
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	590.31	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project site = 30.7 acres (14.12 acres of Open Space)

Construction Phase - Building construction, paving, & painting assumed to occur simultaneously

Grading - Project site = 30.7 acres (14.12 acres of Open Space)

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	278.00
tblConstructionPhase	NumDays	20.00	300.00
tblConstructionPhase	PhaseEndDate	6/12/2017	5/18/2016
tblConstructionPhase	PhaseEndDate	7/12/2017	5/18/2016
tblConstructionPhase	PhaseStartDate	5/19/2016	4/26/2015
tblConstructionPhase	PhaseStartDate	5/19/2016	3/26/2015
tblGrading	AcresOfGrading	75.00	17.00
tblLandUse	LotAcreage	20.45	16.58
tblProjectCharacteristics	OperationalYear	2014	2015

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	12.3819	79.1275	51.9181	0.0637	18.2032	3.8034	21.2925	9.9670	3.5253	12.8092	0.0000	6,652.1884	6,652.1884	1.9449	0.0000	6,693.0316
2016	11.7687	53.9817	38.2697	0.0577	0.3682	3.4366	3.8048	0.0985	3.2158	3.3143	0.0000	5,757.0146	5,757.0146	1.4117	0.0000	5,786.6596
Total	**24.1507**	**133.1092**	**90.1878**	**0.1214**	**18.5714**	**7.2399**	**25.0973**	**10.0655**	**6.7411**	**16.1235**	**0.0000**	**12,409.2030**	**12,409.2030**	**3.3566**	**0.0000**	**12,479.6912**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	12.3761	79.0550	51.8714	0.0636	8.2667	3.7999	11.3533	4.5051	3.5221	7.3447	0.0000	6,646.2376	6,646.2376	1.9431	0.0000	6,687.0435
2016	11.7634	53.9329	38.2374	0.0577	0.3682	3.4334	3.8017	0.0985	3.2129	3.3114	0.0000	5,752.1823	5,752.1823	1.4104	0.0000	5,781.8005
Total	**24.1394**	**132.9878**	**90.1088**	**0.1213**	**8.6350**	**7.2333**	**15.1549**	**4.6036**	**6.7350**	**10.6561**	**0.0000**	**12,398.4199**	**12,398.4199**	**3.3535**	**0.0000**	**12,468.8440**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.0465	0.0912	0.0875	0.0824	53.5040	0.0916	39.6154	54.2634	0.0914	33.9097	0.0000	0.0869	0.0869	0.0909	0.0000	0.0869

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.9850	0.0624	5.2950	2.7000e-004		0.0284	0.0284		0.0284	0.0284	0.0000	9.3588	9.3588	9.7300e-003	0.0000	9.5632
Energy	0.0599	0.5114	0.2176	3.2600e-003		0.0414	0.0414		0.0414	0.0414		652.8804	652.8804	0.0125	0.0120	656.8537
Mobile	7.3337	5.4429	29.2318	0.0517	3.4496	0.0776	3.5272	0.9214	0.0712	0.9927		4,599.2395	4,599.2395	0.2012		4,603.4640
Total	**10.3785**	**6.0167**	**34.7445**	**0.0552**	**3.4496**	**0.1473**	**3.5969**	**0.9214**	**0.1409**	**1.0624**	**0.0000**	**5,261.4787**	**5,261.4787**	**0.2234**	**0.0120**	**5,269.8809**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.9850	0.0624	5.2950	2.7000e-004		0.0284	0.0284		0.0284	0.0284	0.0000	9.3588	9.3588	9.7300e-003	0.0000	9.5632
Energy	0.0599	0.5114	0.2176	3.2600e-003		0.0414	0.0414		0.0414	0.0414		652.8804	652.8804	0.0125	0.0120	656.8537
Mobile	7.3337	5.4429	29.2318	0.0517	3.4496	0.0776	3.5272	0.9214	0.0712	0.9927		4,599.2395	4,599.2395	0.2012		4,603.4640
Total	**10.3785**	**6.0167**	**34.7445**	**0.0552**	**3.4496**	**0.1473**	**3.5969**	**0.9214**	**0.1409**	**1.0624**	**0.0000**	**5,261.4787**	**5,261.4787**	**0.2234**	**0.0120**	**5,269.8809**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/29/2015	2/11/2015	5	10	
2	Grading	Grading	2/12/2015	3/25/2015	5	30	
3	Building Construction	Building Construction	3/26/2015	5/18/2016	5	300	
4	Paving	Paving	3/26/2015	5/18/2016	5	300	
5	Architectural Coating	Architectural Coating	4/26/2015	5/18/2016	5	278	

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	2	8.00	162	0.38
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	125	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	130	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	23.00	7.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	5.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

Acres of Grading: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	5.2609	56.8897	42.6318	0.0391		3.0883	3.0883		2.8412	2.8412		4,111.7444	4,111.7444	1.2275		4,137.5225
Total	5.2609	56.8897	42.6318	0.0391	18.0663	3.0883	21.1545	9.9307	2.8412	12.7719		4,111.7444	4,111.7444	1.2275		4,137.5225

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2872	0.0727	0.9703	1.7500e-003	0.1369	1.0600e-003	0.1380	0.0363	9.7000e-004	0.0373		149.3506	149.3506	7.6500e-003		149.5112
Total	0.2872	0.0727	0.9703	1.7500e-003	0.1369	1.0600e-003	0.1380	0.0363	9.7000e-004	0.0373		149.3506	149.3506	7.6500e-003		149.5112

3.2 Site Preparation - 2015

Mitigated Construction On-Site

Acres of Grading: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	5.2561	56.8375	42.5927	0.0391		3.0855	3.0855		2.8386	2.8386	0.0000	4,107.9721	4,107.9721	1.2264		4,133.7265
Total	**5.2561**	**56.8375**	**42.5927**	**0.0391**	**8.1298**	**3.0855**	**11.2153**	**4.4688**	**2.8386**	**7.3074**	**0.0000**	**4,107.9721**	**4,107.9721**	**1.2264**		**4,133.7265**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2872	0.0727	0.9703	1.7500e-003	0.1369	1.0600e-003	0.1380	0.0363	9.7000e-004	0.0373		149.3506	149.3506	7.6500e-003		149.5112
Total	**0.2872**	**0.0727**	**0.9703**	**1.7500e-003**	**0.1369**	**1.0600e-003**	**0.1380**	**0.0363**	**9.7000e-004**	**0.0373**		**149.3506**	**149.3506**	**7.6500e-003**		**149.5112**

3.3 Grading - 2015

Unmitigated Construction On-Site

Acres of Grading: 17

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6230	0.0000	6.6230	3.3751	0.0000	3.3751			0.0000			0.0000
Off-Road	6.7751	79.0467	50.8400	0.0618		3.8022	3.8022		3.4980	3.4980		6,486.2433	6,486.2433	1.9364		6,526.9080
Total	**6.7751**	**79.0467**	**50.8400**	**0.0618**	**6.6230**	**3.8022**	**10.4252**	**3.3751**	**3.4980**	**6.8731**		**6,486.2433**	**6,486.2433**	**1.9364**		**6,526.9080**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3191	0.0808	1.0781	1.9500e-003	0.1521	1.1700e-003	0.1533	0.0404	1.0700e-003	0.0414		165.9451	165.9451	8.5000e-003		166.1236
Total	**0.3191**	**0.0808**	**1.0781**	**1.9500e-003**	**0.1521**	**1.1700e-003**	**0.1533**	**0.0404**	**1.0700e-003**	**0.0414**		**165.9451**	**165.9451**	**8.5000e-003**		**166.1236**

3.3 Grading - 2015

Mitigated Construction On-Site

Acres of Grading: 17

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9804	0.0000	2.9804	1.5188	0.0000	1.5188			0.0000			0.0000
Off-Road	6.7689	78.9742	50.7933	0.0617		3.7987	3.7987		3.4948	3.4948	0.0000	6,480.2925	6,480.2925	1.9346		6,520.9199
Total	**6.7689**	**78.9742**	**50.7933**	**0.0617**	**2.9804**	**3.7987**	**6.7791**	**1.5188**	**3.4948**	**5.0136**	**0.0000**	**6,480.2925**	**6,480.2925**	**1.9346**		**6,520.9199**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3191	0.0808	1.0781	1.9500e-003	0.1521	1.1700e-003	0.1533	0.0404	1.0700e-003	0.0414		165.9451	165.9451	8.5000e-003		166.1236
Total	**0.3191**	**0.0808**	**1.0781**	**1.9500e-003**	**0.1521**	**1.1700e-003**	**0.1533**	**0.0404**	**1.0700e-003**	**0.0414**		**165.9451**	**165.9451**	**8.5000e-003**		**166.1236**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6591	30.0299	18.7446	0.0268		2.1167	2.1167		1.9904	1.9904		2,689.5771	2,689.5771	0.6748		2,703.7483
Total	**3.6591**	**30.0299**	**18.7446**	**0.0268**		**2.1167**	**2.1167**		**1.9904**	**1.9904**		**2,689.5771**	**2,689.5771**	**0.6748**		**2,703.7483**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2082	0.6437	1.1301	1.4700e-003	0.0411	0.0110	0.0521	0.0117	0.0101	0.0218		148.0989	148.0989	1.2700e-003		148.1255
Worker	0.3669	0.0929	1.2398	2.2400e-003	0.1750	1.3500e-003	0.1763	0.0464	1.2400e-003	0.0477		190.8369	190.8369	9.7700e-003		191.0421
Total	**0.5752**	**0.7367**	**2.3699**	**3.7100e-003**	**0.2161**	**0.0124**	**0.2284**	**0.0581**	**0.0113**	**0.0695**		**338.9358**	**338.9358**	**0.0110**		**339.1677**

3.4 Building Construction - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6557	30.0024	18.7274	0.0268		2.1148	2.1148		1.9886	1.9886	0.0000	2,687.1096	2,687.1096	0.6742		2,701.2678
Total	**3.6557**	**30.0024**	**18.7274**	**0.0268**		**2.1148**	**2.1148**		**1.9886**	**1.9886**	**0.0000**	**2,687.1096**	**2,687.1096**	**0.6742**		**2,701.2678**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2082	0.6437	1.1301	1.4700e-003	0.0411	0.0110	0.0521	0.0117	0.0101	0.0218		148.0989	148.0989	1.2700e-003		148.1255
Worker	0.3669	0.0929	1.2398	2.2400e-003	0.1750	1.3500e-003	0.1763	0.0464	1.2400e-003	0.0477		190.8369	190.8369	9.7700e-003		191.0421
Total	**0.5752**	**0.7367**	**2.3699**	**3.7100e-003**	**0.2161**	**0.0124**	**0.2284**	**0.0581**	**0.0113**	**0.0695**		**338.9358**	**338.9358**	**0.0110**		**339.1677**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4062	28.5063	18.5066	0.0268		1.9674	1.9674		1.8485	1.8485		2,669.2864	2,669.2864	0.6620		2,683.1890
Total	**3.4062**	**28.5063**	**18.5066**	**0.0268**		**1.9674**	**1.9674**		**1.8485**	**1.8485**		**2,669.2864**	**2,669.2864**	**0.6620**		**2,683.1890**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1702	0.5622	0.9864	1.4600e-003	0.0411	9.2200e-003	0.0503	0.0117	8.4600e-003	0.0202		146.1484	146.1484	1.1500e-003		146.1725
Worker	0.3366	0.0829	1.1099	2.2400e-003	0.1750	1.2900e-003	0.1763	0.0464	1.1800e-003	0.0476		183.8690	183.8690	8.8800e-003		184.0555
Total	**0.5068**	**0.6451**	**2.0964**	**3.7000e-003**	**0.2161**	**0.0105**	**0.2266**	**0.0581**	**9.6400e-003**	**0.0678**		**330.0173**	**330.0173**	**0.0100**		**330.2280**

3.4 Building Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4031	28.4802	18.4897	0.0268		1.9656	1.9656		1.8468	1.8468	0.0000	2,666.8375	2,666.8375	0.6614		2,680.7273
Total	**3.4031**	**28.4802**	**18.4897**	**0.0268**		**1.9656**	**1.9656**		**1.8468**	**1.8468**	**0.0000**	**2,666.8375**	**2,666.8375**	**0.6614**		**2,680.7273**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1702	0.5622	0.9864	1.4600e-003	0.0411	9.2200e-003	0.0503	0.0117	8.4600e-003	0.0202		146.1484	146.1484	1.1500e-003		146.1725
Worker	0.3366	0.0829	1.1099	2.2400e-003	0.1750	1.2900e-003	0.1763	0.0464	1.1800e-003	0.0476		183.8690	183.8690	8.8800e-003		184.0555
Total	**0.5068**	**0.6451**	**2.0964**	**3.7000e-003**	**0.2161**	**0.0105**	**0.2266**	**0.0581**	**9.6400e-003**	**0.0678**		**330.0173**	**330.0173**	**0.0100**		**330.2280**

3.5 Paving - 2015

Unmitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3172	25.1758	14.9781	0.0223		1.4148	1.4148		1.3016	1.3016		2,339.8984	2,339.8984	0.6986		2,354.5681
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.3172**	**25.1758**	**14.9781**	**0.0223**		**1.4148**	**1.4148**		**1.3016**	**1.3016**		**2,339.8984**	**2,339.8984**	**0.6986**		**2,354.5681**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2393	0.0606	0.8086	1.4600e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		124.4588	124.4588	6.3700e-003		124.5927
Total	**0.2393**	**0.0606**	**0.8086**	**1.4600e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**124.4588**	**124.4588**	**6.3700e-003**		**124.5927**

3.5 Paving - 2015

Mitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3151	25.1527	14.9643	0.0223		1.4135	1.4135		1.3004	1.3004	0.0000	2,337.7516	2,337.7516	0.6979		2,352.4079
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.3151**	**25.1527**	**14.9643**	**0.0223**		**1.4135**	**1.4135**		**1.3004**	**1.3004**	**0.0000**	**2,337.7516**	**2,337.7516**	**0.6979**		**2,352.4079**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2393	0.0606	0.8086	1.4600e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		124.4588	124.4588	6.3700e-003		124.5927
Total	**0.2393**	**0.0606**	**0.8086**	**1.4600e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**124.4588**	**124.4588**	**6.3700e-003**		**124.5927**

3.5 Paving - 2016

Unmitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0898	22.3859	14.8176	0.0223		1.2610	1.2610		1.1601	1.1601		2,316.3767	2,316.3767	0.6987		2,331.0495
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.0898**	**22.3859**	**14.8176**	**0.0223**		**1.2610**	**1.2610**		**1.1601**	**1.1601**		**2,316.3767**	**2,316.3767**	**0.6987**		**2,331.0495**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2195	0.0541	0.7239	1.4600e-003	0.1141	8.4000e-004	0.1149	0.0303	7.7000e-004	0.0310		119.9145	119.9145	5.7900e-003		120.0362
Total	**0.2195**	**0.0541**	**0.7239**	**1.4600e-003**	**0.1141**	**8.4000e-004**	**0.1149**	**0.0303**	**7.7000e-004**	**0.0310**		**119.9145**	**119.9145**	**5.7900e-003**		**120.0362**

3.5 Paving - 2016

Mitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0879	22.3654	14.8040	0.0223		1.2598	1.2598		1.1590	1.1590	0.0000	2,314.2516	2,314.2516	0.6981		2,328.9109
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.0879**	**22.3654**	**14.8040**	**0.0223**		**1.2598**	**1.2598**		**1.1590**	**1.1590**	**0.0000**	**2,314.2516**	**2,314.2516**	**0.6981**		**2,328.9109**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2195	0.0541	0.7239	1.4600e-003	0.1141	8.4000e-004	0.1149	0.0303	7.7000e-004	0.0310		119.9145	119.9145	5.7900e-003		120.0362
Total	**0.2195**	**0.0541**	**0.7239**	**1.4600e-003**	**0.1141**	**8.4000e-004**	**0.1149**	**0.0303**	**7.7000e-004**	**0.0310**		**119.9145**	**119.9145**	**5.7900e-003**		**120.0362**

3.6 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.1048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4066	2.5703	1.9018	2.9700e-003		0.2209	0.2209		0.2209	0.2209		281.4481	281.4481	0.0367		282.2177
Total	**5.5114**	**2.5703**	**1.9018**	**2.9700e-003**		**0.2209**	**0.2209**		**0.2209**	**0.2209**		**281.4481**	**281.4481**	**0.0367**		**282.2177**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0798	0.0202	0.2695	4.9000e-004	0.0380	2.9000e-004	0.0383	0.0101	2.7000e-004	0.0104		41.4863	41.4863	2.1200e-003		41.5309
Total	**0.0798**	**0.0202**	**0.2695**	**4.9000e-004**	**0.0380**	**2.9000e-004**	**0.0383**	**0.0101**	**2.7000e-004**	**0.0104**		**41.4863**	**41.4863**	**2.1200e-003**		**41.5309**

3.6 Architectural Coating - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.1048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4062	2.5680	1.9000	2.9700e-003		0.2207	0.2207		0.2207	0.2207	0.0000	281.1898	281.1898	0.0366		281.9587
Total	**5.5111**	**2.5680**	**1.9000**	**2.9700e-003**		**0.2207**	**0.2207**		**0.2207**	**0.2207**	**0.0000**	**281.1898**	**281.1898**	**0.0366**		**281.9587**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0798	0.0202	0.2695	4.9000e-004	0.0380	2.9000e-004	0.0383	0.0101	2.7000e-004	0.0104		41.4863	41.4863	2.1200e-003		41.5309
Total	**0.0798**	**0.0202**	**0.2695**	**4.9000e-004**	**0.0380**	**2.9000e-004**	**0.0383**	**0.0101**	**2.7000e-004**	**0.0104**		**41.4863**	**41.4863**	**2.1200e-003**		**41.5309**

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.1048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966		281.4481	281.4481	0.0332		282.1449
Total	**5.4733**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**		**281.4481**	**281.4481**	**0.0332**		**282.1449**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0732	0.0180	0.2413	4.9000e-004	0.0380	2.8000e-004	0.0383	0.0101	2.6000e-004	0.0104		39.9715	39.9715	1.9300e-003		40.0121
Total	**0.0732**	**0.0180**	**0.2413**	**4.9000e-004**	**0.0380**	**2.8000e-004**	**0.0383**	**0.0101**	**2.6000e-004**	**0.0104**		**39.9715**	**39.9715**	**1.9300e-003**		**40.0121**

3.6 Architectural Coating - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.1048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3681	2.3701	1.8822	2.9700e-003		0.1964	0.1964		0.1964	0.1964	0.0000	281.1898	281.1898	0.0332		281.8860
Total	**5.4730**	**2.3701**	**1.8822**	**2.9700e-003**		**0.1964**	**0.1964**		**0.1964**	**0.1964**	**0.0000**	**281.1898**	**281.1898**	**0.0332**		**281.8860**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0732	0.0180	0.2413	4.9000e-004	0.0380	2.8000e-004	0.0383	0.0101	2.6000e-004	0.0104		39.9715	39.9715	1.9300e-003		40.0121
Total	**0.0732**	**0.0180**	**0.2413**	**4.9000e-004**	**0.0380**	**2.8000e-004**	**0.0383**	**0.0101**	**2.6000e-004**	**0.0104**		**39.9715**	**39.9715**	**1.9300e-003**		**40.0121**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.3337	5.4429	29.2318	0.0517	3.4496	0.0776	3.5272	0.9214	0.0712	0.9927		4,599.2395	4,599.2395	0.2012		4,603.4640
Unmitigated	7.3337	5.4429	29.2318	0.0517	3.4496	0.0776	3.5272	0.9214	0.0712	0.9927		4,599.2395	4,599.2395	0.2012		4,603.4640

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	602.91	635.04	552.51	1,540,435	1,540,435
Total	602.91	635.04	552.51	1,540,435	1,540,435

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.00	5.00	6.50	46.50	12.50	41.00	86	11	3

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.504472	0.068177	0.177914	0.148798	0.045219	0.006392	0.019958	0.015471	0.002301	0.002330	0.006201	0.000579	0.002187

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0599	0.5114	0.2176	3.2600e-003		0.0414	0.0414		0.0414	0.0414		652.8804	652.8804	0.0125	0.0120	656.8537
NaturalGas Unmitigated	0.0599	0.5114	0.2176	3.2600e-003		0.0414	0.0414		0.0414	0.0414		652.8804	652.8804	0.0125	0.0120	656.8537

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	5549.48	0.0599	0.5114	0.2176	3.2600e-003		0.0414	0.0414		0.0414	0.0414		652.8804	652.8804	0.0125	0.0120	656.8537
Total		**0.0599**	**0.5114**	**0.2176**	**3.2600e-003**		**0.0414**	**0.0414**		**0.0414**	**0.0414**		**652.8804**	**652.8804**	**0.0125**	**0.0120**	**656.8537**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	5.54948	0.0599	0.5114	0.2176	3.2600e-003		0.0414	0.0414		0.0414	0.0414		652.8804	652.8804	0.0125	0.0120	656.8537
Total		**0.0599**	**0.5114**	**0.2176**	**3.2600e-003**		**0.0414**	**0.0414**		**0.0414**	**0.0414**		**652.8804**	**652.8804**	**0.0125**	**0.0120**	**656.8537**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.9850	0.0624	5.2950	2.7000e-004		0.0284	0.0284		0.0284	0.0284	0.0000	9.3588	9.3588	9.7300e-003	0.0000	9.5632
Unmitigated	2.9850	0.0624	5.2950	2.7000e-004		0.0284	0.0284		0.0284	0.0284	0.0000	9.3588	9.3588	9.7300e-003	0.0000	9.5632

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3888					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.4268					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1694	0.0624	5.2950	2.7000e-004		0.0284	0.0284		0.0284	0.0284		9.3588	9.3588	9.7300e-003		9.5632
Total	**2.9850**	**0.0624**	**5.2950**	**2.7000e-004**		**0.0284**	**0.0284**		**0.0284**	**0.0284**	**0.0000**	**9.3588**	**9.3588**	**9.7300e-003**	**0.0000**	**9.5632**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3888					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.4268					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1694	0.0624	5.2950	2.7000e-004		0.0284	0.0284		0.0284	0.0284		9.3588	9.3588	9.7300e-003		9.5632
Total	**2.9850**	**0.0624**	**5.2950**	**2.7000e-004**		**0.0284**	**0.0284**		**0.0284**	**0.0284**	**0.0000**	**9.3588**	**9.3588**	**9.7300e-003**	**0.0000**	**9.5632**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Calvine Meadows

Sacramento County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	63.00	Dwelling Unit	16.58	113,400.00	168

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2015
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	590.31	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project site = 30.7 acres (14.12 acres of Open Space)

Construction Phase - Building construction, paving, & painting assumed to occur simultaneously

Grading - Project site = 30.7 acres (14.12 acres of Open Space)

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	278.00
tblConstructionPhase	NumDays	20.00	300.00
tblConstructionPhase	PhaseEndDate	6/12/2017	5/18/2016
tblConstructionPhase	PhaseEndDate	7/12/2017	5/18/2016
tblConstructionPhase	PhaseStartDate	5/19/2016	4/26/2015
tblConstructionPhase	PhaseStartDate	5/19/2016	3/26/2015
tblGrading	AcresOfGrading	75.00	17.00
tblLandUse	LotAcreage	20.45	16.58
tblProjectCharacteristics	OperationalYear	2014	2015

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	12.5031	79.1470	51.8196	0.0635	18.2032	3.8034	21.2925	9.9670	3.5255	12.8092	0.0000	6,631.9664	6,631.9664	1.9449	0.0000	6,672.8096
2016	11.8759	54.0596	38.5213	0.0572	0.3682	3.4367	3.8049	0.0985	3.2160	3.3144	0.0000	5,713.7990	5,713.7990	1.4117	0.0000	5,743.4448
Total	**24.3790**	**133.2066**	**90.3409**	**0.1207**	**18.5714**	**7.2401**	**25.0975**	**10.0655**	**6.7414**	**16.1236**	**0.0000**	**12,345.7654**	**12,345.7654**	**3.3566**	**0.0000**	**12,416.2544**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	12.4973	79.0745	51.7729	0.0634	8.2667	3.7999	11.3533	4.5051	3.5223	7.3447	0.0000	6,626.0156	6,626.0156	1.9431	0.0000	6,666.8215
2016	11.8705	54.0107	38.4890	0.0572	0.3682	3.4336	3.8018	0.0985	3.2130	3.3115	0.0000	5,708.9667	5,708.9667	1.4104	0.0000	5,738.5856
Total	**24.3678**	**133.0853**	**90.2619**	**0.1206**	**8.6350**	**7.2334**	**15.1551**	**4.6036**	**6.7353**	**10.6562**	**0.0000**	**12,334.9823**	**12,334.9823**	**3.3536**	**0.0000**	**12,405.4071**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.0461	0.0911	0.0874	0.0829	53.5040	0.0916	39.6152	54.2634	0.0914	33.9094	0.0000	0.0873	0.0873	0.0909	0.0000	0.0874

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.9850	0.0624	5.2950	2.7000e-004		0.0284	0.0284		0.0284	0.0284	0.0000	9.3588	9.3588	9.7300e-003	0.0000	9.5632
Energy	0.0599	0.5114	0.2176	3.2600e-003		0.0414	0.0414		0.0414	0.0414		652.8804	652.8804	0.0125	0.0120	656.8537
Mobile	8.0089	6.2130	29.9120	0.0466	3.4496	0.0782	3.5278	0.9214	0.0718	0.9932		4,158.2063	4,158.2063	0.2013		4,162.4332
Total	**11.0537**	**6.7868**	**35.4246**	**0.0502**	**3.4496**	**0.1479**	**3.5975**	**0.9214**	**0.1415**	**1.0629**	**0.0000**	**4,820.4455**	**4,820.4455**	**0.2235**	**0.0120**	**4,828.8501**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.9850	0.0624	5.2950	2.7000e-004		0.0284	0.0284		0.0284	0.0284	0.0000	9.3588	9.3588	9.7300e-003	0.0000	9.5632
Energy	0.0599	0.5114	0.2176	3.2600e-003		0.0414	0.0414		0.0414	0.0414		652.8804	652.8804	0.0125	0.0120	656.8537
Mobile	8.0089	6.2130	29.9120	0.0466	3.4496	0.0782	3.5278	0.9214	0.0718	0.9932		4,158.2063	4,158.2063	0.2013		4,162.4332
Total	**11.0537**	**6.7868**	**35.4246**	**0.0502**	**3.4496**	**0.1479**	**3.5975**	**0.9214**	**0.1415**	**1.0629**	**0.0000**	**4,820.4455**	**4,820.4455**	**0.2235**	**0.0120**	**4,828.8501**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/29/2015	2/11/2015	5	10	
2	Grading	Grading	2/12/2015	3/25/2015	5	30	
3	Building Construction	Building Construction	3/26/2015	5/18/2016	5	300	
4	Paving	Paving	3/26/2015	5/18/2016	5	300	
5	Architectural Coating	Architectural Coating	4/26/2015	5/18/2016	5	278	

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	2	8.00	162	0.38
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	125	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	130	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	23.00	7.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	5.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

Acres of Grading: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	5.2609	56.8897	42.6318	0.0391		3.0883	3.0883		2.8412	2.8412		4,111.7444	4,111.7444	1.2275		4,137.5225
Total	5.2609	56.8897	42.6318	0.0391	18.0663	3.0883	21.1545	9.9307	2.8412	12.7719		4,111.7444	4,111.7444	1.2275		4,137.5225

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3216	0.0903	0.8816	1.5400e-003	0.1369	1.0600e-003	0.1380	0.0363	9.7000e-004	0.0373		131.1508	131.1508	7.6500e-003		131.3115
Total	0.3216	0.0903	0.8816	1.5400e-003	0.1369	1.0600e-003	0.1380	0.0363	9.7000e-004	0.0373		131.1508	131.1508	7.6500e-003		131.3115

3.2 Site Preparation - 2015

Mitigated Construction On-Site

Acres of Grading: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	5.2561	56.8375	42.5927	0.0391		3.0855	3.0855		2.8386	2.8386	0.0000	4,107.9721	4,107.9721	1.2264		4,133.7265
Total	**5.2561**	**56.8375**	**42.5927**	**0.0391**	**8.1298**	**3.0855**	**11.2153**	**4.4688**	**2.8386**	**7.3074**	**0.0000**	**4,107.9721**	**4,107.9721**	**1.2264**		**4,133.7265**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3216	0.0903	0.8816	1.5400e-003	0.1369	1.0600e-003	0.1380	0.0363	9.7000e-004	0.0373		131.1508	131.1508	7.6500e-003		131.3115
Total	**0.3216**	**0.0903**	**0.8816**	**1.5400e-003**	**0.1369**	**1.0600e-003**	**0.1380**	**0.0363**	**9.7000e-004**	**0.0373**		**131.1508**	**131.1508**	**7.6500e-003**		**131.3115**

3.3 Grading - 2015

Unmitigated Construction On-Site

Acres of Grading: 17

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6230	0.0000	6.6230	3.3751	0.0000	3.3751			0.0000			0.0000
Off-Road	6.7751	79.0467	50.8400	0.0618		3.8022	3.8022		3.4980	3.4980		6,486.2433	6,486.2433	1.9364		6,526.9080
Total	**6.7751**	**79.0467**	**50.8400**	**0.0618**	**6.6230**	**3.8022**	**10.4252**	**3.3751**	**3.4980**	**6.8731**		**6,486.2433**	**6,486.2433**	**1.9364**		**6,526.9080**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3573	0.1004	0.9796	1.7100e-003	0.1521	1.1700e-003	0.1533	0.0404	1.0700e-003	0.0414		145.7231	145.7231	8.5000e-003		145.9016
Total	**0.3573**	**0.1004**	**0.9796**	**1.7100e-003**	**0.1521**	**1.1700e-003**	**0.1533**	**0.0404**	**1.0700e-003**	**0.0414**		**145.7231**	**145.7231**	**8.5000e-003**		**145.9016**

3.3 Grading - 2015

Mitigated Construction On-Site

Acres of Grading: 17

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9804	0.0000	2.9804	1.5188	0.0000	1.5188			0.0000			0.0000
Off-Road	6.7689	78.9742	50.7933	0.0617		3.7987	3.7987		3.4948	3.4948	0.0000	6,480.2925	6,480.2925	1.9346		6,520.9199
Total	**6.7689**	**78.9742**	**50.7933**	**0.0617**	**2.9804**	**3.7987**	**6.7791**	**1.5188**	**3.4948**	**5.0136**	**0.0000**	**6,480.2925**	**6,480.2925**	**1.9346**		**6,520.9199**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3573	0.1004	0.9796	1.7100e-003	0.1521	1.1700e-003	0.1533	0.0404	1.0700e-003	0.0414		145.7231	145.7231	8.5000e-003		145.9016
Total	**0.3573**	**0.1004**	**0.9796**	**1.7100e-003**	**0.1521**	**1.1700e-003**	**0.1533**	**0.0404**	**1.0700e-003**	**0.0414**		**145.7231**	**145.7231**	**8.5000e-003**		**145.9016**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6591	30.0299	18.7446	0.0268		2.1167	2.1167		1.9904	1.9904		2,689.5771	2,689.5771	0.6748		2,703.7483
Total	**3.6591**	**30.0299**	**18.7446**	**0.0268**		**2.1167**	**2.1167**		**1.9904**	**1.9904**		**2,689.5771**	**2,689.5771**	**0.6748**		**2,703.7483**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2472	0.6907	1.5768	1.4700e-003	0.0411	0.0112	0.0523	0.0117	0.0103	0.0220		146.8166	146.8166	1.3000e-003		146.8440
Worker	0.4109	0.1154	1.1265	1.9600e-003	0.1750	1.3500e-003	0.1763	0.0464	1.2400e-003	0.0477		167.5816	167.5816	9.7700e-003		167.7869
Total	**0.6581**	**0.8061**	**2.7033**	**3.4300e-003**	**0.2161**	**0.0125**	**0.2286**	**0.0581**	**0.0115**	**0.0696**		**314.3982**	**314.3982**	**0.0111**		**314.6309**

3.4 Building Construction - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6557	30.0024	18.7274	0.0268		2.1148	2.1148		1.9886	1.9886	0.0000	2,687.1096	2,687.1096	0.6742		2,701.2678
Total	**3.6557**	**30.0024**	**18.7274**	**0.0268**		**2.1148**	**2.1148**		**1.9886**	**1.9886**	**0.0000**	**2,687.1096**	**2,687.1096**	**0.6742**		**2,701.2678**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2472	0.6907	1.5768	1.4700e-003	0.0411	0.0112	0.0523	0.0117	0.0103	0.0220		146.8166	146.8166	1.3000e-003		146.8440
Worker	0.4109	0.1154	1.1265	1.9600e-003	0.1750	1.3500e-003	0.1763	0.0464	1.2400e-003	0.0477		167.5816	167.5816	9.7700e-003		167.7869
Total	**0.6581**	**0.8061**	**2.7033**	**3.4300e-003**	**0.2161**	**0.0125**	**0.2286**	**0.0581**	**0.0115**	**0.0696**		**314.3982**	**314.3982**	**0.0111**		**314.6309**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4062	28.5063	18.5066	0.0268		1.9674	1.9674		1.8485	1.8485		2,669.2864	2,669.2864	0.6620		2,683.1890
Total	**3.4062**	**28.5063**	**18.5066**	**0.0268**		**1.9674**	**1.9674**		**1.8485**	**1.8485**		**2,669.2864**	**2,669.2864**	**0.6620**		**2,683.1890**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2015	0.6028	1.4400	1.4600e-003	0.0411	9.3500e-003	0.0505	0.0117	8.5900e-003	0.0203		144.8750	144.8750	1.1800e-003		144.8999
Worker	0.3771	0.1029	1.0019	1.9600e-003	0.1750	1.2900e-003	0.1763	0.0464	1.1800e-003	0.0476		161.4347	161.4347	8.8800e-003		161.6213
Total	**0.5786**	**0.7057**	**2.4419**	**3.4200e-003**	**0.2161**	**0.0106**	**0.2267**	**0.0581**	**9.7700e-003**	**0.0679**		**306.3098**	**306.3098**	**0.0101**		**306.5212**

3.4 Building Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4031	28.4802	18.4897	0.0268		1.9656	1.9656		1.8468	1.8468	0.0000	2,666.8375	2,666.8375	0.6614		2,680.7273
Total	**3.4031**	**28.4802**	**18.4897**	**0.0268**		**1.9656**	**1.9656**		**1.8468**	**1.8468**	**0.0000**	**2,666.8375**	**2,666.8375**	**0.6614**		**2,680.7273**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2015	0.6028	1.4400	1.4600e-003	0.0411	9.3500e-003	0.0505	0.0117	8.5900e-003	0.0203		144.8750	144.8750	1.1800e-003		144.8999
Worker	0.3771	0.1029	1.0019	1.9600e-003	0.1750	1.2900e-003	0.1763	0.0464	1.1800e-003	0.0476		161.4347	161.4347	8.8800e-003		161.6213
Total	**0.5786**	**0.7057**	**2.4419**	**3.4200e-003**	**0.2161**	**0.0106**	**0.2267**	**0.0581**	**9.7700e-003**	**0.0679**		**306.3098**	**306.3098**	**0.0101**		**306.5212**

3.5 Paving - 2015

Unmitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3172	25.1758	14.9781	0.0223		1.4148	1.4148		1.3016	1.3016		2,339.8984	2,339.8984	0.6986		2,354.5681
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	2.3172	25.1758	14.9781	0.0223		1.4148	1.4148		1.3016	1.3016		2,339.8984	2,339.8984	0.6986		2,354.5681

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2680	0.0753	0.7347	1.2800e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		109.2923	109.2923	6.3700e-003		109.4262
Total	0.2680	0.0753	0.7347	1.2800e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		109.2923	109.2923	6.3700e-003		109.4262

3.5 Paving - 2015

Mitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3151	25.1527	14.9643	0.0223		1.4135	1.4135		1.3004	1.3004	0.0000	2,337.7516	2,337.7516	0.6979		2,352.4079
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.3151**	**25.1527**	**14.9643**	**0.0223**		**1.4135**	**1.4135**		**1.3004**	**1.3004**	**0.0000**	**2,337.7516**	**2,337.7516**	**0.6979**		**2,352.4079**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2680	0.0753	0.7347	1.2800e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		109.2923	109.2923	6.3700e-003		109.4262
Total	**0.2680**	**0.0753**	**0.7347**	**1.2800e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**109.2923**	**109.2923**	**6.3700e-003**		**109.4262**

3.5 Paving - 2016

Unmitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0898	22.3859	14.8176	0.0223		1.2610	1.2610		1.1601	1.1601		2,316.3767	2,316.3767	0.6987		2,331.0495
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.0898**	**22.3859**	**14.8176**	**0.0223**		**1.2610**	**1.2610**		**1.1601**	**1.1601**		**2,316.3767**	**2,316.3767**	**0.6987**		**2,331.0495**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2460	0.0671	0.6534	1.2800e-003	0.1141	8.4000e-004	0.1149	0.0303	7.7000e-004	0.0310		105.2835	105.2835	5.7900e-003		105.4052
Total	**0.2460**	**0.0671**	**0.6534**	**1.2800e-003**	**0.1141**	**8.4000e-004**	**0.1149**	**0.0303**	**7.7000e-004**	**0.0310**		**105.2835**	**105.2835**	**5.7900e-003**		**105.4052**

3.5 Paving - 2016

Mitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0879	22.3654	14.8040	0.0223		1.2598	1.2598		1.1590	1.1590	0.0000	2,314.2516	2,314.2516	0.6981		2,328.9109
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.0879**	**22.3654**	**14.8040**	**0.0223**		**1.2598**	**1.2598**		**1.1590**	**1.1590**	**0.0000**	**2,314.2516**	**2,314.2516**	**0.6981**		**2,328.9109**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2460	0.0671	0.6534	1.2800e-003	0.1141	8.4000e-004	0.1149	0.0303	7.7000e-004	0.0310		105.2835	105.2835	5.7900e-003		105.4052
Total	**0.2460**	**0.0671**	**0.6534**	**1.2800e-003**	**0.1141**	**8.4000e-004**	**0.1149**	**0.0303**	**7.7000e-004**	**0.0310**		**105.2835**	**105.2835**	**5.7900e-003**		**105.4052**

3.6 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.1048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4066	2.5703	1.9018	2.9700e-003		0.2209	0.2209		0.2209	0.2209		281.4481	281.4481	0.0367		282.2177
Total	**5.5114**	**2.5703**	**1.9018**	**2.9700e-003**		**0.2209**	**0.2209**		**0.2209**	**0.2209**		**281.4481**	**281.4481**	**0.0367**		**282.2177**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0893	0.0251	0.2449	4.3000e-004	0.0380	2.9000e-004	0.0383	0.0101	2.7000e-004	0.0104		36.4308	36.4308	2.1200e-003		36.4754
Total	**0.0893**	**0.0251**	**0.2449**	**4.3000e-004**	**0.0380**	**2.9000e-004**	**0.0383**	**0.0101**	**2.7000e-004**	**0.0104**		**36.4308**	**36.4308**	**2.1200e-003**		**36.4754**

3.6 Architectural Coating - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.1048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4062	2.5680	1.9000	2.9700e-003		0.2207	0.2207		0.2207	0.2207	0.0000	281.1898	281.1898	0.0366		281.9587
Total	**5.5111**	**2.5680**	**1.9000**	**2.9700e-003**		**0.2207**	**0.2207**		**0.2207**	**0.2207**	**0.0000**	**281.1898**	**281.1898**	**0.0366**		**281.9587**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0893	0.0251	0.2449	4.3000e-004	0.0380	2.9000e-004	0.0383	0.0101	2.7000e-004	0.0104		36.4308	36.4308	2.1200e-003		36.4754
Total	**0.0893**	**0.0251**	**0.2449**	**4.3000e-004**	**0.0380**	**2.9000e-004**	**0.0383**	**0.0101**	**2.7000e-004**	**0.0104**		**36.4308**	**36.4308**	**2.1200e-003**		**36.4754**

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.1048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966		281.4481	281.4481	0.0332		282.1449
Total	**5.4733**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**		**281.4481**	**281.4481**	**0.0332**		**282.1449**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0820	0.0224	0.2178	4.3000e-004	0.0380	2.8000e-004	0.0383	0.0101	2.6000e-004	0.0104		35.0945	35.0945	1.9300e-003		35.1351
Total	**0.0820**	**0.0224**	**0.2178**	**4.3000e-004**	**0.0380**	**2.8000e-004**	**0.0383**	**0.0101**	**2.6000e-004**	**0.0104**		**35.0945**	**35.0945**	**1.9300e-003**		**35.1351**

3.6 Architectural Coating - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.1048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3681	2.3701	1.8822	2.9700e-003		0.1964	0.1964		0.1964	0.1964	0.0000	281.1898	281.1898	0.0332		281.8860
Total	**5.4730**	**2.3701**	**1.8822**	**2.9700e-003**		**0.1964**	**0.1964**		**0.1964**	**0.1964**	**0.0000**	**281.1898**	**281.1898**	**0.0332**		**281.8860**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0820	0.0224	0.2178	4.3000e-004	0.0380	2.8000e-004	0.0383	0.0101	2.6000e-004	0.0104		35.0945	35.0945	1.9300e-003		35.1351
Total	**0.0820**	**0.0224**	**0.2178**	**4.3000e-004**	**0.0380**	**2.8000e-004**	**0.0383**	**0.0101**	**2.6000e-004**	**0.0104**		**35.0945**	**35.0945**	**1.9300e-003**		**35.1351**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.0089	6.2130	29.9120	0.0466	3.4496	0.0782	3.5278	0.9214	0.0718	0.9932		4,158.2063	4,158.2063	0.2013		4,162.4332
Unmitigated	8.0089	6.2130	29.9120	0.0466	3.4496	0.0782	3.5278	0.9214	0.0718	0.9932		4,158.2063	4,158.2063	0.2013		4,162.4332

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	602.91	635.04	552.51	1,540,435	1,540,435
Total	602.91	635.04	552.51	1,540,435	1,540,435

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.00	5.00	6.50	46.50	12.50	41.00	86	11	3

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.504472	0.068177	0.177914	0.148798	0.045219	0.006392	0.019958	0.015471	0.002301	0.002330	0.006201	0.000579	0.002187

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0599	0.5114	0.2176	3.2600e-003		0.0414	0.0414		0.0414	0.0414		652.8804	652.8804	0.0125	0.0120	656.8537
NaturalGas Unmitigated	0.0599	0.5114	0.2176	3.2600e-003		0.0414	0.0414		0.0414	0.0414		652.8804	652.8804	0.0125	0.0120	656.8537

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	5549.48	0.0599	0.5114	0.2176	3.2600e-003		0.0414	0.0414		0.0414	0.0414		652.8804	652.8804	0.0125	0.0120	656.8537
Total		**0.0599**	**0.5114**	**0.2176**	**3.2600e-003**		**0.0414**	**0.0414**		**0.0414**	**0.0414**		**652.8804**	**652.8804**	**0.0125**	**0.0120**	**656.8537**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	5.54948	0.0599	0.5114	0.2176	3.2600e-003		0.0414	0.0414		0.0414	0.0414		652.8804	652.8804	0.0125	0.0120	656.8537
Total		**0.0599**	**0.5114**	**0.2176**	**3.2600e-003**		**0.0414**	**0.0414**		**0.0414**	**0.0414**		**652.8804**	**652.8804**	**0.0125**	**0.0120**	**656.8537**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.9850	0.0624	5.2950	2.7000e-004		0.0284	0.0284		0.0284	0.0284	0.0000	9.3588	9.3588	9.7300e-003	0.0000	9.5632
Unmitigated	2.9850	0.0624	5.2950	2.7000e-004		0.0284	0.0284		0.0284	0.0284	0.0000	9.3588	9.3588	9.7300e-003	0.0000	9.5632

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3888					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.4268					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1694	0.0624	5.2950	2.7000e-004		0.0284	0.0284		0.0284	0.0284		9.3588	9.3588	9.7300e-003		9.5632
Total	**2.9850**	**0.0624**	**5.2950**	**2.7000e-004**		**0.0284**	**0.0284**		**0.0284**	**0.0284**	**0.0000**	**9.3588**	**9.3588**	**9.7300e-003**	**0.0000**	**9.5632**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3888					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.4268					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1694	0.0624	5.2950	2.7000e-004		0.0284	0.0284		0.0284	0.0284		9.3588	9.3588	9.7300e-003		9.5632
Total	**2.9850**	**0.0624**	**5.2950**	**2.7000e-004**		**0.0284**	**0.0284**		**0.0284**	**0.0284**	**0.0000**	**9.3588**	**9.3588**	**9.7300e-003**	**0.0000**	**9.5632**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

B. Biological Resources

U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 140605123638

Current as of: June 5, 2014

Quad Lists

Listed Species

Invertebrates

Branchinecta conservatio
- Conservancy fairy shrimp (E)

Branchinecta lynchi
- Critical habitat, vernal pool fairy shrimp (X)
- vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
- Critical habitat, valley elderberry longhorn beetle (X)
- valley elderberry longhorn beetle (T)

Lepidurus packardi
- Critical habitat, vernal pool tadpole shrimp (X)
- vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
- green sturgeon (T) (NMFS)

Hypomesus transpacificus
- Critical habitat, delta smelt (X)
- delta smelt (T)

Oncorhynchus mykiss
- Central Valley steelhead (T) (NMFS)
- Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
- Central Valley spring-run chinook salmon (T) (NMFS)
- Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
- winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
- California tiger salamander, central population (T)
- Critical habitat, CA tiger salamander, central population (X)

Rana draytonii
- California red-legged frog (T)

Reptiles

Thamnophis gigas
- giant garter snake (T)

Plants

Castilleja campestris ssp. succulenta
- Critical habitat, succulent (=fleshy) owl's-clover (X)
- succulent (=fleshy) owl's-clover (T)

Orcuttia tenuis
- Critical habitat, slender Orcutt grass (X)

slender Orcutt grass (T)

Orcuttia viscida
Critical habitat, Sacramento Orcutt grass (X)
Sacramento Orcutt grass (E)

Quads Containing Listed, Proposed or Candidate Species:

SLOUGHHOUSE (495B)
CLAY (495C)
ELK GROVE (496A)
FLORIN (496B)
BRUCEVILLE (496C)
GALT (496D)
BUFFALO CREEK (511C)
SACRAMENTO EAST (512C)
CARMICHAEL (512D)

County Lists

Sacramento County

Listed Species

Invertebrates

Apodemia mormo langei
Lange's metalmark butterfly (E)

Branchinecta conservatio
Conservancy fairy shrimp (E)

Branchinecta lynchi
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
Critical habitat, valley elderberry longhorn beetle (X)
valley elderberry longhorn beetle (T)

Elaphrus viridis
delta green ground beetle (T)

Lepidurus packardi
Critical habitat, vernal pool tadpole shrimp (X)
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus mykiss
Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

Rana draytonii
California red-legged frog (T)

Reptiles

Thamnophis gigas
giant garter snake (T)

Birds

Charadrius alexandrinus nivosus
western snowy plover (T)

Rallus longirostris obsoletus
California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni
California least tern (E)

Vireo bellii pusillus
Least Bell's vireo (E)

Mammals

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Sylvilagus bachmani riparius
riparian brush rabbit (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Arctostaphylos myrtifolia
Ione manzanita (T)

Calystegia stebbinsii
Stebbins's morning-glory (E)

Castilleja campestris ssp. succulenta
Critical habitat, succulent (=fleshy) owl's-clover (X)
succulent (=fleshy) owl's-clover (T)

Ceanothus roderickii
Pine Hill ceanothus (E)

Cordylanthus mollis ssp. mollis
soft bird's-beak (E)

Cordylanthus palmatus
palmate-bracted bird's-beak (E)

Eriogonum apricum var. apricum
Ione buckwheat (E)

Eriogonum apricum var. prostratum
Irish Hill buckwheat (E)

Erysimum capitatum ssp. angustatum
Contra Costa wallflower (E)
Critical Habitat, Contra Costa wallflower (X)

Fremontodendron californicum ssp. decumbens
Pine Hill flannelbush (E)

Galium californicum ssp. sierrae
El Dorado bedstraw (E)

Lasthenia conjugens
Contra Costa goldfields (E)

Neostapfia colusana
Colusa grass (T)

Oenothera deltoides ssp. howellii
Antioch Dunes evening-primrose (E)
Critical habitat, Antioch Dunes evening-primrose (X)

Orcuttia tenuis
Critical habitat, slender Orcutt grass (X)
slender Orcutt grass (T)

Orcuttia viscida
Critical habitat, Sacramento Orcutt grass (X)
Sacramento Orcutt grass (E)

Senecio layneae
Layne's butterweed (=ragwort) (T)

Sidalcea keckii
Keck's checker-mallow (=checkerbloom) (E)

Candidate Species

Birds

Coccyzus americanus occidentalis
Western yellow-billed cuckoo (C)

Key:

(E) *Endangered* - Listed as being in danger of extinction.
(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.
Critical Habitat - Area essential to the conservation of a species.
(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
(C) *Candidate* - Candidate to become a proposed species.
(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be September 03, 2014.

CNDDB 9-Quad Species List 266 records.

Element Type	Scientific Name	Common Name	Element Code	Federal Status	State Status	CDFW Status	CA Rare Plant Rank	Quad Code	Quad Name	Data Status	Taxonomic Sort
Animals - Amphibians	Ambystoma californiense	California tiger salamander	AAAAA01180	Threatened	Threatened	SSC	-	3812132	Clay	Mapped and Unprocessed	Animals - Amphibians - Ambystomatidae - Ambystoma californiense
Animals - Amphibians	Ambystoma californiense	California tiger salamander	AAAAA01180	Threatened	Threatened	SSC	-	3812133	Galt	Mapped and Unprocessed	Animals - Amphibians - Ambystomatidae - Ambystoma californiense
Animals - Amphibians	Ambystoma californiense	California tiger salamander	AAAAA01180	Threatened	Threatened	SSC	-	3812142	Sloughhouse	Unprocessed	Animals - Amphibians - Ambystomatidae - Ambystoma californiense
Animals - Amphibians	Spea hammondii	western spadefoot	AAABF02020	None	None	SSC	-	3812142	Sloughhouse	Mapped	Animals - Amphibians - Scaphiopodidae - Spea hammondii
Animals - Amphibians	Spea hammondii	western spadefoot	AAABF02020	None	None	SSC	-	3812152	Buffalo Creek	Mapped	Animals - Amphibians - Scaphiopodidae - Spea hammondii
Animals - Amphibians	Spea hammondii	western spadefoot	AAABF02020	None	None	SSC	-	3812153	Carmichael	Mapped and Unprocessed	Animals - Amphibians - Scaphiopodidae - Spea hammondii
Animals - Birds	Accipiter cooperii	Cooper's hawk	ABNKC12040	None	None	WL	-	3812153	Carmichael	Mapped and Unprocessed	Animals - Birds - Accipitridae - Accipiter cooperii
Animals - Birds	Accipiter cooperii	Cooper's hawk	ABNKC12040	None	None	WL	-	3812152	Buffalo Creek	Mapped and Unprocessed	Animals - Birds - Accipitridae - Accipiter cooperii
Animals - Birds	Accipiter cooperii	Cooper's hawk	ABNKC12040	None	None	WL	-	3812154	Sacramento East	Mapped	Animals - Birds - Accipitridae - Accipiter cooperii
Animals - Birds	Accipiter cooperii	Cooper's hawk	ABNKC12040	None	None	WL	-	3812143	Elk Grove	Mapped	Animals - Birds - Accipitridae - Accipiter cooperii
Animals - Birds	Accipiter cooperii	Cooper's hawk	ABNKC12040	None	None	WL	-	3812144	Florin	Mapped	Animals - Birds - Accipitridae - Accipiter cooperii
Animals - Birds	Aquila chrysaetos	golden eagle	ABNKC22010	None	None	FP , WL	-	3812153	Carmichael	Mapped and Unprocessed	Animals - Birds - Accipitridae - Aquila chrysaetos
Animals - Birds	Aquila chrysaetos	golden eagle	ABNKC22010	None	None	FP , WL	-	3812152	Buffalo Creek	Unprocessed	Animals - Birds - Accipitridae - Aquila chrysaetos
Animals - Birds	Buteo regalis	ferruginous hawk	ABNKC19120	None	None	WL	-	3812153	Carmichael	Mapped	Animals - Birds - Accipitridae - Buteo regalis
Animals - Birds	Buteo regalis	ferruginous hawk	ABNKC19120	None	None	WL	-	3812144	Florin	Mapped	Animals - Birds - Accipitridae - Buteo regalis
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812144	Florin	Mapped	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812143	Elk Grove	Mapped	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812142	Sloughhouse	Mapped	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812132	Clay	Mapped	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812133	Galt	Mapped	Animals - Birds - Accipitridae - Buteo swainsoni

Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812134	Bruceville	Mapped	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812154	Sacramento East	Mapped	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812153	Carmichael	Mapped	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812152	Buffalo Creek	Mapped	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Circus cyaneus	northern harrier	ABNKC11010	None	None	SSC	-	3812152	Buffalo Creek	Unprocessed	Animals - Birds - Accipitridae - Circus cyaneus
Animals - Birds	Circus cyaneus	northern harrier	ABNKC11010	None	None	SSC	-	3812142	Sloughhouse	Unprocessed	Animals - Birds - Accipitridae - Circus cyaneus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812142	Sloughhouse	Mapped	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812144	Florin	Mapped and Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812143	Elk Grove	Mapped	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812134	Bruceville	Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812133	Galt	Mapped	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812152	Buffalo Creek	Mapped and Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812153	Carmichael	Mapped and Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812154	Sacramento East	Mapped and Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Pandion haliaetus	osprey	ABNKC01010	None	None	WL	-	3812153	Carmichael	Unprocessed	Animals - Birds - Accipitridae - Pandion haliaetus
Animals - Birds	Pandion haliaetus	osprey	ABNKC01010	None	None	WL	-	3812134	Bruceville	Unprocessed	Animals - Birds - Accipitridae - Pandion haliaetus
Animals - Birds	Chaetura vauxi	Vaux's swift	ABNUA03020	None	None	SSC	-	3812153	Carmichael	Unprocessed	Animals - Birds - Apodidae - Chaetura vauxi
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812153	Carmichael	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812134	Bruceville	Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812133	Galt	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812144	Florin	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812144	Florin	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812133	Galt	Mapped	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812134	Bruceville	Unprocessed	Animals - Birds - Ardeidae - Ardea herodias

Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812153	Carmichael	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812154	Sacramento East	Mapped	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Botaurus lentiginosus	American bittern	ABNGA01020	None	None	-	-	3812144	Florin	Unprocessed	Animals - Birds - Ardeidae - Botaurus lentiginosus
Animals - Birds	Egretta thula	snowy egret	ABNGA06030	None	None	-	-	3812144	Florin	Unprocessed	Animals - Birds - Ardeidae - Egretta thula
Animals - Birds	Egretta thula	snowy egret	ABNGA06030	None	None	-	-	3812134	Bruceville	Unprocessed	Animals - Birds - Ardeidae - Egretta thula
Animals - Birds	Ixobrychus exilis	least bittern	ABNGA02010	None	None	SSC	-	3812144	Florin	Unprocessed	Animals - Birds - Ardeidae - Ixobrychus exilis
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	3812144	Florin	Mapped and Unprocessed	Animals - Birds - Ardeidae - Nycticorax nycticorax
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	3812133	Galt	Mapped	Animals - Birds - Ardeidae - Nycticorax nycticorax
Animals - Birds	Cardinalis cardinalis	northern cardinal	ABPBX60010	None	None	WL	-	3812133	Galt	Unprocessed	Animals - Birds - Cardinalidae - Cardinalis cardinalis
Animals - Birds	Pica nuttalli	yellow-billed magpie	ABPAV09020	None	None	-	-	3812154	Sacramento East	Unprocessed	Animals - Birds - Corvidae - Pica nuttalli
Animals - Birds	Coccyzus americanus occidentalis	western yellow-billed cuckoo	ABNRB02022	Proposed Threatened	Endangered	-	-	3812134	Bruceville	Unprocessed	Animals - Birds - Cuculidae - Coccyzus americanus occidentalis
Animals - Birds	Ammodramus savannarum	grasshopper sparrow	ABPBXA0020	None	None	SSC	-	3812134	Bruceville	Unprocessed	Animals - Birds - Emberizidae - Ammodramus savannarum
Animals - Birds	Ammodramus savannarum	grasshopper sparrow	ABPBXA0020	None	None	SSC	-	3812154	Sacramento East	Unprocessed	Animals - Birds - Emberizidae - Ammodramus savannarum
Animals - Birds	Ammodramus savannarum	grasshopper sparrow	ABPBXA0020	None	None	SSC	-	3812144	Florin	Unprocessed	Animals - Birds - Emberizidae - Ammodramus savannarum
Animals - Birds	Chondestes grammacus	lark sparrow	ABPBX96010	None	None	-	-	3812154	Sacramento East	Unprocessed	Animals - Birds - Emberizidae - Chondestes grammacus
Animals - Birds	Melospiza melodia	song sparrow (-inModesto-in population)	ABPBXA3010	None	None	SSC	-	3812154	Sacramento East	Mapped	Animals - Birds - Emberizidae - Melospiza melodia
Animals - Birds	Melospiza melodia	song sparrow (-inModesto-in population)	ABPBXA3010	None	None	SSC	-	3812144	Florin	Mapped	Animals - Birds - Emberizidae - Melospiza melodia
Animals - Birds	Melospiza melodia	song sparrow (-inModesto-in population)	ABPBXA3010	None	None	SSC	-	3812134	Bruceville	Mapped	Animals - Birds - Emberizidae - Melospiza melodia
Animals - Birds	Spizella breweri	Brewer's sparrow	ABPBX94040	None	None	-	-	3812154	Sacramento East	Unprocessed	Animals - Birds - Emberizidae - Spizella breweri
Animals - Birds	Falco columbarius	merlin	ABNKD06030	None	None	WL	-	3812152	Buffalo Creek	Unprocessed	Animals - Birds - Falconidae - Falco columbarius
Animals - Birds	Falco columbarius	merlin	ABNKD06030	None	None	WL	-	3812144	Florin	Mapped	Animals - Birds - Falconidae - Falco columbarius

Animals - Birds	Falco mexicanus	prairie falcon	ABNKD06090	None	None	WL	-	3812154	Sacramento East	Unprocessed	Animals - Birds - Falconidae - Falco mexicanus
Animals - Birds	Spinus lawrencei	Lawrence's goldfinch	ABPBY06100	None	None	-	-	3812152	Buffalo Creek	Unprocessed	Animals - Birds - Fringillidae - Spinus lawrencei
Animals - Birds	Grus canadensis canadensis	lesser sandhill crane	ABNMK01011	None	None	SSC	-	3812134	Bruceville	Unprocessed	Animals - Birds - Gruidae - Grus canadensis canadensis
Animals - Birds	Grus canadensis tabida	greater sandhill crane	ABNMK01014	None	Threatened	FP	-	3812134	Bruceville	Unprocessed	Animals - Birds - Gruidae - Grus canadensis tabida
Animals - Birds	Grus canadensis tabida	greater sandhill crane	ABNMK01014	None	Threatened	FP	-	3812144	Florin	Unprocessed	Animals - Birds - Gruidae - Grus canadensis tabida
Animals - Birds	Progne subis	purple martin	ABPAU01010	None	None	SSC	-	3812154	Sacramento East	Mapped and Unprocessed	Animals - Birds - Hirundinidae - Progne subis
Animals - Birds	Riparia riparia	bank swallow	ABPAU08010	None	Threatened	-	-	3812154	Sacramento East	Mapped	Animals - Birds - Hirundinidae - Riparia riparia
Animals - Birds	Riparia riparia	bank swallow	ABPAU08010	None	Threatened	-	-	3812153	Carmichael	Mapped	Animals - Birds - Hirundinidae - Riparia riparia
Animals - Birds	Riparia riparia	bank swallow	ABPAU08010	None	Threatened	-	-	3812142	Sloughhouse	Mapped	Animals - Birds - Hirundinidae - Riparia riparia
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	None	SSC	-	3812142	Sloughhouse	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	None	SSC	-	3812143	Elk Grove	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	None	SSC	-	3812134	Bruceville	Mapped and Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	None	SSC	-	3812133	Galt	Mapped and Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	None	SSC	-	3812132	Clay	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	None	SSC	-	3812153	Carmichael	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	None	SSC	-	3812152	Buffalo Creek	Mapped and Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	None	SSC	-	3812144	Florin	Mapped and Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Xanthocephalus xanthocephalus	yellow-headed blackbird	ABPBXB3010	None	None	SSC	-	3812144	Florin	Mapped	Animals - Birds - Icteridae - Xanthocephalus xanthocephalus
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3812144	Florin	Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3812134	Bruceville	Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Sternula antillarum browni	California least tern	ABNNM08103	Endangered	Endangered	FP	-	3812144	Florin	Unprocessed	Animals - Birds - Laridae - Sternula antillarum browni
Animals - Birds	Baeolophus inornatus	oak titmouse	ABPAW01100	None	None	-	-	3812144	Florin	Unprocessed	Animals - Birds - Paridae - Baeolophus inornatus
Animals - Birds	Dendroica occidentalis	hermit warbler	ABPBX03090	None	None	-	-	3812133	Galt	Unprocessed	Animals - Birds - Parulidae - Dendroica occidentalis

Animals - Birds	Phalacrocorax auritus	double-crested cormorant	ABNFD01020	None	None	WL	-	3812134	Bruceville	Unprocessed	Animals - Birds - Phalacrocoracidae - Phalacrocorax auritus
Animals - Birds	Phalacrocorax auritus	double-crested cormorant	ABNFD01020	None	None	WL	-	3812144	Florin	Mapped and Unprocessed	Animals - Birds - Phalacrocoracidae - Phalacrocorax auritus
Animals - Birds	Picoides nuttallii	Nuttall's woodpecker	ABNYF07020	None	None	-	-	3812144	Florin	Unprocessed	Animals - Birds - Picidae - Picoides nuttallii
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812144	Florin	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812143	Elk Grove	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812142	Sloughhouse	Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812133	Galt	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812132	Clay	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812134	Bruceville	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812152	Buffalo Creek	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812154	Sacramento East	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812153	Carmichael	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812154	Sacramento East	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812152	Buffalo Creek	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812153	Carmichael	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812144	Florin	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812134	Bruceville	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812132	Clay	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812133	Galt	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi

Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812142	Sloughhouse	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812143	Elk Grove	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta mesovallensis	midvalley fairy shrimp	ICBRA03150	None	None	-	-	3812143	Elk Grove	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta mesovallensis
Animals - Crustaceans	Branchinecta mesovallensis	midvalley fairy shrimp	ICBRA03150	None	None	-	-	3812142	Sloughhouse	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta mesovallensis
Animals - Crustaceans	Branchinecta mesovallensis	midvalley fairy shrimp	ICBRA03150	None	None	-	-	3812133	Galt	Mapped	Animals - Crustaceans - Branchinectidae - Branchinecta mesovallensis
Animals - Crustaceans	Branchinecta mesovallensis	midvalley fairy shrimp	ICBRA03150	None	None	-	-	3812132	Clay	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta mesovallensis
Animals - Crustaceans	Branchinecta mesovallensis	midvalley fairy shrimp	ICBRA03150	None	None	-	-	3812144	Florin	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta mesovallensis
Animals - Crustaceans	Branchinecta mesovallensis	midvalley fairy shrimp	ICBRA03150	None	None	-	-	3812153	Carmichael	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta mesovallensis
Animals - Crustaceans	Branchinecta mesovallensis	midvalley fairy shrimp	ICBRA03150	None	None	-	-	3812152	Buffalo Creek	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta mesovallensis
Animals - Crustaceans	Dumontia oregonensis	hairy water flea	ICBRA23010	None	None	-	-	3812152	Buffalo Creek	Mapped	Animals - Crustaceans - Dumontiidae - Dumontia oregonensis
Animals - Crustaceans	Dumontia oregonensis	hairy water flea	ICBRA23010	None	None	-	-	3812153	Carmichael	Mapped	Animals - Crustaceans - Dumontiidae - Dumontia oregonensis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812153	Carmichael	Mapped and Unprocessed	Animals - Crustaceans - Linderiellidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812152	Buffalo Creek	Mapped and Unprocessed	Animals - Crustaceans - Linderiellidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812144	Florin	Mapped and Unprocessed	Animals - Crustaceans - Linderiellidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812154	Sacramento East	Mapped and Unprocessed	Animals - Crustaceans - Linderiellidae - Linderiella occidentalis

Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812132	Clay	Mapped and Unprocessed	Animals - Crustaceans - Linderiellidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812133	Galt	Mapped and Unprocessed	Animals - Crustaceans - Linderiellidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812134	Bruceville	Mapped and Unprocessed	Animals - Crustaceans - Linderiellidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812142	Sloughhouse	Mapped and Unprocessed	Animals - Crustaceans - Linderiellidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812143	Elk Grove	Mapped and Unprocessed	Animals - Crustaceans - Linderiellidae - Linderiella occidentalis
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812143	Elk Grove	Mapped and Unprocessed	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812142	Sloughhouse	Mapped and Unprocessed	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812134	Bruceville	Mapped and Unprocessed	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812133	Galt	Mapped and Unprocessed	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812132	Clay	Mapped and Unprocessed	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812154	Sacramento East	Mapped and Unprocessed	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812144	Florin	Mapped and Unprocessed	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812152	Buffalo Creek	Mapped and Unprocessed	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812153	Carmichael	Mapped and Unprocessed	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Fish	Lavinia exilicauda exilicauda	Central Valley hitch	AFCJB19012	None	None	-	-	3812134	Bruceville	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda
Animals - Fish	Mylopharodon conocephalus	hardhead	AFCJB25010	None	None	SSC	-	3812154	Sacramento East	Unprocessed	Animals - Fish - Cyprinidae - Mylopharodon conocephalus

Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812154	Sacramento East	Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812144	Florin	Mapped	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812134	Bruceville	Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Hysterocarpus traski traski	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3812134	Bruceville	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traski traski
Animals - Fish	Hysterocarpus traski traski	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3812154	Sacramento East	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traski traski
Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3812154	Sacramento East	Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3812134	Bruceville	Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Spirinchus thaleichthys	longfin smelt	AFCHB03010	Candidate	Threatened	SSC	-	3812144	Florin	Mapped	Animals - Fish - Osmeridae - Spirinchus thaleichthys
Animals - Fish	Entosphenus tridentatus	Pacific lamprey	AFBAA02100	None	None	-	-	3812154	Sacramento East	Unprocessed	Animals - Fish - Petromyzontidae - Entosphenus tridentatus
Animals - Fish	Entosphenus tridentatus	Pacific lamprey	AFBAA02100	None	None	-	-	3812134	Bruceville	Unprocessed	Animals - Fish - Petromyzontidae - Entosphenus tridentatus
Animals - Fish	Lampetra ayresii	river lamprey	AFBAA02030	None	None	SSC	-	3812154	Sacramento East	Unprocessed	Animals - Fish - Petromyzontidae - Lampetra ayresii
Animals - Fish	Oncorhynchus mykiss irideus	steelhead - central California coast DPS	AFCHA0209G	Threatened	None	-	-	3812154	Sacramento East	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus
Animals - Fish	Oncorhynchus mykiss irideus	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812154	Sacramento East	Mapped	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus
Animals - Fish	Oncorhynchus mykiss irideus	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812144	Florin	Mapped	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus
Animals - Fish	Oncorhynchus mykiss irideus	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812153	Carmichael	Mapped	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus
Animals - Fish	Oncorhynchus mykiss irideus	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812133	Galt	Mapped	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus
Animals - Fish	Oncorhynchus mykiss irideus	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812134	Bruceville	Mapped	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus
Animals - Fish	Oncorhynchus mykiss irideus	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812142	Sloughhouse	Mapped	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus
Animals - Fish	Oncorhynchus mykiss irideus	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812143	Elk Grove	Mapped	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus

Animals - Fish	Oncorhynchus tshawytscha	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3812134	Bruceville	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha
Animals - Fish	Oncorhynchus tshawytscha	chinook salmon - Central Valley spring-run ESU	AFCHA0205A	Threatened	Threatened	-	-	3812154	Sacramento East	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha
Animals - Fish	Oncorhynchus tshawytscha	chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	-	-	3812154	Sacramento East	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha
Animals - Fish	Oncorhynchus tshawytscha	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3812154	Sacramento East	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha
Animals - Insects	Andrena blennospermatis	Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	-	-	3812142	Sloughhouse	Mapped	Animals - Insects - Andrenidae - Andrena blennospermatis
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812142	Sloughhouse	Mapped	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812143	Elk Grove	Mapped	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812134	Bruceville	Mapped	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812133	Galt	Mapped	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812154	Sacramento East	Mapped and Unprocessed	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812153	Carmichael	Mapped and Unprocessed	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812152	Buffalo Creek	Mapped	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Hydrochara ricksecker	Ricksecker's water scavenger beetle	IICOL5V010	None	None	-	-	3812152	Buffalo Creek	Mapped	Animals - Insects - Hydrophilidae - Hydrochara ricksecker
Animals - Insects	Hydrochara ricksecker	Ricksecker's water scavenger beetle	IICOL5V010	None	None	-	-	3812153	Carmichael	Mapped	Animals - Insects - Hydrophilidae - Hydrochara ricksecker
Animals - Insects	Hydrochara ricksecker	Ricksecker's water scavenger beetle	IICOL5V010	None	None	-	-	3812134	Bruceville	Mapped	Animals - Insects - Hydrophilidae - Hydrochara ricksecker
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3812134	Bruceville	Mapped	Animals - Mammals - Mustelidae - Taxidea taxus

Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3812153	Carmichael	Mapped	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3812152	Buffalo Creek	Mapped and Unprocessed	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3812144	Florin	Mapped and Unprocessed	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3812154	Sacramento East	Mapped	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Lasiurus blossevillii	western red bat	AMACC05060	None	None	SSC	-	3812144	Florin	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus blossevillii
Animals - Mammals	Lasiurus cinereus	hoary bat	AMACC05030	None	None	-	-	3812144	Florin	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus cinereus
Animals - Mammals	Lasiurus cinereus	hoary bat	AMACC05030	None	None	-	-	3812134	Bruceville	Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus cinereus
Animals - Mammals	Myotis ciliolabrum	western small-footed myotis	AMACC01140	None	None	-	-	3812134	Bruceville	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis ciliolabrum
Animals - Mammals	Myotis lucifugus	little brown bat	AMACC01010	None	None	-	-	3812134	Bruceville	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis lucifugus
Animals - Mammals	Myotis lucifugus	little brown bat	AMACC01010	None	None	-	-	3812144	Florin	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis lucifugus
Animals - Mammals	Myotis yumanensis	Yuma myotis	AMACC01020	None	None	-	-	3812144	Florin	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis yumanensis
Animals - Mammals	Myotis yumanensis	Yuma myotis	AMACC01020	None	None	-	-	3812134	Bruceville	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis yumanensis
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812133	Galt	Mapped	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812132	Clay	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812134	Bruceville	Mapped	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812142	Sloughhouse	Mapped	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812143	Elk Grove	Mapped	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812144	Florin	Mapped	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812152	Buffalo Creek	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812153	Carmichael	Mapped	Animals - Reptiles - Emydidae - Emys marmorata

Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812154	Sacramento East	Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Thamnophis gigas	giant garter snake	ARADB36150	Threatened	Threatened	-	-	3812144	Florin	Mapped	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant garter snake	ARADB36150	Threatened	Threatened	-	-	3812143	Elk Grove	Mapped	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant garter snake	ARADB36150	Threatened	Threatened	-	-	3812142	Sloughhouse	Unprocessed	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant garter snake	ARADB36150	Threatened	Threatened	-	-	3812134	Bruceville	Mapped	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant garter snake	ARADB36150	Threatened	Threatened	-	-	3812132	Clay	Mapped and Unprocessed	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant garter snake	ARADB36150	Threatened	Threatened	-	-	3812133	Galt	Mapped and Unprocessed	Animals - Reptiles - Natricidae - Thamnophis gigas
Community - Terrestrial	Coastal and Valley Freshwater Marsh	Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	-	-	3812134	Bruceville	Mapped	Community - Terrestrial - Coastal and Valley Freshwater Marsh
Community - Terrestrial	Elderberry Savanna	Elderberry Savanna	CTT63440CA	None	None	-	-	3812154	Sacramento East	Mapped	Community - Terrestrial - Elderberry Savanna
Community - Terrestrial	Great Valley Mixed Riparian Forest	Great Valley Mixed Riparian Forest	CTT61420CA	None	None	-	-	3812134	Bruceville	Mapped	Community - Terrestrial - Great Valley Mixed Riparian Forest
Community - Terrestrial	Great Valley Valley Oak Riparian Forest	Great Valley Valley Oak Riparian Forest	CTT61430CA	None	None	-	-	3812134	Bruceville	Mapped	Community - Terrestrial - Great Valley Valley Oak Riparian Forest
Community - Terrestrial	Great Valley Valley Oak Riparian Forest	Great Valley Valley Oak Riparian Forest	CTT61430CA	None	None	-	-	3812143	Elk Grove	Mapped	Community - Terrestrial - Great Valley Valley Oak Riparian Forest
Community - Terrestrial	Great Valley Valley Oak Riparian Forest	Great Valley Valley Oak Riparian Forest	CTT61430CA	None	None	-	-	3812133	Galt	Mapped	Community - Terrestrial - Great Valley Valley Oak Riparian Forest
Community - Terrestrial	Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	CTT44110CA	None	None	-	-	3812133	Galt	Mapped	Community - Terrestrial - Northern Hardpan Vernal Pool
Community - Terrestrial	Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	CTT44110CA	None	None	-	-	3812132	Clay	Mapped	Community - Terrestrial - Northern Hardpan Vernal Pool
Community - Terrestrial	Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	CTT44110CA	None	None	-	-	3812143	Elk Grove	Mapped	Community - Terrestrial - Northern Hardpan Vernal Pool
Community - Terrestrial	Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	CTT44110CA	None	None	-	-	3812134	Bruceville	Mapped	Community - Terrestrial - Northern Hardpan Vernal Pool
Community - Terrestrial	Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	CTT44110CA	None	None	-	-	3812142	Sloughhouse	Mapped	Community - Terrestrial - Northern Hardpan Vernal Pool
Community - Terrestrial	Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	CTT44110CA	None	None	-	-	3812144	Florin	Mapped	Community - Terrestrial - Northern Hardpan Vernal Pool
Community - Terrestrial	Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	CTT44110CA	None	None	-	-	3812152	Buffalo Creek	Mapped	Community - Terrestrial - Northern Hardpan Vernal Pool

Community - Terrestrial	Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	CTT44110CA	None	None	-	-	3812153	Carmichael	Mapped	Community - Terrestrial - Northern Hardpan Vernal Pool
Community - Terrestrial	Valley Oak Woodland	Valley Oak Woodland	CTT71130CA	None	None	-	-	3812134	Bruceville	Mapped	Community - Terrestrial - Valley Oak Woodland
Community - Terrestrial	Valley Oak Woodland	Valley Oak Woodland	CTT71130CA	None	None	-	-	3812133	Galt	Mapped	Community - Terrestrial - Valley Oak Woodland
Plants - Vascular	Sagittaria sanfordii	Sanford's arrowhead	PMALI040Q0	None	None	-	1B.2	3812133	Galt	Mapped	Plants - Vascular - Alismataceae - Sagittaria sanfordii
Plants - Vascular	Sagittaria sanfordii	Sanford's arrowhead	PMALI040Q0	None	None	-	1B.2	3812134	Bruceville	Mapped	Plants - Vascular - Alismataceae - Sagittaria sanfordii
Plants - Vascular	Sagittaria sanfordii	Sanford's arrowhead	PMALI040Q0	None	None	-	1B.2	3812142	Sloughhouse	Mapped	Plants - Vascular - Alismataceae - Sagittaria sanfordii
Plants - Vascular	Sagittaria sanfordii	Sanford's arrowhead	PMALI040Q0	None	None	-	1B.2	3812143	Elk Grove	Mapped	Plants - Vascular - Alismataceae - Sagittaria sanfordii
Plants - Vascular	Sagittaria sanfordii	Sanford's arrowhead	PMALI040Q0	None	None	-	1B.2	3812144	Florin	Mapped	Plants - Vascular - Alismataceae - Sagittaria sanfordii
Plants - Vascular	Sagittaria sanfordii	Sanford's arrowhead	PMALI040Q0	None	None	-	1B.2	3812154	Sacramento East	Mapped	Plants - Vascular - Alismataceae - Sagittaria sanfordii
Plants - Vascular	Sagittaria sanfordii	Sanford's arrowhead	PMALI040Q0	None	None	-	1B.2	3812153	Carmichael	Mapped	Plants - Vascular - Alismataceae - Sagittaria sanfordii
Plants - Vascular	Cicuta maculata var. bolanderi	Bolander's water-hemlock	PDAPI0M051	None	None	-	2B.1	3812134	Bruceville	Mapped	Plants - Vascular - Apiaceae - Cicuta maculata var. bolanderi
Plants - Vascular	Lilaeopsis masonii	Mason's lilaeopsis	PDAPI19030	None	Rare	-	1B.1	3812134	Bruceville	Mapped	Plants - Vascular - Apiaceae - Lilaeopsis masonii
Plants - Vascular	Centromadia parryi ssp. rudis	Parry's rough tarplant	PDAST4R0P3	None	None	-	4.2	3812134	Bruceville	Unprocessed	Plants - Vascular - Asteraceae - Centromadia parryi ssp. rudis
Plants - Vascular	Centromadia parryi ssp. rudis	Parry's rough tarplant	PDAST4R0P3	None	None	-	4.2	3812144	Florin	Unprocessed	Plants - Vascular - Asteraceae - Centromadia parryi ssp. rudis
Plants - Vascular	Hesperevax caulescens	hogwallow starfish	PDASTE5020	None	None	-	4.2	3812144	Florin	Unprocessed	Plants - Vascular - Asteraceae - Hesperevax caulescens
Plants - Vascular	Lasthenia ferrisiae	Ferris' goldfields	PDAST5L070	None	None	-	4.2	3812134	Bruceville	Unprocessed	Plants - Vascular - Asteraceae - Lasthenia ferrisiae
Plants - Vascular	Lepidium latipes var. heckardii	Heckard's pepper-grass	PDBRA1M0K1	None	None	-	1B.2	3812144	Florin	Mapped	Plants - Vascular - Brassicaceae - Lepidium latipes var. heckardii
Plants - Vascular	Brasenia schreberi	watershield	PDCAB01010	None	None	-	2B.3	3812134	Bruceville	Mapped	Plants - Vascular - Cabombaceae - Brasenia schreberi
Plants - Vascular	Downingia pusilla	dwarf downingia	PDCAM060C0	None	None	-	2B.2	3812133	Galt	Mapped	Plants - Vascular - Campanulaceae - Downingia pusilla
Plants - Vascular	Downingia pusilla	dwarf downingia	PDCAM060C0	None	None	-	2B.2	3812132	Clay	Mapped	Plants - Vascular - Campanulaceae - Downingia pusilla
Plants - Vascular	Downingia pusilla	dwarf downingia	PDCAM060C0	None	None	-	2B.2	3812143	Elk Grove	Mapped	Plants - Vascular - Campanulaceae - Downingia pusilla
Plants - Vascular	Downingia pusilla	dwarf downingia	PDCAM060C0	None	None	-	2B.2	3812144	Florin	Mapped	Plants - Vascular - Campanulaceae - Downingia pusilla

Plants - Vascular	Legenere limosa	legenere	PDCAM0C010	None	None	-	1B.1	3812144	Florin	Mapped	Plants - Vascular - Campanulaceae - Legenere limosa
Plants - Vascular	Legenere limosa	legenere	PDCAM0C010	None	None	-	1B.1	3812153	Carmichael	Mapped	Plants - Vascular - Campanulaceae - Legenere limosa
Plants - Vascular	Legenere limosa	legenere	PDCAM0C010	None	None	-	1B.1	3812152	Buffalo Creek	Mapped	Plants - Vascular - Campanulaceae - Legenere limosa
Plants - Vascular	Legenere limosa	legenere	PDCAM0C010	None	None	-	1B.1	3812143	Elk Grove	Mapped	Plants - Vascular - Campanulaceae - Legenere limosa
Plants - Vascular	Legenere limosa	legenere	PDCAM0C010	None	None	-	1B.1	3812142	Sloughhouse	Mapped	Plants - Vascular - Campanulaceae - Legenere limosa
Plants - Vascular	Legenere limosa	legenere	PDCAM0C010	None	None	-	1B.1	3812132	Clay	Mapped	Plants - Vascular - Campanulaceae - Legenere limosa
Plants - Vascular	Legenere limosa	legenere	PDCAM0C010	None	None	-	1B.1	3812133	Galt	Mapped	Plants - Vascular - Campanulaceae - Legenere limosa
Plants - Vascular	Legenere limosa	legenere	PDCAM0C010	None	None	-	1B.1	3812134	Bruceville	Mapped	Plants - Vascular - Campanulaceae - Legenere limosa
Plants - Vascular	Cuscuta obtusiflora var. glandulosa	Peruvian dodder	PDCUS01111	None	None	-	2B.2	3812144	Florin	Mapped	Plants - Vascular - Cuscutaceae - Cuscuta obtusiflora var. glandulosa
Plants - Vascular	Carex comosa	bristly sedge	PMCYP032Y0	None	None	-	2B.1	3812134	Bruceville	Mapped	Plants - Vascular - Cyperaceae - Carex comosa
Plants - Vascular	Lathyrus jepsonii var. jepsonii	Delta tule pea	PDFAB250D2	None	None	-	1B.2	3812134	Bruceville	Mapped	Plants - Vascular - Fabaceae - Lathyrus jepsonii var. jepsonii
Plants - Vascular	Trifolium hydrophilum	saline clover	PDFAB400R5	None	None	-	1B.2	3812134	Bruceville	Mapped	Plants - Vascular - Fabaceae - Trifolium hydrophilum
Plants - Vascular	Trifolium hydrophilum	saline clover	PDFAB400R5	None	None	-	1B.2	3812144	Florin	Mapped	Plants - Vascular - Fabaceae - Trifolium hydrophilum
Plants - Vascular	Juglans hindsii	Northern California black walnut	PDJUG02040	None	None	-	1B.1	3812144	Florin	Mapped	Plants - Vascular - Juglandaceae - Juglans hindsii
Plants - Vascular	Juncus leiospermus var. ahartii	Ahart's dwarf rush	PMJUN011L1	None	None	-	1B.2	3812152	Buffalo Creek	Mapped	Plants - Vascular - Juncaceae - Juncus leiospermus var. ahartii
Plants - Vascular	Juncus leiospermus var. ahartii	Ahart's dwarf rush	PMJUN011L1	None	None	-	1B.2	3812153	Carmichael	Mapped	Plants - Vascular - Juncaceae - Juncus leiospermus var. ahartii
Plants - Vascular	Scutellaria galericulata	marsh skullcap	PDLAM1U0J0	None	None	-	2B.2	3812134	Bruceville	Mapped	Plants - Vascular - Lamiaceae - Scutellaria galericulata
Plants - Vascular	Scutellaria lateriflora	side-flowering skullcap	PDLAM1U0Q0	None	None	-	2B.2	3812134	Bruceville	Mapped	Plants - Vascular - Lamiaceae - Scutellaria lateriflora
Plants - Vascular	Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	PDMAL0H0R3	None	None	-	1B.2	3812134	Bruceville	Mapped	Plants - Vascular - Malvaceae - Hibiscus lasiocarpos var. occidentalis
Plants - Vascular	Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	PDMAL0H0R3	None	None	-	1B.2	3812144	Florin	Mapped	Plants - Vascular - Malvaceae - Hibiscus lasiocarpos var. occidentalis

Plants - Vascular	Gratiola heterosepala	Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	-	1B.2	3812152	Buffalo Creek	Mapped	Plants - Vascular - Plantaginaceae - Gratiola heterosepala
Plants - Vascular	Gratiola heterosepala	Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	-	1B.2	3812153	Carmichael	Mapped	Plants - Vascular - Plantaginaceae - Gratiola heterosepala
Plants - Vascular	Gratiola heterosepala	Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	-	1B.2	3812142	Sloughhouse	Mapped	Plants - Vascular - Plantaginaceae - Gratiola heterosepala
Plants - Vascular	Gratiola heterosepala	Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	-	1B.2	3812143	Elk Grove	Mapped	Plants - Vascular - Plantaginaceae - Gratiola heterosepala
Plants - Vascular	Orcuttia tenuis	slender Orcutt grass	PMPOA4G050	Threatened	Endangered	-	1B.1	3812143	Elk Grove	Mapped	Plants - Vascular - Poaceae - Orcuttia tenuis
Plants - Vascular	Orcuttia tenuis	slender Orcutt grass	PMPOA4G050	Threatened	Endangered	-	1B.1	3812152	Buffalo Creek	Mapped	Plants - Vascular - Poaceae - Orcuttia tenuis
Plants - Vascular	Orcuttia viscida	Sacramento Orcutt grass	PMPOA4G070	Endangered	Endangered	-	1B.1	3812152	Buffalo Creek	Mapped	Plants - Vascular - Poaceae - Orcuttia viscida
Plants - Vascular	Orcuttia viscida	Sacramento Orcutt grass	PMPOA4G070	Endangered	Endangered	-	1B.1	3812153	Carmichael	Mapped	Plants - Vascular - Poaceae - Orcuttia viscida
Plants - Vascular	Orcuttia viscida	Sacramento Orcutt grass	PMPOA4G070	Endangered	Endangered	-	1B.1	3812143	Elk Grove	Mapped	Plants - Vascular - Poaceae - Orcuttia viscida
Plants - Vascular	Navarretia eriocephala	hoary navarretia	PDPLM0C060	None	None	-	4.3	3812143	Elk Grove	Unprocessed	Plants - Vascular - Polemoniaceae - Navarretia eriocephala
Plants - Vascular	Limosella australis	Delta mudwort	PDSCR10050	None	None	-	2B.1	3812134	Bruceville	Mapped	Plants - Vascular - Scrophulariaceae - Limosella australis

Plant List

24 matches found. *Click on scientific name for details*

Search Criteria

Found in 9 Quads around 38121D3

Scientific Name	Common Name	Family	Lifeform	Rare Plant Rank	State Rank	Global Rank
Brasenia schreberi	watershield	Cabombaceae	perennial rhizomatous herb	2B.3	S2	G5
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	2B.1	S2	G5
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	4.2	S3.2	G3T3
Cicuta maculata var. bolanderi	Bolander's water-hemlock	Apiaceae	perennial herb	2B.1	S2	G5T3T4
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	Convolvulaceae	annual vine (parasitic)	2B.2	SH	G5T4T5
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	2B.2	S2	GU
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	1B.2	S2	G2
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	4.2	S3.2	G3
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	Malvaceae	perennial rhizomatous herb	1B.2	S2	G5T2
Juglans hindsii	Northern California black walnut	Juglandaceae	perennial deciduous tree	1B.1	S1	G1
Juncus leiospermus var. ahartii	Ahart's dwarf rush	Juncaceae	annual herb	1B.2	S1	G2T1
Lasthenia ferrisiae	Ferris' goldfields	Asteraceae	annual herb	4.2	S3.2	G3
Lathyrus jepsonii var. jepsonii	Delta tule pea	Fabaceae	perennial herb	1B.2	S2.2	G5T2
Legenere limosa	legenere	Campanulaceae	annual herb	1B.1	S2	G2
Lepidium latipes var. heckardii	Heckard's pepper-grass	Brassicaceae	annual herb	1B.2	S2	G4T2
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	1B.1	S2	G2
Limosella australis	Delta mudwort	Scrophulariaceae	perennial stoloniferous herb	2B.1	S2	G4G5
Navarretia eriocephala	hoary navarretia	Polemoniaceae	annual herb	4.3	S3.3	G3
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	1B.1	S2	G2
Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	1B.1	S1	G1
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae		1B.2	S3	G3

			perennial rhizomatous herb			
Scutellaria galericulata	marsh skullcap	Lamiaceae	perennial rhizomatous herb	2B.2	S2	G5
Scutellaria lateriflora	side-flowering skullcap	Lamiaceae	perennial rhizomatous herb	2B.2	S1	G5
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	1B.2	S2	G2

Suggested Citation

CNPS, Rare Plant Program. 2014. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. Website http://www.rareplants.cnps.org [accessed 05 June 2014].

C. Cultural Resources

CULTURAL RESOURCE ASSESSMENT

FOR THE CALVINE MEADOWS PROJECT,

CITY OF ELK GROVE,

SACRAMENTO COUNTY, CALIFORNIA

Prepared by

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Prepared for

PMC
2729 Prospect Park Drive, Suite 220
Rancho Cordova, CA 95670

June 2014
(Job #13-073)

INTRODUCTION

The Calvine Meadows Project site is located on the south side of Calvine Road in Elk Grove, California (Figure 1). The Project site is comprised of Sacramento County APNs 121-0180-007 and 001. The Project site is in the north ½ of Section 20, Township 7 North and Range 6 East, MDB&M, mapped on the Elk Grove 7.5' topographic quadrangle. Laguna Creek transects the property.

The Calvine Meadows Project is a residential subdivision of the 30.5 acres located at 9450 Calvine Road. The Project will create 63 lots on the eastern side of the property, with two remainder lots on the western side as well as two lots for the landscape corridor and emergency access (Figure 2).

The proposed Project is requesting the following entitlements:

- Rezoning of the 30.70-acre site from Agricultural Residential (AR-5) to Low Density Residential (RD-4) and Open Space (O).

- Small-lot tentative subdivision map (TSM) of 63 single-family residential lots, ranging in size from approximately 4,700 to 10,800 square feet (see Figure 2), 3 open space parcels totaling 14.12 acres, and 1 landscape lot totaling 1.01 acres.

The residential parcels would be arranged along public roadways with sidewalk, curb, gutter, streetlights, and other improvements consistent with Section 23.16.080 of the Elk Grove Municipal Code (Design Review).

Personnel

Melinda Peak (resume, Appendix 1) served as principal investigator for the project, with Michael Lawson completing the field survey of the project area in April 2014.

STATE REGULATIONS

State historic preservation regulations affecting this project include the statutes and guidelines contained in the California Environmental Quality Act (CEQA; Public Resources Code sections 21083.2 and 21084.1 and sections 15064.5 and 15126.4 (b) of the CEQA Guidelines). CEQA Section 15064.5 requires that lead agencies determine whether projects may have a significant effect on archaeological and historical resources. Public Resources Code Section 21098.1 further cites: A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

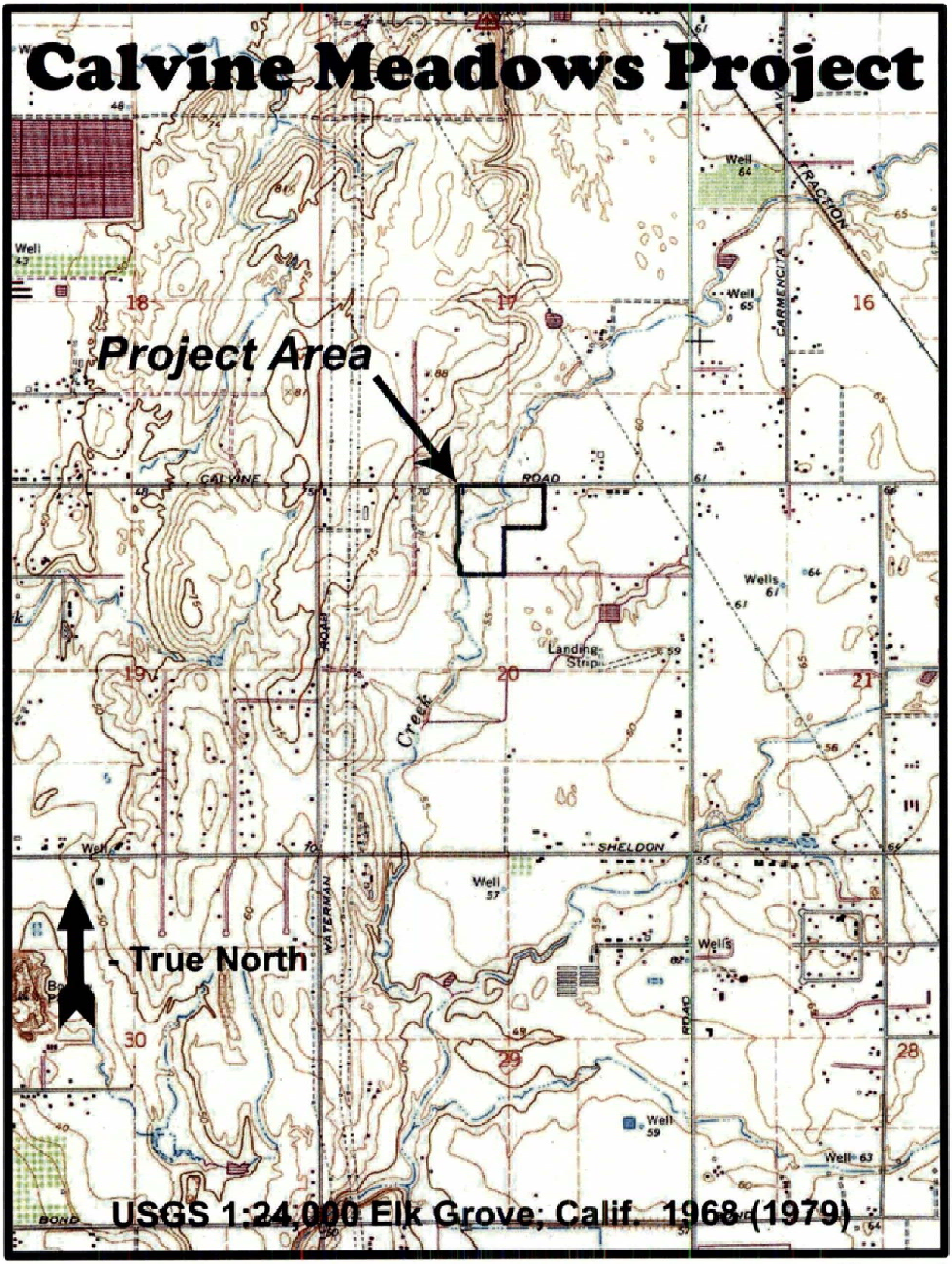

Calvine Meadows Project
Project Area
CALVINE
ROAD
WATERMAN
ROAD
Creek
SHELDON
ROAD
CARMENCITA
TRACTION
Landing Strip
Wells
Well
True North
USGS 1:24,000 Elk Grove, Calif. 1968 (1979)

Figure 1

TENTATIVE SUBDIVISION MAP

9450 CALVINE RD.

CITY OF ELK GROVE, CA.

DECEMBER 4, 2012

PROJECT NOTES

OWNER / APPLICANT / DEVELOPER
BLUE MOUNTAIN AIR INC.
707 ALDRIDGE ROAD, SUITE B
VACAVILLE, CA. 95688
CONTACT: KEN MOODY
PHONE: (707) 451-8111

PLANNER / ENGINEER
GUIDE ENGINEERING
1536 EUREKA RD. STE 600
ROSEVILLE, CA. 05661
CONTACT: JARED BROWN
PHONE: (916) 759-2453

ASSESSOR'S PARCEL NO.
121-0180-007, 051, 052

AREA OF PROPOSED TENTATIVE SUBDIVISION MAP
14.2 ± ACRES (GROSS)

EXISITNG USE
UNDEVELOPED AGGRICULTURAL

PROPOSED USE
SINGLE FAMILY RESIDENTIAL

PROPOSED USE
83 SINGLE FAMILY RESIDENTIAL LOTS
2 REMAINDER LOTS
1 LANDSCAPE CORRIDOR LOT
1 EMERGENCY ACCESS LOT

EXISTING ZONNING
SINGLE FAMILY RESIDENTIAL

PROPOSED ZONING
SINGLE FAMILY RESIDENTIAL

PARK DISTRICT
CITY OF ELK GROVE PARK DISTRICT

FIRE PROTECTION
CITY OF ELK GROVE FIRE DEPT.

SCHOOL DISTRICT
ELK GROVE SCHOOL DISTRICT

SEWER
SACRAMENTO AREA SEWER DISTRICT

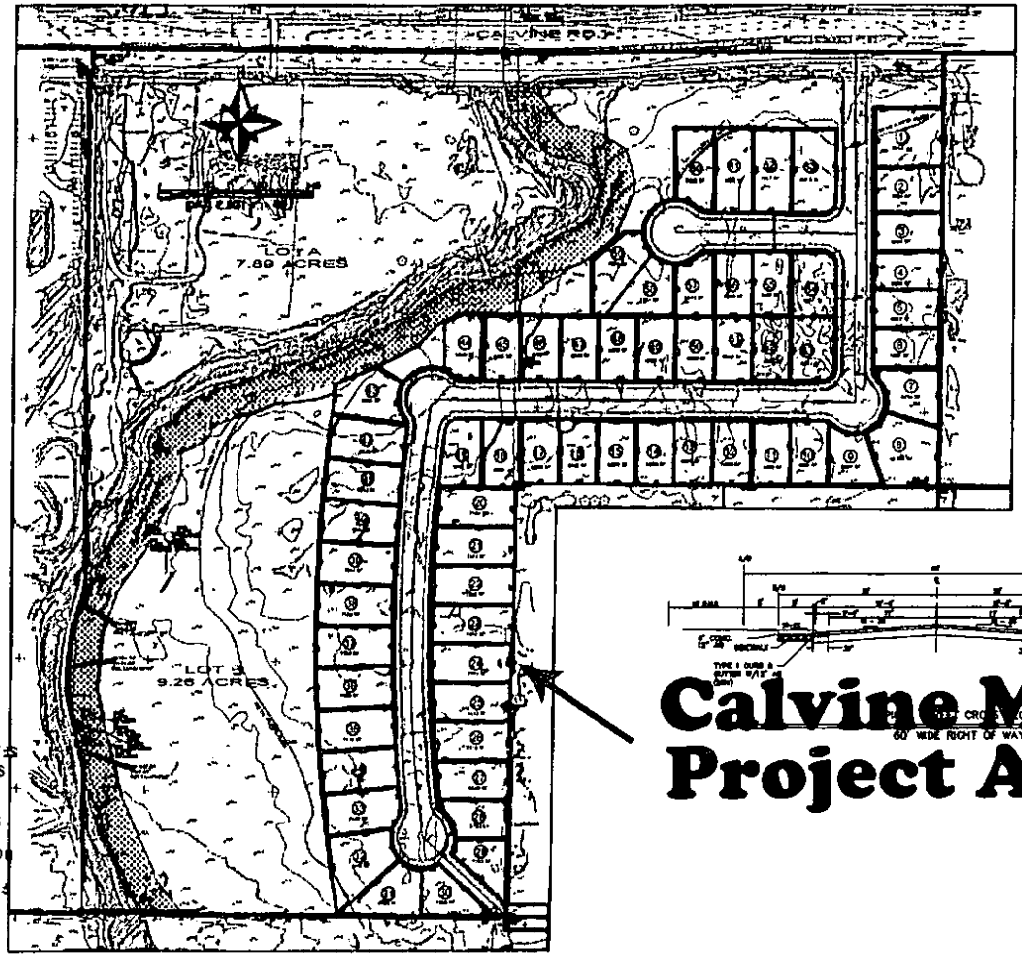
STORM DRAIN
CITY OF ELK GROVE

WATER
CITY OF ELK GROVE

ELECTRICITY
PG&E

NOTES:

1. SUBDIVIDER RESERVES THE RIGHT TO FILE MULTIPLE FINAL MAPS PURSUANT TO SECTION 66456.1(A) OF SUBDIVISION MAP ACT.
2. A 12.5' P.U.E. SHALL BE LOCATED ADJACENT TO ALL PUBLIC RIGHTS-OF-WAY AND PRIVATE DRIV
3. THIS EXHIBIT IS FOR TENTTAIVE MAP PURPOSES ONLY. ALL SITE CHARACTERISTICS ARE TO BE VERIFIED PRIOR TO FINAL MAP.
4. ALL EXISTING TREES, STRUCTURES AND WELLS SHALL BE REMOVED.
5. SUBDIVISION NUMBERING IS FOR IDENTIFICATIO PURPOSES ONLY.
6. THE AERIAL TOPOGRAPHY SHOWN HEREON WA FLOWN BY TRI STATE SURVEYING INC. IN OCT. 2012

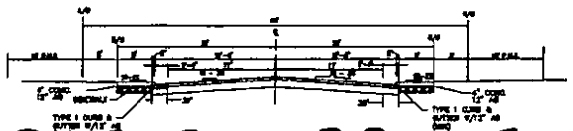


SITE LOCATION

VICINITY MAP

LAND USE SUMMARY TABLE

LAND USE	GROSS AREA	NET AREA	DWELLING UNITS	NET DENSITY
VILLAGE 1 RESIDENTIAL	13.4	10.5	83	6.2
LOTS A & B REMAINDER	14.7	14.7	-	-
MAPLE AVE ROAD	0.1	0.1	-	-
LANDSCAPE	-	2.5	-	-
CALVINE RD.	2.3	2.5	-	-
TOTAL	30.7	29.7	83	6.2



Calvine Meadows Project Area

Figure 2

GUIDE ENGINEERING
LAND ENGINEERING AND PLANNING
1536 EUREKA RD. STE 600
ROSEVILLE, CA 95661
PHONE: 916.759.2453
FAX: 916.677.5734

An "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript that is historically or archaeologically significant (Public Resources Code section 5020.1).

Advice on procedures to identify such resources, evaluate their importance, and estimate potential effects is given in several agency publications such as the series produced by the Governor's Office of Planning and Research (OPR), *CEQA and Archaeological Resources*, 1994. The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including, but not limited to, museums, historical commissions, associations and societies be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of the antiquity and provides for the sensitive treatment and disposition of those remains (California Health and Safety Code Section 7050.5, California Public Resources Codes Sections 5097.94 et al).

The California Register of Historical Resources (Public Resources Code Section 5020 et seq.)

The State Historic Preservation Office (SHPO) maintains the California Register of Historical Resources (CRHR). Properties listed, or formally designated as eligible for listing, on the National Register of Historic Places are automatically listed on the CRHR, as are State Landmarks and Points of Interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

For the purposes of CEQA, an historical resource is a resource listed in, or determined eligible for listing in the California Register of Historical Resources. When a project will impact a site, it needs to be determined whether the site is an historical resource. The criteria are set forth in Section 15064.5(a)(3) of the CEQA Guidelines, and are defined as any resource that does any of the following:

A. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

B. Is associated with the lives of persons important in our past;

C. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

D. Has yielded, or may be likely to yield, information important in prehistory or history.

In addition, the CEQA Guidelines, Section 15064.5(a)(4) states:

The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code section 5020.1(j) or 5024.1.

California Health and Safety Code Sections 7050.5, 7051, And 7054

These sections collectively address the illegality of interference with human burial remains, as well as the disposition of Native American burials in archaeological sites. The law protects such remains from disturbance, vandalism, or inadvertent destruction, and establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project, including the treatment of remains prior to, during, and after evaluation, and reburial procedures.

California Public Resources Code Section 15064.5(e)

This law addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction. The section establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project and establishes the Native American Heritage Commission as the entity responsible to resolve disputes regarding the disposition of such remains.

CULTURAL HISTORY

Archeological Background

The Sacramento Delta was one of the first regions in California to attract intensive archeological fieldwork. Between 1893 and 1901, avocational archeologist J. A. Barr excavated many prehistoric mounds in the Stockton area. He collected nearly 2000 artifacts during the course of his investigations. H. C. Meredith was another avocational archeologist of the period who pursued collecting in the same Stockton locality. Meredith (1899, 1900) did publish a compilation of his own and Barr's findings, and these appear to constitute the earliest accounts of Delta archeology. Holmes (1902), from the Smithsonian Institution, further elaborated on the Delta or "Stockton District" archeology, presenting illustrations of artifacts collected by Meredith and Barr.

It was Elmer J. Dawson who first recognized culture changes through time in delta archeology. Though he was an amateur archeologist, Dawson understood the necessity of keeping accurate notes on grave associations and provenience of artifacts. He collaborated with W. E. Schenck to produce an overview of northern San Joaquin Valley archeology (Schenck and Dawson 1929). The overview contained information on more than 90 prehistoric sites as well as data on previous collectors.

By 1931, the focus of archeological work was directed toward the Cosumnes River locality, where survey and exploration were conducted by Sacramento Junior College (Lillard and Purves 1936). Excavations, especially at the stratified Windmiller mound (CA-SAC-107), suggested three temporally distinct cultural traditions: Early, Transitional, and Late. Information grew as a result of excavations at other mounds in the Delta and lower Sacramento Valley by Sacramento Junior College and the University of California, Berkeley.

Previous investigations in the project region have focused upon very detailed archival research of Spanish sources (Bennyhoff 1977), and the archeological investigations at a number of small sites (Schulz et al. 1979; Schulz and Simons 1973; Soule 1976). A reexamination of earlier work has also been undertaken (Ragir 1972; Schulz 1981; Doran 1980). Several of the previously investigated sites probably represent satellite encampments or small villages associated with major villages.

The majority of the sites appear to be relatively late in time, and probably represent Plains Miwok. As mentioned above, the sites appear to be satellite encampments or small villages. The activities practiced are varied, but detailed studies on the faunal collection suggest seasonality of occupation and a focus on fish species other than the main channel varieties.

Writing the definitive summary of California archeology, Moratto (1984: 529-547) devoted an entire chapter to linguistic prehistory. For the Central Valley region, Moratto points out that some Early Horizon and Middle Horizon central California archeological sites appear at least in part, contemporaneous, based on existing radiocarbon dates. Cultural materials recovered from CA-SJO-68, an Early Horizon site, are thought to relate to date to 4350±250 B.P or 2350 B.C. On the other hand, a Middle Horizon component at CA-CCO-308 dates to 4450±400 B.P. or 2450 B.C. The antiquity of other Early and Middle Horizon sites demonstrate an overlap of the two horizons by a millennium or more.

One explanation proposes that the Middle Horizon represents an intrusion of ancestral Miwok speaking people into the lower Cosumnes, Mokelumne, and Sacramento River areas from the Bay Area. The Early Horizon may represent older Yokuts settlements or perhaps the speakers of an Utian language who were somehow replaced by a shift of population(s) from the bay.

Ethnological Background

The Eastern Miwok represent one of the two main divisions of the Miwokan subgroup of the Utian language family (Levy 1978:398). The Plains Miwok, one of five separate cultural and linguistic groups of the Eastern Miwok, occupied the lower reaches of the Mokelumne, Cosumnes and Sacramento Rivers including the area of south Sacramento County surrounding the project area. Linguistic studies and the application of a lexicostatistic model for language divergence suggest that Plains Miwok was a distinct linguistic entity for the last 2000 years (Levy 1970). This result led researchers such as Richard Levy (1978:398) to conclude that the Plains Miwok inhabited the Sacramento Delta for a considerable period of time.

The political organization of the Plains Miwok centered on the tribelet. Tribelets were comprised of 300 to 500 individuals (Levy 1978:410). Each tribelet was thought to control a specific area of resources and usually consisted of several villages or hamlets. Each tribelet also was divided along lineages. These lineages were apparently localized to a specific geographic setting and most likely represented a village site and their associated satellite sites where the seasonal collection of resources occurred (Levy 1978:398-399). Descent was reckoned through males. Each settlement apparently contained roughly 21 individuals according to data collected by Gifford (Cook 1955:35).

The diet of the Plains Miwok emphasized the collection of floral resources such as acorns, buckeye, digger pine nuts, seeds from the native grasses and various fresh greens. Faunal resources such as tule elk, pronghorn antelope, deer, jackrabbits, cottontails, beaver, gray squirrels, woodrats, quail and waterfowl were hunted. Fishing, particularly salmon and sturgeon, contributed significantly to the Plains Miwok diet (Levy 1978:402-403). The primary method of collecting fish was by nets, but the use of bone hooks, harpoons and obsidian-tipped spears is also known ethnographically (Levy 1978:404)

Both twined and coiled basketry were manufactured by the Eastern Miwok. The uses of baskets included the collection and storage of seeds, basketry cradles and gaming (Levy 1978:406). Tule mats were also known to have been used by the Plains Miwok primarily as a floor covering. Other uses of tule included the manufacture of the tule balsa, a water craft in which native people navigated and exploited adjacent delta and major river systems.

Four main types of structures were known among the Eastern Miwok, depending on the environmental setting. In the mountains, the primary structure was a conical structure of bark slabs. At lower elevations the structures consisted of thatched structures, semi-subterranean earth-covered dwellings and two types of assembly houses used for ceremonial purposes (Levy 1978:408-409).

Bennyhoff (1977:11) characterized the Plains Miwok as intensive hunter-gatherers, with an emphasis upon gathering. The seasonal availability of floral resources defined the limits of the group's economic pursuits. Hunting and fishing subsistence pursuits apparently accommodated the given distribution of resources. The Plains Miwok territory covered six seasonally productive biotic communities and as such native people could apparently afford to pick and choose the resources they ranked highest from each of these zones. The subsequent storage of floral resources (such as acorns in granaries) allowed for a more stable use of the resource base (Bennyhoff 1977:10). The acorn was apparently the subsistence base needed to provide an unusually productive environment as earlier non-acorn using peoples who resided in the same geographic setting apparently suffered some seasonal deprivation (Schulz 1981). Such an emphasis upon the gathering of acorns is consistent with the population increase evident during the Upper Emergent Period in California (Doran 1980).

The study of piscine (fish) remains from both CA-SAC-65 (Schulz et al. 1979) and CA-SAC-145 (Schulz n.d.; Schulz and Simons 1973) indicates that small villages away from the major rivers appear to concentrate on the collection of piscine species (particularly the Sacramento perch) that inhabited slow-moving waters.

Historical Background

The project area lies a few miles north of the Sheldon and Daylor grant (Rancho Omochumnes). Both men were assistants of John Sutter, with Jared Sheldon becoming a naturalized citizen of Mexico to obtain a land grant. Sheldon was awarded the grant in 1841, but this grant proved defective and another was issued in 1844 (Hoover, Rensch and Rensch 1970:288). William Daylor oversaw ranch operations as Sheldon pursued several other business ventures.

One of the ventures, a grist mill near Sloughhouse, was the indirect cause of Sheldon's death in 1851. The dam that provided water to power the mill had been flooding out miners' claims on the Cosumnes River, so the miners demanded that Sheldon release the water. Sheldon refused, and built a small fort, installing a cannon to back up his refusal. The miners armed themselves and captured the fort. When Sheldon arrived with an armed party, a battle ensued in which Sheldon and two of his men were killed (Hoover, Rensch and Rensch 1970:290). Ironically, the dam washed out during a flood in the winter of the same year.

The name of Elk Grove was originally applied to a spot about a mile away from the eventual location of the town. James Hall built a hotel there in 1850 and named it after his home town in Missouri. This hotel burned down in 1857. The eventual site of Elk Grove was on the ranch of Major James Buckner, who also built a hotel on the site in 1850. The hotel was owned successively by Buckner, Phineas Woodward, Mrs. Jared Erwin, and Nicholas Christophel (Davis 1890:243).

The site did not really become a town until after the railroad was constructed. A farmer named Everson saw potential commercial opportunities for a town at this location, but none of the residents, including Everson, had the money available to construct the necessary buildings. Everson persuaded the citizens to pool their money to form the Elk Grove Building Company in 1876. The profits from the first building, the Chittenden and Everson general merchandise store, fueled further construction which, in turn, brought in merchants from outside the area. Only four years later, the town boasted the original general store and one other, two hotels, a flouring mill, the railroad depot, a hardware store, a meat market, a furniture factory, two drug stores, a harness shop, a grain and hay warehouse, a dressmaking shop, two millinery shops, a boot shop, a wagon factory and a blacksmith (Thompson and West 1880:234). The town continued to grow, first as a commercial center for the farmers in the area and recently as a suburban residential zone for greater Sacramento.

Site Specific History

The 1856 General Land Office plat for the Township shows no features in or near the project area. In 1885, the north half of the section had two owners, each with about 160 acres, with Shadrack Jones shown as the owner of the northeast ¼ and T.R. Rhoads owned the northwest ¼ of the section (Official County Map of Sacramento County 1885).

The northeast quarter of the section had been acquired by the Sheldon Townsite & Realty Company by 1911, and by 1923, it had been broken into 16 ten acre parcels. The northwest quarter had been subdivided by 1923, with a single owner for the 80 acre south half, and four owners of twenty acre

parcels for the north half of the quarter section (name not legible for Project area). The project area is comprised of a twenty acre tract, and one ten acre tract of the Sheldon subdivision (Official Map of Sacramento County 1911, 1923).

RESEARCH

Records of previously recorded cultural resources and cultural resource investigations were examined by the North Central Information Center of the California Historical Resources Information System on January 3, 2014 (NCIC File No.: SAC-14-02, Appendix 2). Laguna Creek had been surveyed in 1974 by J. Johnson (NCIC Doc. No. 00088), with no sites recorded within the Project area. Calvine Road and the northern portion of the Project area have been surveyed in 2006 by ECORP for the North Vineyard Station Off-Site Project (NCIC Doc. No. 08062), but the building present was not recorded and no other sites were found.

Although it is an active, improved roadway, Calvine Road was recorded by an archeologist as a site many years ago. The roadway was assigned the primary number P-34-000699, and the trinomial CA-SAC-544H. The same archeologist recorded many other old roadways throughout the Sacramento region, and none of the old roadways are considered significant for any reason.

A review of older topographic shows a number of changes within the property. The map coverage on the 1856 General Land office plat is generalized, and there are no features or details shown within or near the Project area. The 1909 Elk Grove 1:31,680 scale USGS topographic map is the earliest detailed map that shows locations of buildings in this area. The creek course is different than the current course, and there are no buildings within the Project area.

The 1910 Elk Grove USGS topographic map shows a building on the east side of the creek, just south of Calvine Road. This building is still present on the Franklin 15' Army Corps of Engineers map dating to 1941. The creek changes course between 1941 and 1952, and the building on the east side of the creek is gone by 1952 (Elk Grove 7.5' USGS topographic map 1952).

Between 1941 and 1952, two buildings were added to the Project area: a residence on the north edge of the project area on the west side of the creek, and an outbuilding to the south of the building, located just north of the creek (Franklin 15' Army Corps of Engineers map 1941; Elk Grove 7.5' USGS topographic map 1952). The buildings are most likely constructed after the end of World War II, when building materials became more readily available.

Between 1952 and 1968, a larger building is present at the site of the residence on the west side of the creek, suggesting a replacement building or alterations to the existing building. The outbuilding shown on the 1952 map had been removed. By 1980, a new building had been added to the property at the site of the earlier outbuilding (Elk Grove 7.5' USGS topographic map 1952, 1968, 1980).

FIELD SURVEY

The course of Laguna Creek was completely surveyed by Johnson in 1974 with negative results, and the northern part of the property surveyed by ECORP in 2006. No prehistoric artifacts or evidence of prehistoric use of the survey area was found in either of these surveys, nor were any historic sites identified.

The current field survey effort was undertaken by Michael Lawson on April 24, 2014, using transects no wider than 10 meters (Figure 3). There was a fairly thick cover of new grass, and little rodent activity or other ground disturbance, making visibility of the ground surface only fair. There was no evidence of prehistoric period resources in the Project site.

There was no evidence of the building that formerly was present on the east side of the creek. All evidence has apparently been removed from the site. The building had been removed by 1968, so it is likely the demolition was complete, and nothing remains at the former site.

The site of the older building at the north end of the property was examined. The residence has been altered a number of times, extending the building's footprint southward, reflected on the 1968 topographic map. The building has been burned, obscuring original construction details. The house was a frame building on pier blocks, with the original home a very small building. The later extensions included aluminum slider windows.

There are other features on the western side of the property: a dilapidated small wood plank bridge crossing Laguna Creek, several chicken coop remnants, a small reservoir and dam, and a small concrete foundation. There is also debris surrounding the house and in several other piles near the house site.

CONCLUSIONS

Prehistoric Period Resources

No evidence of prehistoric period resource has been found in or near the property. The Project site lies on a flat open plain, near Laguna Creek. Campsites and villages would more likely be located near the larger, more reliable water sources such as the Cosumnes River. As a result, it is likely that the Native American inhabitants of the region used the Project site for collecting plant foods and for hunting, but such activities leave little physical evidence.

Historic Period Resources

The former residence is over 50 years old, but it is not associated with important events or important people in local history. It is not a unique building in any way; one of many post-war residential buildings built throughout California. The building has been altered to a great degree over the years

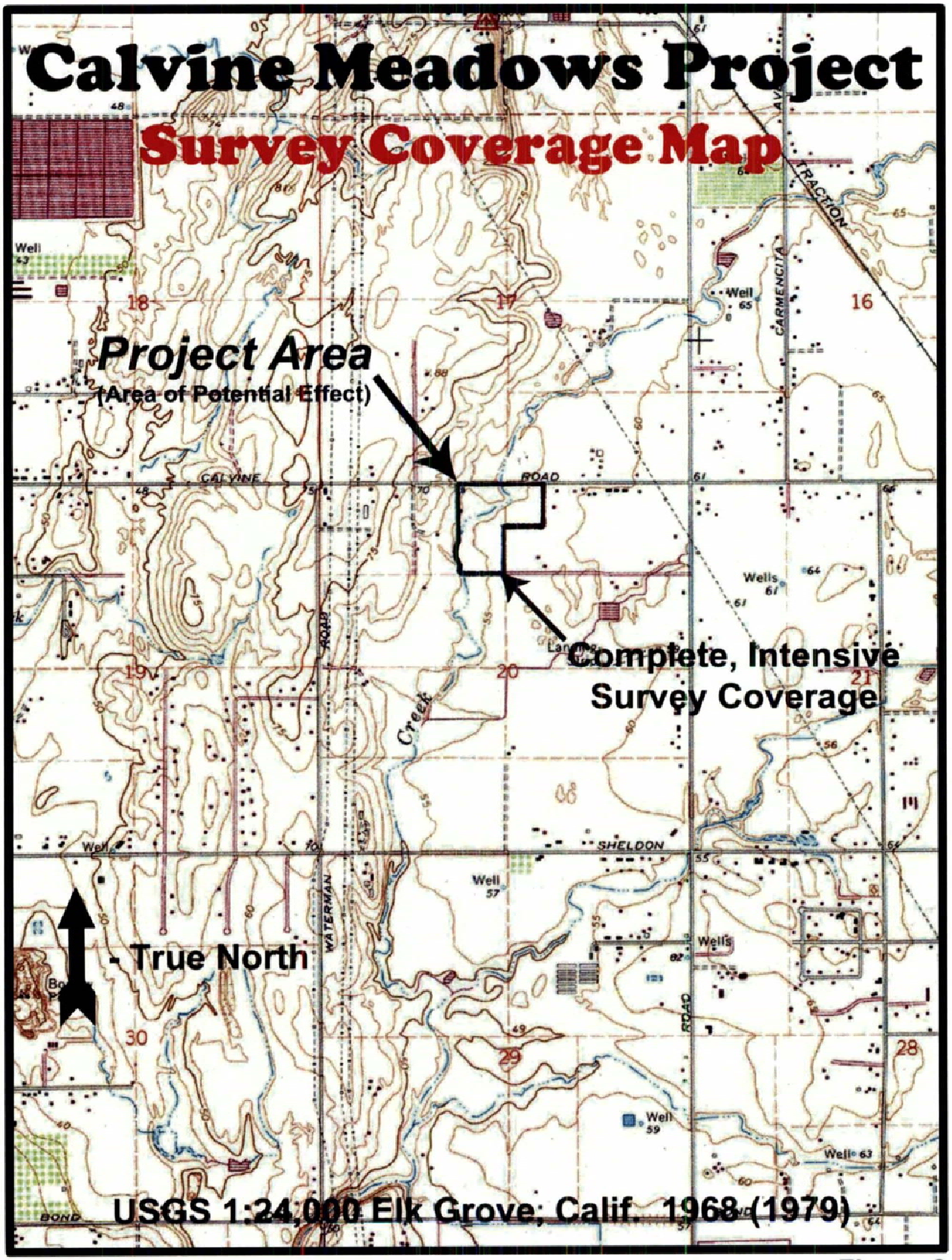

Calvine Meadows Project
Survey Coverage Map
Project Area
(Area of Potential Effect)
Complete, Intensive
Survey Coverage
True North
USGS 1:24,000 Elk Grove, Calif. 1968 (1979)
CALVINE
ROAD
SHELDON
WATERMAN
CARMENCITA
FRACTION
Creek
Well
Wells

Figure 3

with two major additions. The fire has destroyed any integrity of the building. The removal of whatever building was associated with the foundation makes it purpose undeterminable, and the disuse of the complex overall has led to the disintegration of the rural building complex. This remnant building complex is not an important resource under the criteria of the California Register of Historical Resources.

RECOMMENDATIONS

Although no prehistoric sites were found during the survey, there is a slight possibility that a site may exist and be totally obscured by vegetation, fill, or other historic activities, leaving no surface evidence. Should artifacts or unusual amounts of stone, bone, or shell be uncovered during construction activities, an archeologist should be consulted for on-the-spot evaluation of the finding. If the bone appears to be human, state law requires that the Sacramento County Coroner be contacted. If the Coroner determines that the bone is human and is most likely Native American in origin, he must contact the Native American Heritage Commission (916-322-7791).

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APPENDIX 1

Resume of Principal Investigator

PEAK & ASSOCIATES, INC.
RESUME

MELINDA A. PEAK **January 2014**
Senior Historian/Archeologist
3941 Park Drive, Suite 20 #329
El Dorado Hills, CA 95762
(916) 939-2405

PROFESSIONAL EXPERIENCE

Ms. Peak has served as the principal investigator on a wide range of prehistoric and historic excavations throughout California. She has directed laboratory analyses of archeological materials, including the historic period. She has also conducted a wide variety of cultural resource assessments in California, including documentary research, field survey, Native American consultation and report preparation.

In addition, Ms. Peak has developed a second field of expertise in applied history, specializing in site-specific research for historic period resources. She is a registered professional historian and has completed a number of historical research projects for a wide variety of site types.

Through her education and experience, Ms. Peak meets the Secretary of Interior Standards for historian, architectural historian, prehistoric archeologist and historic archeologist.

EDUCATION

M.A. - History - California State University, Sacramento, 1989
Thesis: *The Bellevue Mine: A Historical Resources Management Site Study in Plumas and Sierra Counties, California*
B.A. - Anthropology - University of California, Berkeley

RECENT PROJECTS

Ms. Peak completed the cultural resource research and contributed to the text prepared for the DeSabla-Centerville PAD for the initial stage of the FERC relicensing. She also served cultural resource project manager for the FERC relicensing of the Beardsley-Donnells Project. For the South Feather Power Project and the Woodleaf-Palermo and Sly Creek Transmission Lines, her team completing the technical work for the project.

In recent months, Ms. Peak has completed several determinations of eligibility and effect documents in coordination with the Corps of Engineers for projects requiring federal permits, assessing the eligibility of a number of sites for the National Register of Historic Places. She has also completed historical research projects on a wide variety of topics for a number of projects including the development of navigation and landings on the Napa River, farmhouses dating to the

1860s, bridges, an early roadhouse, Folsom Dam and a section of an electric railway line. In recent years, Ms. Peak has prepared a number of cultural resource overviews and predictive models for blocks of land proposed for future development for general and specific plans. She has been able to direct a number of surveys of these areas, allowing the model to be tested.

She served as principal investigator for the multi-phase Twelve Bridges Golf Club project in Placer County. She served as liaison with the various agencies, helped prepare the historic properties treatment plan, managed the various phases of test and data recovery excavations, and completed the final report on the analysis of the test phase excavations of a number of prehistoric sites. She is currently involved as the principal investigator for the Clover Valley Lakes project adjacent to Twelve Bridges in the City of Rocklin, coordinating contacts with Native Americans, the Corps of Engineers and the Office of Historic Preservation.

Ms. Peak has served as project manager for a number of major survey and excavation projects in recent years, including the many surveys and site definition excavations for the 172-mile-long Pacific Pipeline proposed for construction in Santa Barbara, Ventura and Los Angeles counties. She also completed an archival study in the City of Los Angeles for the project. She also served as principal investigator for a major coaxial cable removal project for AT&T.

Additionally, she completed a number of small surveys, served as a construction monitor at several urban sites, and conducted emergency recovery excavations for sites found during monitoring. She has directed the excavations of several historic complexes in Sacramento, Placer and El Dorado Counties.

Ms. Peak is the author of a chapter and two sections of a published history (1999) of Sacramento County, *Sacramento: Gold Rush Legacy, Metropolitan Legacy.* She served as the consultant for a children's book on California, published by Capstone Press in 2003 in the land of Liberty series.

APPENDIX 2

Records Search

California Historical Resources Information System

NORTH CENTRAL INFORMATION CENTER

AMADOR
EL DORADO
NEVADA
PLACER
SACRAMENTO
YUBA

California State University, Sacramento
6000 J Street, Folsom Hall, Suite 2042
Sacramento, California 95819-6100
phone: (916) 278-6217
fax: (916) 278-5162
email: ncic@csus.edu

January 3, 2014

NCIC File No.: SAC-14-02

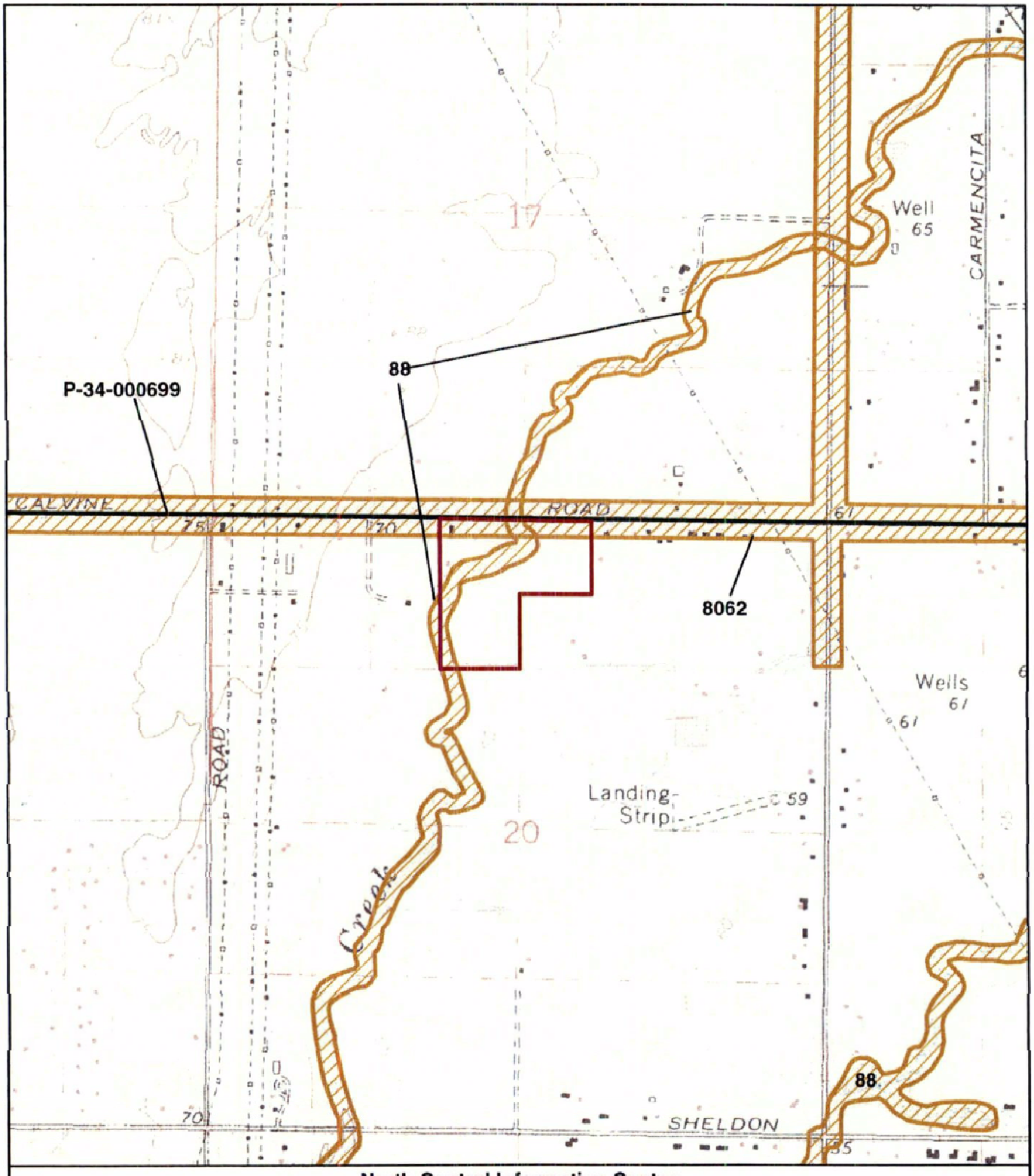
Robert A. Gerry
Peak and Associates, Inc.
3941 Park Drive, Ste. 20-329
Sacramento, CA 95762

Records Search Results
Calvine Meadows
T7N/R6E, Section 20
USGS 7.5' Elk Grove Quadrangle, Sacramento County

- **NCIC Resources Within Project Area:**
  P-34-000699 (CA-SAC-544H)
  Listing and copy of resource record enclosed.
- **NCIC Reports Within Project Area:**
  88
  8062
  Listing enclosed.
- **OHP Historic Property Data File (2012):** Nothing listed.
- **Determination of Eligibility (2012):** CA-SAC-544H (Calvine Road) - listing included.
- **NRHP/CRHR listings (2008 & updates):** Not requested.
- **California Inventory of Historic Resources (1976):** Not requested.
- **California State Historical Landmarks (1996):** Not requested.
- **Points of Historic Interest (1992):** Not requested.
- **Caltrans Bridge Inventory:** Not requested.
- **Shipwreck Inventory:** Not requested.
- **Historic Maps:** GLO Plat T7N/R6E (1856), Elk Grove 7.5' Quadrangle (1952), Army Corps of Engineers Elk Grove Sheet (1953)

Thank you for using our services. An invoice confidentiality agreement is enclosed; please sign and return a copy for our files.

Calvine Meadows



North Central Information Center
Records Search Results

Elk Grove 7.5' Quadrangle

May depict confidential cultural resource locations.
Do not redistribute.

1 Resource
2 Reports

N

0 240 480

Meters

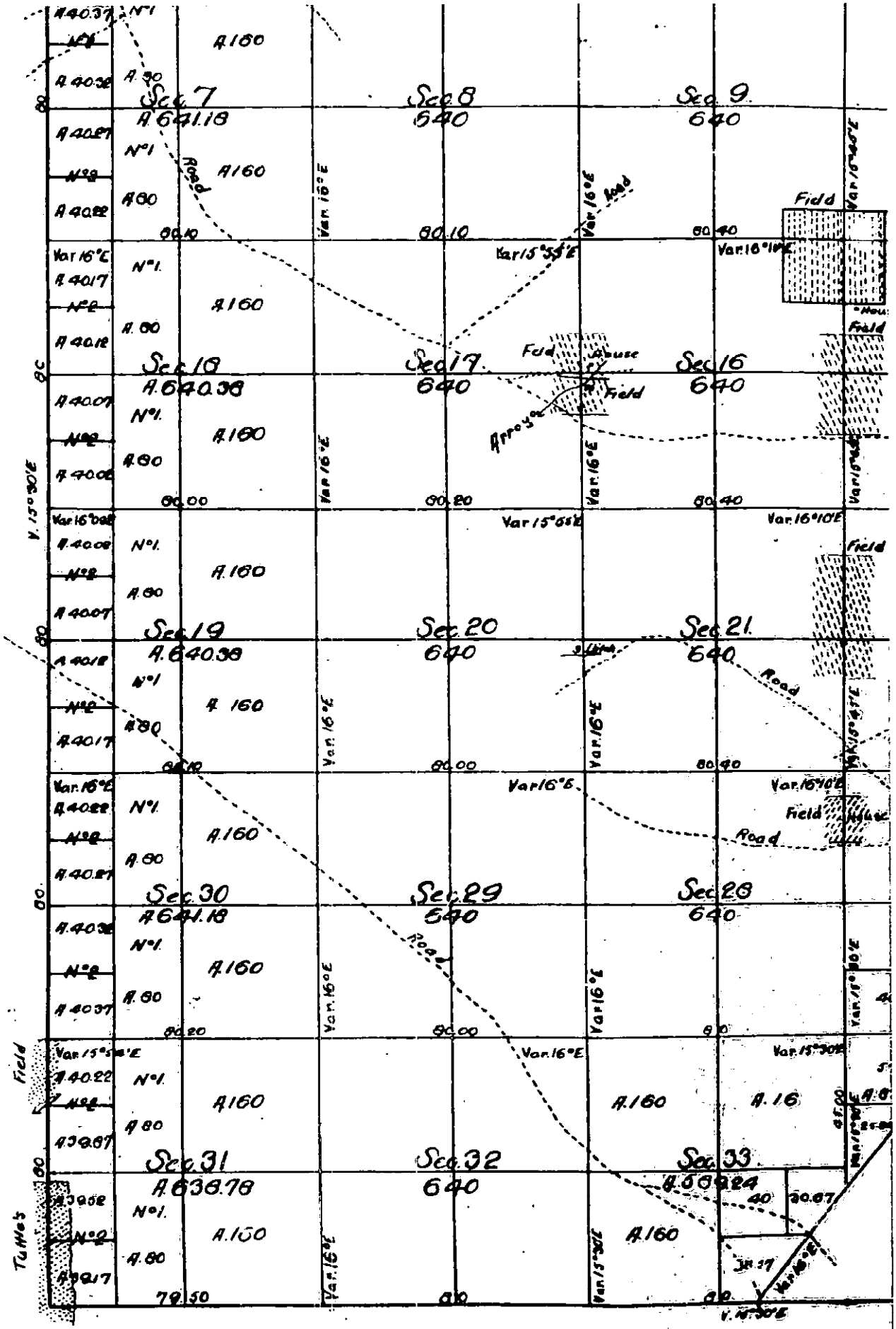
North Central Information Center Resource Listing

Primary No.	HRI No.	Trinomial	Name	Other IDs	Associated reports
P-34-000699		CA-SAC-544H	Calvine Road	Other CRU-93-SAC-20H	02977

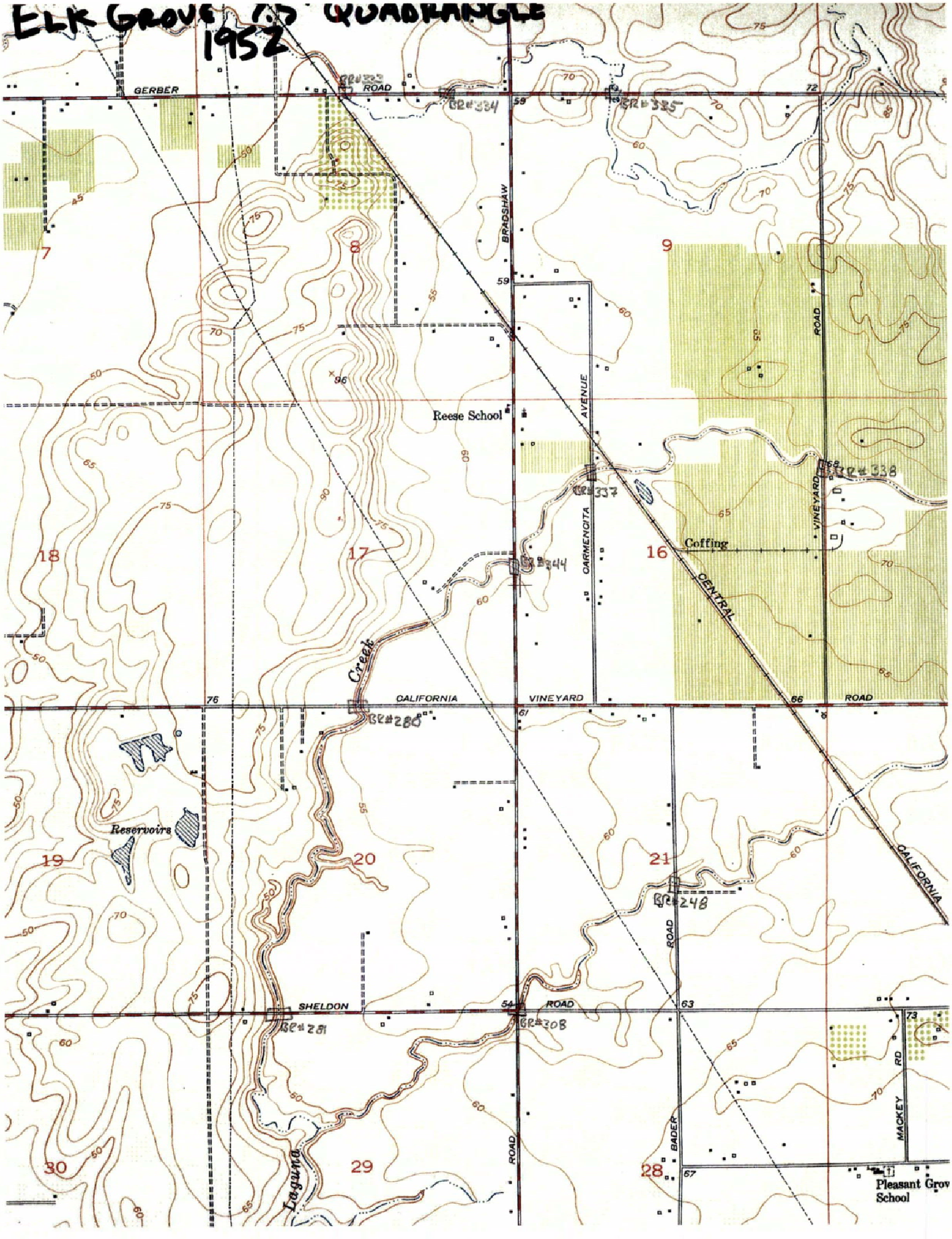
North Central Information Center Report Listing

Doc no.	Year	Author(s)	Title	Affiliation	Client
00088	1974	Johnson, Jerald J.	Reconnaissance Archeological Survey of the Morrison Stream Group in Sacramento County, California.		U.S. Army Corps of Engineers, Sacramento District, 650 Capitol Mall, Sacramento, CA 95814.
08062	2006	Ecorp Consulting	Cultural Resources Survey and Evaluation North Vineyard Station Off-Sitee (WBIG) Project	Ecorp	The West Bradshaw Implimentation Group

GLO PLAT
T7N/R6E
1856



Surveys Designated	By Whom surveyed	Date of Contract	Amount of Surveys Miles Chs Lks	When s
Township lines	A. H. Jones	April 17th 1855	23 79 71	1


ELK GROVE 15' QUADRANGLE
1952
GERBER
ROAD
BRADSHAW
AVENUE
Reese School
CARMENCITA
VINEYARD
ROAD
Coffing
CENTRAL
CALIFORNIA
ROAD
Creek
Reservoirs
SHELDON
ROAD
ROAD
BADER
MACKEY
RD
Laguna
Pleasant Grov
School
7
8
9
16
17
18
19
20
21
28
29
30

D. Greenhouse Gases

Calvine Meadows

Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	63.00	Dwelling Unit	16.58	113,400.00	168

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2015
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	590.31	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project site = 30.7 acres (14.12 acres of Open Space)

Construction Phase - Building construction, paving, & painting assumed to occur simultaneously

Grading - Project site = 30.7 acres (14.12 acres of Open Space)

Construction Off-road Equipment Mitigation -

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	278.00
tblConstructionPhase	NumDays	20.00	300.00
tblConstructionPhase	PhaseEndDate	6/12/2017	5/18/2016
tblConstructionPhase	PhaseEndDate	7/12/2017	5/18/2016
tblConstructionPhase	PhaseStartDate	5/19/2016	4/26/2015
tblConstructionPhase	PhaseStartDate	5/19/2016	3/26/2015
tblGrading	AcresOfGrading	75.00	17.00
tblLandUse	LotAcreage	20.45	16.58
tblProjectCharacteristics	OperationalYear	2014	2015

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	1.3155	7.3375	4.8832	6.8800e-003	0.2279	0.4486	0.6764	0.1105	0.4186	0.5291	0.0000	633.4487	633.4487	0.1620	0.0000	636.8511
2016	0.5819	2.6745	1.8892	2.8400e-003	0.0176	0.1701	0.1877	4.7200e-003	0.1592	0.1639	0.0000	257.0133	257.0133	0.0634	0.0000	258.3445
Total	**1.8973**	**10.0120**	**6.7724**	**9.7200e-003**	**0.2455**	**0.6187**	**0.8642**	**0.1152**	**0.5778**	**0.6930**	**0.0000**	**890.4620**	**890.4620**	**0.2254**	**0.0000**	**895.1956**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	1.3145	7.3289	4.8778	6.8700e-003	0.1236	0.4480	0.5716	0.0554	0.4181	0.4734	0.0000	632.7488	632.7488	0.1618	0.0000	636.1472
2016	0.5815	2.6713	1.8871	2.8300e-003	0.0176	0.1699	0.1875	4.7200e-003	0.1590	0.1637	0.0000	256.7319	256.7319	0.0633	0.0000	258.0616
Total	**1.8961**	**10.0002**	**6.7649**	**9.7000e-003**	**0.1412**	**0.6179**	**0.7591**	**0.0601**	**0.5771**	**0.6372**	**0.0000**	**889.4807**	**889.4807**	**0.2252**	**0.0000**	**894.2088**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.0664	0.1176	0.1103	0.2058	42.4929	0.1180	12.1575	47.8566	0.1194	8.0577	0.0000	0.1102	0.1102	0.1153	0.0000	0.1102

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5350	7.8000e-003	0.6619	3.0000e-005		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	1.0613	1.0613	1.1000e-003	0.0000	1.0845
Energy	0.0109	0.0933	0.0397	6.0000e-004		7.5500e-003	7.5500e-003		7.5500e-003	7.5500e-003	0.0000	233.5507	233.5507	8.2400e-003	3.2600e-003	234.7332
Mobile	1.2176	1.0106	4.7089	8.1900e-003	0.5733	0.0134	0.5866	0.1536	0.0123	0.1658	0.0000	663.0165	663.0165	0.0314	0.0000	663.6752
Waste						0.0000	0.0000		0.0000	0.0000	12.2769	0.0000	12.2769	0.7255	0.0000	27.5133
Water						0.0000	0.0000		0.0000	0.0000	1.4523	7.9014	9.3536	5.3900e-003	3.2400e-003	10.4707
Total	**1.7635**	**1.1118**	**5.4105**	**8.8200e-003**	**0.5733**	**0.0245**	**0.5977**	**0.1536**	**0.0234**	**0.1769**	**13.7291**	**905.5298**	**919.2590**	**0.7716**	**6.5000e-003**	**937.4769**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5350	7.8000e-003	0.6619	3.0000e-005		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	1.0613	1.0613	1.1000e-003	0.0000	1.0845
Energy	9.5900e-003	0.0819	0.0349	5.2000e-004		6.6200e-003	6.6200e-003		6.6200e-003	6.6200e-003	0.0000	218.4830	218.4830	7.8900e-003	3.0000e-003	219.5774
Mobile	1.2176	1.0106	4.7089	8.1900e-003	0.5733	0.0134	0.5866	0.1536	0.0123	0.1658	0.0000	663.0165	663.0165	0.0314	0.0000	663.6752
Waste						0.0000	0.0000		0.0000	0.0000	12.2769	0.0000	12.2769	0.7255	0.0000	27.5133
Water						0.0000	0.0000		0.0000	0.0000	1.4523	7.7535	9.2057	5.4000e-003	3.2400e-003	10.3238
Total	**1.7622**	**1.1004**	**5.4057**	**8.7400e-003**	**0.5733**	**0.0235**	**0.5968**	**0.1536**	**0.0224**	**0.1760**	**13.7291**	**890.3143**	**904.0434**	**0.7713**	**6.2400e-003**	**922.1741**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.0754	1.0263	0.0898	0.9070	0.0000	3.8006	0.1556	0.0000	3.9795	0.5256	0.0000	1.6803	1.6552	0.0441	4.0000	1.6323

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/29/2015	2/11/2015	5	10	
2	Grading	Grading	2/12/2015	3/25/2015	5	30	
3	Building Construction	Building Construction	3/26/2015	5/18/2016	5	300	
4	Paving	Paving	3/26/2015	5/18/2016	5	300	
5	Architectural Coating	Architectural Coating	4/26/2015	5/18/2016	5	278	

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	23.00	7.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	5.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

Acres of Grading: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0263	0.2845	0.2132	2.0000e-004		0.0154	0.0154		0.0142	0.0142	0.0000	18.6506	18.6506	5.5700e-003	0.0000	18.7675
Total	**0.0263**	**0.2845**	**0.2132**	**2.0000e-004**	**0.0903**	**0.0154**	**0.1058**	**0.0497**	**0.0142**	**0.0639**	**0.0000**	**18.6506**	**18.6506**	**5.5700e-003**	**0.0000**	**18.7675**

3.2 Site Preparation - 2015

Unmitigated Construction Off-Site

Acres of Grading: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3900e-003	4.0000e-004	4.2300e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.7000e-004	1.8000e-004	0.0000	1.8000e-004	0.0000	0.6124	0.6124	3.0000e-005	0.0000	0.6131
Total	**1.3900e-003**	**4.0000e-004**	**4.2300e-003**	**1.0000e-005**	**6.6000e-004**	**1.0000e-005**	**6.7000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.6124**	**0.6124**	**3.0000e-005**	**0.0000**	**0.6131**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0263	0.2841	0.2129	2.0000e-004		0.0154	0.0154		0.0142	0.0142	0.0000	18.6284	18.6284	5.5600e-003	0.0000	18.7452
Total	**0.0263**	**0.2841**	**0.2129**	**2.0000e-004**	**0.0407**	**0.0154**	**0.0561**	**0.0223**	**0.0142**	**0.0365**	**0.0000**	**18.6284**	**18.6284**	**5.5600e-003**	**0.0000**	**18.7452**

3.2 Site Preparation - 2015

Mitigated Construction Off-Site

Acres of Grading: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3900e-003	4.0000e-004	4.2300e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.7000e-004	1.8000e-004	0.0000	1.8000e-004	0.0000	0.6124	0.6124	3.0000e-005	0.0000	0.6131
Total	**1.3900e-003**	**4.0000e-004**	**4.2300e-003**	**1.0000e-005**	**6.6000e-004**	**1.0000e-005**	**6.7000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.6124**	**0.6124**	**3.0000e-005**	**0.0000**	**0.6131**

3.3 Grading - 2015

Unmitigated Construction On-Site

Acres of Grading: 17

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0994	0.0000	0.0994	0.0506	0.0000	0.0506	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1016	1.1857	0.7626	9.3000e-004		0.0570	0.0570		0.0525	0.0525	0.0000	88.2633	88.2633	0.0264	0.0000	88.8167
Total	**0.1016**	**1.1857**	**0.7626**	**9.3000e-004**	**0.0994**	**0.0570**	**0.1564**	**0.0506**	**0.0525**	**0.1031**	**0.0000**	**88.2633**	**88.2633**	**0.0264**	**0.0000**	**88.8167**

3.3 Grading - 2015

Unmitigated Construction Off-Site

Acres of Grading: 17

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6300e-003	1.3500e-003	0.0141	3.0000e-005	2.2000e-003	2.0000e-005	2.2200e-003	5.9000e-004	2.0000e-005	6.0000e-004	0.0000	2.0412	2.0412	1.2000e-004	0.0000	2.0436
Total	**4.6300e-003**	**1.3500e-003**	**0.0141**	**3.0000e-005**	**2.2000e-003**	**2.0000e-005**	**2.2200e-003**	**5.9000e-004**	**2.0000e-005**	**6.0000e-004**	**0.0000**	**2.0412**	**2.0412**	**1.2000e-004**	**0.0000**	**2.0436**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0447	0.0000	0.0447	0.0228	0.0000	0.0228	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1015	1.1843	0.7617	9.3000e-004		0.0570	0.0570		0.0524	0.0524	0.0000	88.1583	88.1583	0.0263	0.0000	88.7110
Total	**0.1015**	**1.1843**	**0.7617**	**9.3000e-004**	**0.0447**	**0.0570**	**0.1017**	**0.0228**	**0.0524**	**0.0752**	**0.0000**	**88.1583**	**88.1583**	**0.0263**	**0.0000**	**88.7110**

3.3 Grading - 2015

Mitigated Construction Off-Site

Acres of Grading: 17

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6300e-003	1.3500e-003	0.0141	3.0000e-005	2.2000e-003	2.0000e-005	2.2200e-003	5.9000e-004	2.0000e-005	6.0000e-004	0.0000	2.0412	2.0412	1.2000e-004	0.0000	2.0436
Total	**4.6300e-003**	**1.3500e-003**	**0.0141**	**3.0000e-005**	**2.2000e-003**	**2.0000e-005**	**2.2200e-003**	**5.9000e-004**	**2.0000e-005**	**6.0000e-004**	**0.0000**	**2.0412**	**2.0412**	**1.2000e-004**	**0.0000**	**2.0436**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3677	3.0180	1.8838	2.7000e-003		0.2127	0.2127		0.2000	0.2000	0.0000	245.2143	245.2143	0.0615	0.0000	246.5063
Total	**0.3677**	**3.0180**	**1.8838**	**2.7000e-003**		**0.2127**	**0.2127**		**0.2000**	**0.2000**	**0.0000**	**245.2143**	**245.2143**	**0.0615**	**0.0000**	**246.5063**

3.4 Building Construction - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0218	0.0683	0.1293	1.5000e-004	4.0100e-003	1.1100e-003	5.1300e-003	1.1500e-003	1.0200e-003	2.1700e-003	0.0000	13.4534	13.4534	1.2000e-004	0.0000	13.4558
Worker	0.0357	0.0104	0.1086	2.0000e-004	0.0170	1.4000e-004	0.0171	4.5200e-003	1.2000e-004	4.6400e-003	0.0000	15.7271	15.7271	8.9000e-004	0.0000	15.7458
Total	**0.0575**	**0.0786**	**0.2380**	**3.5000e-004**	**0.0210**	**1.2500e-003**	**0.0222**	**5.6700e-003**	**1.1400e-003**	**6.8100e-003**	**0.0000**	**29.1805**	**29.1805**	**1.0100e-003**	**0.0000**	**29.2017**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3673	3.0144	1.8816	2.6900e-003		0.2125	0.2125		0.1998	0.1998	0.0000	244.9226	244.9226	0.0615	0.0000	246.2131
Total	**0.3673**	**3.0144**	**1.8816**	**2.6900e-003**		**0.2125**	**0.2125**		**0.1998**	**0.1998**	**0.0000**	**244.9226**	**244.9226**	**0.0615**	**0.0000**	**246.2131**

3.4 Building Construction - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0218	0.0683	0.1293	1.5000e-004	4.0100e-003	1.1100e-003	5.1300e-003	1.1500e-003	1.0200e-003	2.1700e-003	0.0000	13.4534	13.4534	1.2000e-004	0.0000	13.4558
Worker	0.0357	0.0104	0.1086	2.0000e-004	0.0170	1.4000e-004	0.0171	4.5200e-003	1.2000e-004	4.6400e-003	0.0000	15.7271	15.7271	8.9000e-004	0.0000	15.7458
Total	**0.0575**	**0.0786**	**0.2380**	**3.5000e-004**	**0.0210**	**1.2500e-003**	**0.0222**	**5.6700e-003**	**1.1400e-003**	**6.8100e-003**	**0.0000**	**29.1805**	**29.1805**	**1.0100e-003**	**0.0000**	**29.2017**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1686	1.4111	0.9161	1.3300e-003		0.0974	0.0974		0.0915	0.0915	0.0000	119.8660	119.8660	0.0297	0.0000	120.4903
Total	**0.1686**	**1.4111**	**0.9161**	**1.3300e-003**		**0.0974**	**0.0974**		**0.0915**	**0.0915**	**0.0000**	**119.8660**	**119.8660**	**0.0297**	**0.0000**	**120.4903**

3.4 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.7700e-003	0.0293	0.0571	7.0000e-005	1.9800e-003	4.6000e-004	2.4400e-003	5.6000e-004	4.2000e-004	9.9000e-004	0.0000	6.5389	6.5389	5.0000e-005	0.0000	6.5400
Worker	0.0161	4.5600e-003	0.0477	1.0000e-004	8.3600e-003	6.0000e-005	8.4300e-003	2.2200e-003	6.0000e-005	2.2800e-003	0.0000	7.4624	7.4624	4.0000e-004	0.0000	7.4707
Total	**0.0249**	**0.0339**	**0.1048**	**1.7000e-004**	**0.0103**	**5.2000e-004**	**0.0109**	**2.7800e-003**	**4.8000e-004**	**3.2700e-003**	**0.0000**	**14.0012**	**14.0012**	**4.5000e-004**	**0.0000**	**14.0107**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1684	1.4094	0.9150	1.3300e-003		0.0973	0.0973		0.0914	0.0914	0.0000	119.7234	119.7234	0.0297	0.0000	120.3470
Total	**0.1684**	**1.4094**	**0.9150**	**1.3300e-003**		**0.0973**	**0.0973**		**0.0914**	**0.0914**	**0.0000**	**119.7234**	**119.7234**	**0.0297**	**0.0000**	**120.3470**

3.4 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.7700e-003	0.0293	0.0571	7.0000e-005	1.9800e-003	4.6000e-004	2.4400e-003	5.6000e-004	4.2000e-004	9.9000e-004	0.0000	6.5389	6.5389	5.0000e-005	0.0000	6.5400
Worker	0.0161	4.5600e-003	0.0477	1.0000e-004	8.3600e-003	6.0000e-005	8.4300e-003	2.2200e-003	6.0000e-005	2.2800e-003	0.0000	7.4624	7.4624	4.0000e-004	0.0000	7.4707
Total	**0.0249**	**0.0339**	**0.1048**	**1.7000e-004**	**0.0103**	**5.2000e-004**	**0.0109**	**2.7800e-003**	**4.8000e-004**	**3.2700e-003**	**0.0000**	**14.0012**	**14.0012**	**4.5000e-004**	**0.0000**	**14.0107**

3.5 Paving - 2015

Unmitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2329	2.5302	1.5053	2.2400e-003		0.1422	0.1422		0.1308	0.1308	0.0000	213.3334	213.3334	0.0637	0.0000	214.6708
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.2329**	**2.5302**	**1.5053**	**2.2400e-003**		**0.1422**	**0.1422**		**0.1308**	**0.1308**	**0.0000**	**213.3334**	**213.3334**	**0.0637**	**0.0000**	**214.6708**

3.5 Paving - 2015

Unmitigated Construction Off-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0233	6.7700e-003	0.0708	1.3000e-004	0.0111	9.0000e-005	0.0112	2.9400e-003	8.0000e-005	3.0300e-003	0.0000	10.2568	10.2568	5.8000e-004	0.0000	10.2690
Total	**0.0233**	**6.7700e-003**	**0.0708**	**1.3000e-004**	**0.0111**	**9.0000e-005**	**0.0112**	**2.9400e-003**	**8.0000e-005**	**3.0300e-003**	**0.0000**	**10.2568**	**10.2568**	**5.8000e-004**	**0.0000**	**10.2690**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2326	2.5272	1.5035	2.2400e-003		0.1420	0.1420		0.1307	0.1307	0.0000	213.0796	213.0796	0.0636	0.0000	214.4155
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.2326**	**2.5272**	**1.5035**	**2.2400e-003**		**0.1420**	**0.1420**		**0.1307**	**0.1307**	**0.0000**	**213.0796**	**213.0796**	**0.0636**	**0.0000**	**214.4155**

3.5 Paving - 2015

Mitigated Construction Off-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0233	6.7700e-003	0.0708	1.3000e-004	0.0111	9.0000e-005	0.0112	2.9400e-003	8.0000e-005	3.0300e-003	0.0000	10.2568	10.2568	5.8000e-004	0.0000	10.2690
Total	**0.0233**	**6.7700e-003**	**0.0708**	**1.3000e-004**	**0.0111**	**9.0000e-005**	**0.0112**	**2.9400e-003**	**8.0000e-005**	**3.0300e-003**	**0.0000**	**10.2568**	**10.2568**	**5.8000e-004**	**0.0000**	**10.2690**

3.5 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1034	1.1081	0.7335	1.1000e-003		0.0624	0.0624		0.0574	0.0574	0.0000	104.0184	104.0184	0.0314	0.0000	104.6773
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1034**	**1.1081**	**0.7335**	**1.1000e-003**		**0.0624**	**0.0624**		**0.0574**	**0.0574**	**0.0000**	**104.0184**	**104.0184**	**0.0314**	**0.0000**	**104.6773**

3.5 Paving - 2016

Unmitigated Construction Off-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0105	2.9700e-003	0.0311	7.0000e-005	5.4500e-003	4.0000e-005	5.4900e-003	1.4500e-003	4.0000e-005	1.4900e-003	0.0000	4.8668	4.8668	2.6000e-004	0.0000	4.8722
Total	**0.0105**	**2.9700e-003**	**0.0311**	**7.0000e-005**	**5.4500e-003**	**4.0000e-005**	**5.4900e-003**	**1.4500e-003**	**4.0000e-005**	**1.4900e-003**	**0.0000**	**4.8668**	**4.8668**	**2.6000e-004**	**0.0000**	**4.8722**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1033	1.1068	0.7326	1.1000e-003		0.0623	0.0623		0.0574	0.0574	0.0000	103.8947	103.8947	0.0313	0.0000	104.5528
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1033**	**1.1068**	**0.7326**	**1.1000e-003**		**0.0623**	**0.0623**		**0.0574**	**0.0574**	**0.0000**	**103.8947**	**103.8947**	**0.0313**	**0.0000**	**104.5528**

3.5 Paving - 2016

Mitigated Construction Off-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0105	2.9700e-003	0.0311	7.0000e-005	5.4500e-003	4.0000e-005	5.4900e-003	1.4500e-003	4.0000e-005	1.4900e-003	0.0000	4.8668	4.8668	2.6000e-004	0.0000	4.8722
Total	**0.0105**	**2.9700e-003**	**0.0311**	**7.0000e-005**	**5.4500e-003**	**4.0000e-005**	**5.4900e-003**	**1.4500e-003**	**4.0000e-005**	**1.4900e-003**	**0.0000**	**4.8668**	**4.8668**	**2.6000e-004**	**0.0000**	**4.8722**

3.6 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0364	0.2300	0.1702	2.7000e-004		0.0198	0.0198		0.0198	0.0198	0.0000	22.8516	22.8516	2.9800e-003	0.0000	22.9141
Total	**0.4933**	**0.2300**	**0.1702**	**2.7000e-004**		**0.0198**	**0.0198**		**0.0198**	**0.0198**	**0.0000**	**22.8516**	**22.8516**	**2.9800e-003**	**0.0000**	**22.9141**

3.6 Architectural Coating - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-003	2.0100e-003	0.0210	4.0000e-005	3.2900e-003	3.0000e-005	3.3100e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	3.0447	3.0447	1.7000e-004	0.0000	3.0484
Total	**6.9000e-003**	**2.0100e-003**	**0.0210**	**4.0000e-005**	**3.2900e-003**	**3.0000e-005**	**3.3100e-003**	**8.7000e-004**	**2.0000e-005**	**9.0000e-004**	**0.0000**	**3.0447**	**3.0447**	**1.7000e-004**	**0.0000**	**3.0484**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0364	0.2298	0.1700	2.7000e-004		0.0198	0.0198		0.0198	0.0198	0.0000	22.8244	22.8244	2.9700e-003	0.0000	22.8869
Total	**0.4932**	**0.2298**	**0.1700**	**2.7000e-004**		**0.0198**	**0.0198**		**0.0198**	**0.0198**	**0.0000**	**22.8244**	**22.8244**	**2.9700e-003**	**0.0000**	**22.8869**

3.6 Architectural Coating - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-003	2.0100e-003	0.0210	4.0000e-005	3.2900e-003	3.0000e-005	3.3100e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	3.0447	3.0447	1.7000e-004	0.0000	3.0484
Total	**6.9000e-003**	**2.0100e-003**	**0.0210**	**4.0000e-005**	**3.2900e-003**	**3.0000e-005**	**3.3100e-003**	**8.7000e-004**	**2.0000e-005**	**9.0000e-004**	**0.0000**	**3.0447**	**3.0447**	**1.7000e-004**	**0.0000**	**3.0484**

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2527					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0182	0.1174	0.0933	1.5000e-004		9.7300e-003	9.7300e-003		9.7300e-003	9.7300e-003	0.0000	12.6386	12.6386	1.4900e-003	0.0000	12.6699
Total	**0.2709**	**0.1174**	**0.0933**	**1.5000e-004**		**9.7300e-003**	**9.7300e-003**		**9.7300e-003**	**9.7300e-003**	**0.0000**	**12.6386**	**12.6386**	**1.4900e-003**	**0.0000**	**12.6699**

3.6 Architectural Coating - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-003	9.9000e-004	0.0104	2.0000e-005	1.8200e-003	1.0000e-005	1.8300e-003	4.8000e-004	1.0000e-005	5.0000e-004	0.0000	1.6223	1.6223	9.0000e-005	0.0000	1.6241
Total	**3.5000e-003**	**9.9000e-004**	**0.0104**	**2.0000e-005**	**1.8200e-003**	**1.0000e-005**	**1.8300e-003**	**4.8000e-004**	**1.0000e-005**	**5.0000e-004**	**0.0000**	**1.6223**	**1.6223**	**9.0000e-005**	**0.0000**	**1.6241**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2527					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0182	0.1173	0.0931	1.5000e-004		9.7200e-003	9.7200e-003		9.7200e-003	9.7200e-003	0.0000	12.6236	12.6236	1.4900e-003	0.0000	12.6548
Total	**0.2709**	**0.1173**	**0.0931**	**1.5000e-004**		**9.7200e-003**	**9.7200e-003**		**9.7200e-003**	**9.7200e-003**	**0.0000**	**12.6236**	**12.6236**	**1.4900e-003**	**0.0000**	**12.6548**

3.6 Architectural Coating - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-003	9.9000e-004	0.0104	2.0000e-005	1.8200e-003	1.0000e-005	1.8300e-003	4.8000e-004	1.0000e-005	5.0000e-004	0.0000	1.6223	1.6223	9.0000e-005	0.0000	1.6241
Total	**3.5000e-003**	**9.9000e-004**	**0.0104**	**2.0000e-005**	**1.8200e-003**	**1.0000e-005**	**1.8300e-003**	**4.8000e-004**	**1.0000e-005**	**5.0000e-004**	**0.0000**	**1.6223**	**1.6223**	**9.0000e-005**	**0.0000**	**1.6241**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.2176	1.0106	4.7089	8.1900e-003	0.5733	0.0134	0.5866	0.1536	0.0123	0.1658	0.0000	663.0165	663.0165	0.0314	0.0000	663.6752
Unmitigated	1.2176	1.0106	4.7089	8.1900e-003	0.5733	0.0134	0.5866	0.1536	0.0123	0.1658	0.0000	663.0165	663.0165	0.0314	0.0000	663.6752

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	602.91	635.04	552.51	1,540,435	1,540,435
Total	602.91	635.04	552.51	1,540,435	1,540,435

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.00	5.00	6.50	46.50	12.50	41.00	86	11	3

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.504472	0.068177	0.177914	0.148798	0.045219	0.006392	0.019958	0.015471	0.002301	0.002330	0.006201	0.000579	0.002187

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	123.6128	123.6128	6.0700e-003	1.2600e-003	124.1298
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	125.4590	125.4590	6.1600e-003	1.2800e-003	125.9837
NaturalGas Mitigated	9.5900e-003	0.0819	0.0349	5.2000e-004		6.6200e-003	6.6200e-003		6.6200e-003	6.6200e-003	0.0000	94.8703	94.8703	1.8200e-003	1.7400e-003	95.4476
NaturalGas Unmitigated	0.0109	0.0933	0.0397	6.0000e-004		7.5500e-003	7.5500e-003		7.5500e-003	7.5500e-003	0.0000	108.0917	108.0917	2.0700e-003	1.9800e-003	108.7495

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	2.02556e+006	0.0109	0.0933	0.0397	6.0000e-004		7.5500e-003	7.5500e-003		7.5500e-003	7.5500e-003	0.0000	108.0917	108.0917	2.0700e-003	1.9800e-003	108.7495
Total		**0.0109**	**0.0933**	**0.0397**	**6.0000e-004**		**7.5500e-003**	**7.5500e-003**		**7.5500e-003**	**7.5500e-003**	**0.0000**	**108.0917**	**108.0917**	**2.0700e-003**	**1.9800e-003**	**108.7495**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	1.7778e+006	9.5900e-003	0.0819	0.0349	5.2000e-004		6.6200e-003	6.6200e-003		6.6200e-003	6.6200e-003	0.0000	94.8703	94.8703	1.8200e-003	1.7400e-003	95.4476
Total		**9.5900e-003**	**0.0819**	**0.0349**	**5.2000e-004**		**6.6200e-003**	**6.6200e-003**		**6.6200e-003**	**6.6200e-003**	**0.0000**	**94.8703**	**94.8703**	**1.8200e-003**	**1.7400e-003**	**95.4476**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	468550	125.4590	6.1600e-003	1.2800e-003	125.9837
Total		**125.4590**	**6.1600e-003**	**1.2800e-003**	**125.9837**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	461655	123.6128	6.0700e-003	1.2600e-003	124.1298
Total		**123.6128**	**6.0700e-003**	**1.2600e-003**	**124.1298**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5350	7.8000e-003	0.6619	3.0000e-005		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	1.0613	1.0613	1.1000e-003	0.0000	1.0845
Unmitigated	0.5350	7.8000e-003	0.6619	3.0000e-005		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	1.0613	1.0613	1.1000e-003	0.0000	1.0845

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0710					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4429					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0212	7.8000e-003	0.6619	3.0000e-005		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	1.0613	1.0613	1.1000e-003	0.0000	1.0845
Total	**0.5350**	**7.8000e-003**	**0.6619**	**3.0000e-005**		**3.5400e-003**	**3.5400e-003**		**3.5400e-003**	**3.5400e-003**	**0.0000**	**1.0613**	**1.0613**	**1.1000e-003**	**0.0000**	**1.0845**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0710					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4429					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0212	7.8000e-003	0.6619	3.0000e-005		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	1.0613	1.0613	1.1000e-003	0.0000	1.0845
Total	**0.5350**	**7.8000e-003**	**0.6619**	**3.0000e-005**		**3.5400e-003**	**3.5400e-003**		**3.5400e-003**	**3.5400e-003**	**0.0000**	**1.0613**	**1.0613**	**1.1000e-003**	**0.0000**	**1.0845**

7.0 Water Detail

7.1 Mitigation Measures Water

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	9.2057	5.4000e-003	3.2400e-003	10.3238
Unmitigated	9.3536	5.3900e-003	3.2400e-003	10.4707

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	4.1047 / 2.58775	9.3536	5.3900e-003	3.2400e-003	10.4707
Total		**9.3536**	**5.3900e-003**	**3.2400e-003**	**10.4707**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	4.1047 / 2.4299	9.2057	5.4000e-003	3.2400e-003	10.3238
Total		**9.2057**	**5.4000e-003**	**3.2400e-003**	**10.3238**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	12.2769	0.7255	0.0000	27.5133
Unmitigated	12.2769	0.7255	0.0000	27.5133

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	60.48	12.2769	0.7255	0.0000	27.5133
Total		**12.2769**	**0.7255**	**0.0000**	**27.5133**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	60.48	12.2769	0.7255	0.0000	27.5133
Total		**12.2769**	**0.7255**	**0.0000**	**27.5133**

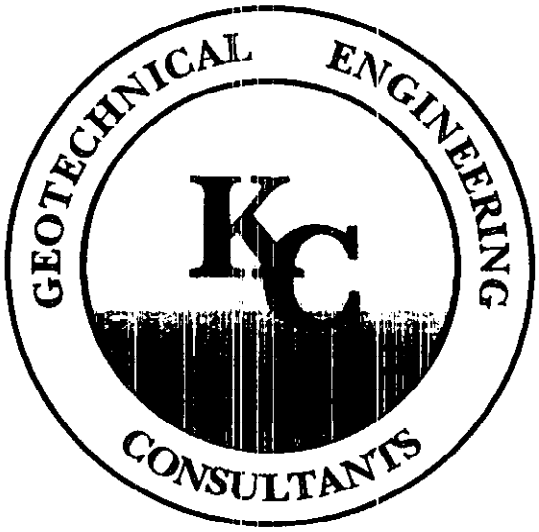
9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

E. GEOLOGY

GEOTECHNICAL EXPLORATION REPORT
on
PROPOSED RESIDENTIAL SUBDIVISION
9540 Calvine Road
Elk Grove, California
for
BLUE MOUNTAIN LAND COMPANY



By

KC ENGINEERING COMPANY

Project No. VV3459

5 March 2013

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Vacaville, California 95688
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KC ENGINEERING COMPANY
A SUBSIDIARY OF MATERIALS TESTING, INC.

Project No. VV3459
5 March 2013

Mr. Ken Moody
Blue Mountain Land Company
707 Aldridge Road, Suite B
Vacaville, CA 95688

Subject: Proposed Residential Subdivision
9540 Calvine Road
Elk Grove, California
GEOTECHNICAL EXPLORATION REPORT

Dear Mr. Moody:

In accordance with your authorization, **KC ENGINEERING COMPANY** has explored the geotechnical conditions of the surface and subsurface soils at the site of the proposed residential subdivision to be developed on the south side of Calvine Road in Elk Grove, California.

The accompanying report presents our conclusions and recommendations based on our exploration. Our findings indicate that the proposed residential structures and associated improvements are feasible for construction, from a geotechnical standpoint, 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.

Reviewed by,

Andrew L. King
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
DAVID V. CYMANSKI
GE 2585
EXP. 6-30-14
GEOTECHNICAL
STATE OF CALIFORNIA

Respectfully Submitted,
KC ENGINEERING COMPANY

David V. Cymanski, G.E.
Principal Engineer

Copies: 3 to Client and 1 email

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GEOTECHNICAL EXPLORATION

Purpose and Scope

The purpose of the geotechnical exploration for the proposed residential subdivision to be constructed on the south side of Calvine Road in Elk Grove, 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 grading of the site, the design of foundations for the proposed structures, and the construction of other related facilities on the property.

In accordance with our proposal, our investigation services included the following tasks:

a. A review of available geotechnical literature concerning the site and vicinity;
b. Site reconnaissance by the Soil Engineer to map the surface conditions;
c. Drilling of five exploratory borings and sampling of the surface and subsurface soils;
d. Laboratory testing of the samples obtained to determine their 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 subject property is located on the south side of Calvine Road in Elk Grove, California as shown on Figure 1, "Aerial Vicinity Map" in the Appendix. The property is bounded by Calvine Road on the north, an existing residential subdivision on the west, and rural ranch properties on the east and south. It is noted that Sheldon High School and Bradshaw Christian High School are located just north of Calvine Road. Also, the southern boundary of the property comprises the westerly extension of Nieman Avenue. The site topography is relatively flat to gently sloping southward as shown on Figure 2 "Site Plan". Laguna Creek drainage meanders across the central to western portion of the site. The creek is about 6 to 8 feet deep and had water present during our exploration. Remnants of an old residence and sheds, along with scattered junk and debris are located on the northwest corner of the site. A barn and outhouse are also present in this area.

The above description is based on a reconnaissance of the site by the Geotechnical Engineer, a review of a Tentative Map by Guide Engineering, undated, and a review of Google Earth aerial images. The Google Earth image dated 10/30/11 was used as the basis for our "Aerial Vicinity

Map" included as Figure 1 in the Appendix. The preliminary subdivision layout Tentative Map by Guide Engineering was used as the basis as our "Site Plan" included as Figure 3.

Proposed Development

Based on our review of the preliminary subdivision layout Tentative Map, we understand that approximately 63 lots will be developed for single family residences as shown on Figure 2 "Site Plan". We also understand that one or two custom residences may be constructed on the northwest portion of the site. The single-family residential structures are anticipated to consist of one and two-story wood framed construction. Additional site improvements will consist of typical underground utilities and streets. Earthwork grading is anticipated to consist of cuts and fills ranging up to about 5 vertical feet.

Field Exploration

Our field explorations were performed on 2/15 and 2/18/13. The explorations included a reconnaissance of the site and the drilling of five exploratory test borings at the approximate locations shown on Figure 2 "Site Plan" in the Appendix. Representative bulk soil samples were also obtained from the near surface soils for laboratory R-value and sulfate testing. Bulk sample locations are also shown on the Site Plan.

The borings were drilled to a maximum depth of 23.5 feet below the existing ground surface. The drilling was performed with truck mounted Mobile B-24 drill rig using power-driven, four-inch diameter, solid flight augers. Visual classifications were made from the auger cuttings and the samples recovered in the field. As the drilling proceeded, relatively undisturbed tube samples were obtained by driving a 3-inch O.D., California split-tube sampler, containing thin brass liners into the boring bottom in accordance with ASTM D1586. The sampler was 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, after seating the sampler 6 inches, 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) energy and diameter correction formula. Disturbed samples were also obtained by driving a SPT 2-inch O.D., split-barrel sampler into the boring bottom in accordance with ASTM D1586. 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 Appendix A.

Laboratory Testing

The laboratory testing program was directed towards providing sufficient information for the determination 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 on the respective "Log of Test Boring" and data sheets 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.

The strength parameters of the foundation soils were determined from unconfined compression tests (ASTM D2166) and direct shear tests (ASTM D3080) performed on selected relatively undisturbed soil samples. Standard field penetration resistance (N-Values) and Pocket Penetrometer tests also assisted in the determination of strength and bearing capacity. The standard penetration resistance values and Penetrometer results are recorded on the respective "Log of Test Boring".

In order to assist in the identification and classification of the subsurface soils, sieve analysis 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.

An R-Value test (Cal Test 301) was performed on bulk samples representative of the near surface soils to assist in preliminary pavement section design.

Representative bag samples of the near surface soils were obtained to evaluate the presence and concentration of water soluble sulfates in accordance with California Test Method 417. These test results were used to identify the corrosion potential of the soils to at or below grade concrete. A discussion is presented in the Foundation section of this report.

Subsurface Conditions

Based on our field exploration and laboratory testing, the subsurface soil profile was found to be relatively uniform across the site. In general, the subsurface soil profile consists of firm to very stiff, highly expansive silty clay with sand in the upper 1.5 to 6 feet, underlain by variable layers

and thicknesses of dense clayey sand and hard sandy clays and sandy silts to the maximum depth explored of 23.5 feet. The underlying clayey sand and silt is locally known as hardpan.

Groundwater was encountered in Boring 1 at a depth of 20 feet below grade. Fluctuations in the groundwater conditions can occur with variations in seasonal rainfall, irrigation on the site and adjacent parcels, 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 "Log of Test Boring" in the Appendix. The approximate locations of the borings are shown on Figure 2.

Site Geology

The geologic deposits on the property have been mapped as late Pleistocene aged Laguna Formation, as shown on the Preliminary Geologic Map of Lodi Quadrangle[1]. The Riverbank Formation is mapped just east. The Laguna Formation is described as cobble gravel, sand and minor silt of mixed metamorphic, granitic and volcanic source. It is noted that the soils encountered during our investigation generally agree with the geologic mapping, with the exception of surficial clays.

Geo-Hazards

Seismicity

The site is not located within an Alquist-Priolo Special Studies Zone[2]. There are no known active or inactive faults crossing the site as mapped and/or recognized by the State of California. 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 11,000 years, or has experienced earthquakes in recorded history. Based on our review of the Fault Activity Map of California[3] and the USGS

[1] Dawson, T., 2009, *Preliminary Geologic Map of the Lodi 30'x60' Quadrangle, California*, California Geological Survey.
[2] Hart, E.W. and Bryant, W.A., 1997, *Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps*, California Department of Conservation, Division of Mines and Geology, Special Publication 42, Interim Revision 2007.
[3] 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.

Fault Database[4], the nearest active faults are the Foothills Fault System and the Great Valley Fault Zones, located approximately 17.6 miles east and 31.5 miles west of the site, respectively.

Based on the Interactive Probabilistic Seismic Hazard Map on the CGS website[5], the peak ground acceleration that has a 10% probability of exceedance in 50 years (475 year return period) is 0.185g (alluvium). Using hazard deaggregation as performed on the US Geological Survey website, the peak ground acceleration that has a 2% probability of exceedance in 50 years (2475 year return period) is 0.23g (rock).

Structures at the site should be designed to withstand the anticipated ground accelerations. Based on the Java Ground Motion Parameters Calculator, version 5.1.0, from the USGS website, the following California Building Code earthquake design criteria are applicable for the site:

Site Class: D
Design Spectral Response Accelerations: $S_{DS} = 0.495g$; $S_{D1} = 0.297g$

Fault Rupture

The site is not located within an Alquist-Priolo Earthquake Fault Zone. Based on our review of geologic maps, no known active or inactive faults cross or project toward the subject site. In addition, no evidence of active faulting was visible on the site during our site reconnaissance. Therefore, it is our opinion that there is no potential for fault-related surface rupture at the subject site.

Landsliding

The subject site and immediate vicinity is relatively flat and therefore, not subject to seismically-induced landslide hazards.

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, because of 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

[4] U.S. Geological Survey and California Geological Survey, 2006, Quaternary Fault and Fold Database for the United States, accessed 3/4/13, from USGS web site: http://earthquake.usgs.gov/regional/qfaults/.
[5] U.S. Geological Survey and California Geological Survey, April 2003, Interactive Probabilistic Seismic Hazards Map, accessed 3/4/13, from CGS web site: http://redirect.conservation.ca.gov/cgs/rghm/pshamap/pshamain.html

and less than 15% fines passing the No. 200 sieve. However, fine-grained soils with a liquid limit less than 37%, a plasticity index less than 12, and an in-situ moisture content that is greater than 0.85 times the liquid limit, are also vulnerable to liquefaction-like effects. 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 data used for evaluating liquefaction potential of the subsurface soils consisted of the in-situ Standard Penetration resistance values $(N_1)_{60}$ values, unit weights, gradations, in-situ moisture contents, the groundwater level, the location of the site to the nearest active fault, and the predicted ground surface acceleration. The sandy deposits across the site are variable in depth and thickness and are considered dense. Based on the dense condition of the granular materials and the hard silts and clays encountered, it is our opinion that liquefaction potential at the site is very low.

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

General

From a geotechnical point of view, the proposed residential subdivision and associated improvements are feasible for construction on the subject site provided the recommendations presented in this report are incorporated into the project plans and specifications.

The grading and foundation plans and structural calculations for the development must be reviewed by the Soil Engineer prior to contract bidding or submittal to governmental agencies to ensure that the geotechnical recommendations contained herein are properly 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 problems that may be encountered in the field and coordinate the work with the contractor.

Field observation and testing during the grading and/or foundation operations must 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 near surface soil is prone to heave and shrink movements with changes in moisture content and, consequently, must be carefully considered in the design of grading, foundations, drainage, and landscaping. The recommendations provided in the following sections will minimize the detrimental effects of expansive soil movement.

Based on the results of the field exploration and laboratory testing, the site's existing foundation soils are considered highly expansive. Therefore, we recommend that the single-family residential structures should be founded on properly designed and constructed thickened post-tensioned slab systems. Specific grading and foundation recommendations are provided herein.

Grading

Grading operations performed during the wet season will be hampered by excessive moisture. Grading activities may be performed during the wet season, however, achieving proper compaction may be difficult due to excessive moisture resulting in project delays to grade the site and/or use of lime treatment. Grading performed during the dry months will minimize the occurrence of the above problems.

The surface of the site in areas to be graded should be stripped to remove all existing vegetation and/or other deleterious materials. It is estimated that stripping depths of approximately 2 to 4 inches may be necessary. Any material that is deemed to be topsoil and requiring stripping may not be used as engineered fill but may be stockpiled and used later for landscaping purposes. Where any loose or soft soils are encountered, they must be excavated to undisturbed native ground. Excavated soil materials may be used as engineered fill with the approval of the Soils Engineer provided they do not contain debris, excessive organics or over-sized rocks or boulders.

Any existing undesirable items encountered on-site that do not meet the requirements of engineered fill (fence posts/wood, basements, old building foundations, concrete rubble, buried irrigation pipes, septic and/or other buried tanks) should be excavated and removed. Excavations made by the removal of any subsurface items should be left open by the demolition contractor for backfill with engineered fill.

After stripping, clearing, and demolition as noted above, the exposed surface soils should be scarified to a depth of 12 inches, moisture conditioned as necessary to 3 or more percent above optimum moisture content, and compacted to a minimum of 90% relative compaction as determined by ASTM D1557. The site may then be filled to the desired finished grades by placing engineered fill in lifts of 8 inches in uncompacted thickness and compacting to a relative compaction of 90% in accordance with the aforementioned test procedure.

All fill material should be approved by the Soil Engineer. The material should be a soil or soil-rock mixture which is free from excessive organic matter or other deleterious substances. The fill material should not contain rocks or lumps over 6 inches in greatest dimension and not more than 15% larger than 2-½ inches. All soils encountered during our investigation would be suitable for use as engineered fill when placed and compacted as recommended.

Should import material be used to establish the proper grading for the proposed development, the import material should be approved by the Soil Engineer before it is brought to the site. If select import soil is used within the upper 3 feet of the pad, it should meet the following requirements:

a. Have an R-Value of not less than 25;
b. Have a Plasticity Index not higher than 15;
c. Not more than 15% passing the No. 200 sieve;
d. No rocks larger than 6 inches in maximum size;

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 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. 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 Laboratory Test Procedure 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 on 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.

Surface Drainage

A very important factor affecting the performance of structures and flatwork is the proper design, implementation, and maintenance of surface drainage. 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, excess moisture vapor and/or warping of floor coverings. To

minimize the potential for the above problems, the following surface drainage measures are recommended and must be maintained by the property owner in perpetuity:

a) Liberal 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 foundation and or other lot improvements. The finished pad grade around the structures or other improvements should be compacted and sloped away from the exterior foundations as required in Section 1804.3 of the 2010 CBC or current code edition.

b) Enclosed or trapped planter areas adjacent to the structure foundation should be avoided. 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 must be provided. Care should be taken to adequately slope surface grades away from the structure foundation and into area inlets. Drainage area inlets should be piped to a suitable discharge facility.

c) The construction of continuous roof gutters is recommended. The downspouts should be connected to a closed pipe system to carry storm water away from the structures. This will reduce the possibility of soil saturation adjacent to the foundation. Downspout water may be allowed to discharge directly onto hardscape surfaces provided positive drainage is maintained.

d) 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 structure.

e) Site drainage should be designed by the project Civil Engineer. Civil engineering, hydraulic engineering, and surveying expertise is necessary to design proper surface drainage to assure that the flow of water is directed away from the foundations.

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 testing program, the site's near surface foundation soils are considered highly expansive and susceptible to potential differential movements due to variations in moisture content. Provided that the residential building pads are constructed in accordance with the grading section noted above, the structures should be supported by properly designed and constructed thickened post-tensioned slab foundation systems.

Post-tensioned slabs should be a minimum 10 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)	=	4.0 feet
e_m (Center Lift)	=	6.5 feet

Differential Movement:

y_m (Edge Lift)	=	1.3 inches
y_m (Center Lift)	=	-0.9 inches

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 concrete and the soil of 0.30 may be used.

c) All areas to receive slabs should be thoroughly wetted to seal any desiccation cracks prior to placing the underslab components. This work should be performed under the observation of the Soil Engineer and approved prior to concrete placement.

d) The reinforcement and/or cables shall be placed in the upper half to center of the slab unless otherwise designated by the Structural Engineer.

e) A vapor barrier membrane should be installed between the gravel base 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 a minimum of 12 inches wide at the edges to extend below pad grade at least 2 inches to create frictional resistance for lateral loading. If it is desired to construct the foundation at pad grade, instead of trenching 2 inches at the perimeter, the slab may be constructed as follows; slab over vapor retarder over 2 inches of a granular base material over the moisture conditioned pad. The base material as recommended in ACI 302.1R may be an unwashed size No. 10 material per ASTM D 448. This material should meet a gradation of 100% passing 3/8", 85 to 100% passing No. 4, 10 to 30% passing No. 100, and 0 to 5% passing No. 200. Alternative materials should be approved by the Soils Engineer.

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.

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 drying-shrinkage cracking, including standard methods of curing.

j) The foundation plans, specifications, calculations and concrete mix designs should be provided to us for review prior to construction to ensure conformance with the above recommendations.

Bag samples of the near surface soil was collected and transported to Sunland Analytical in Rancho Cordova for testing of water soluble sulfates in accordance with California Test Method 417. The testing indicates sulfate contents ranging up to 22.0 ppm (mg/kg) for the samples collected. It is noted that the sulfate test results indicate "not-applicable" or "S0" sulfate exposure to concrete as identified in Section 1904.2 of the 2010 California Building Code and Table 4.2.1 of ACI 318-8 Building Code Requirements for Structural Concrete. No cement type restriction is required, however, we do recommend that a Type I/II cement be utilized.

Slab-on-Grade Construction

Exterior non-structural slabs-on-grade including driveways, patios, and general flatwork should be constructed in accordance with the following recommendations:

a) All areas to receive slabs should be thoroughly wetted to seal any desiccation or shrinkage cracks prior to placing the underslab components. This work should be done under the observation of the Soil Engineer.

b) Slabs should be underlain by a minimum of 4 inches of Caltrans Class II Aggregate Base placed and compacted between the finished subgrade and the slabs to serve as subbase support.

c) Exterior flatwork slabs should be a minimum of 5 inches thick and be reinforced with a minimum of No. 4 bars spaced at 18 inches on center each way. It is noted that where heavy loading is anticipated such as vehicle areas, it may be necessary to construct a 6 inch thick slab and increase the reinforcement. The final slab thickness and reinforcement should be determined by the project Structural Engineer in accordance with the structural requirements. The reinforcement shall be placed in the upper half of the slab unless otherwise designated by the design engineer.

d) To minimize moisture infiltration under slabs and to add edge rigidity, we recommend that slabs be thickened at the edges to extend below the aggregate base layer to soil subgrade for a minimum width of 6 inches.

e) Interior and exterior slabs should be provided with crack control saw cut joints or tool joints to allow for expansion and contraction of the concrete. In general, contraction joints should be spaced no more than 24 times the slab thickness in each direction.

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/or City of Elk Grove.

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 8 inches of the subgrade soil shall be scarified, moisture conditioned and compacted to a minimum relative compaction of 95% at a minimum of 3% above optimum moisture content 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 will be provided based on field conditions.

Aggregate Base: All aggregate base material placed subsequently should also be compacted to a minimum relative compaction of 95% based on the ASTM Test Procedure D1557. The recommended aggregate base thicknesses for asphalt pavements are noted in the table below. The minimum aggregate base thickness for portland cement concrete PCC pavements is 6 compacted inches.

Asphalt Concrete: Bulk samples of the surface soils were obtained from the proposed roadway locations for R-Value testing (California Standard Specification Procedure Test Method 301). An R-Value of 25 was determined, however we recommend the use of a R-Value of 15 to account for site variations. 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 Elk Grove Specifications.

Traffic Index (TI)	Asphalt Concrete (inches)	Class II Aggregate Base[1] (inches)
5.0	3.0	8.0
6.0	3.5	11.5
8.0	4.5	14.0
10.0	6.0	20.0

NOTES:
(1) Minimum R-Value = 78
(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 described above. The concrete should be designed by the project Structural Engineer and be a minimum of 6 inches thick and reinforced with a minimum of No. 4 rebar spaced at 16 inches on center, each way. Additional reinforcement may be required by the Structural Engineer.

Retaining Walls/Sound Walls

The proposed retaining walls that are to be incorporated into the residential development 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	300	0.30
2:1	75	85	300	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. In addition, an earthquake load of $5H^2$ in lbs./lineal foot should be applied at 0.6H where H = wall height in feet, from the bottom of the wall.

Where the proposed mechanically stabilized earth (MSE) interlocking non-mortared walls such as Keystone or Anchor block walls are utilized, the following soil parameters would be applicable for design using on-site, native materials within the reinforced fill zone: Internal friction angle = 28 degrees, cohesion = 50 p.s.f., unit weight = 110 p.c.f. These walls should be designed and constructed in accordance with the manufacturers recommendations. Where down

sloping conditions occur below the walls and at the tiered wall locations, we recommend a minimum of two block embedment below toe grade be provided.

The above criteria are based on fully drained conditions. In order to achieve fully-drained conditions, a drainrock filter blanket should be placed behind the wall. The blanket should be a minimum of 12 inches thick and should extend the full height of the wall to within 12 inches of the surface. If the excavated area behind the wall exceeds 12 inches, the entire excavated space behind the drainage blanket should consist of compacted engineered fill or blanket material. The drainage blanket material should consist of Class II permeable material that meets CalTrans Specification, Section 68. A 4-inch perforated drain pipe should be installed in the bottom of the drainage blanket and should be underlain by at least 4 inches of filter type material. A 12-inch cap of native soil material should be placed over the drainage blanket. Piping with adequate gradient shall be provided to discharge water that collects behind the walls to an adequately controlled discharge system away from the structure foundation.

The dry stacked masonry block retaining walls or any free standing conventional CMU sound walls should be founded on pier foundations with inter-connecting grade 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 300 p.c.f. be used below 2 feet.

Underground Utility and Excavations

Groundwater was encountered at depths ranging from 20 feet below the existing ground surface in the borings and about 6 feet in the creek. Therefore, depending on the time of year of underground construction groundwater will likely be encountered, especially in deeper utilities.

Should groundwater be encountered, the utility construction should begin at its lowest point and proceed uphill. The utility trench should be overexcavated to at least 6 inches below the Elk Grove required pipe bedding material. A minimum of 6 inches of 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 and filled with the 1-inch aggregate material 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 8 inches of the subgrade. The upper 8 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 Elk Grove, 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 B. However, should groundwater be encountered, a Type C soil should be used. 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

Log of Test Boring

Boring Log Legend

Laboratory Test Results

KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688
707.447.4025

Project No. VV3459
Proposed Residential Subdivision
9540 Calvine Road, Elk Grove, California
Figure 1 – AERIAL VICINITY MAP

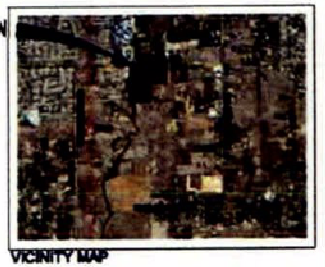
FOR

9540 CALVINE RD.

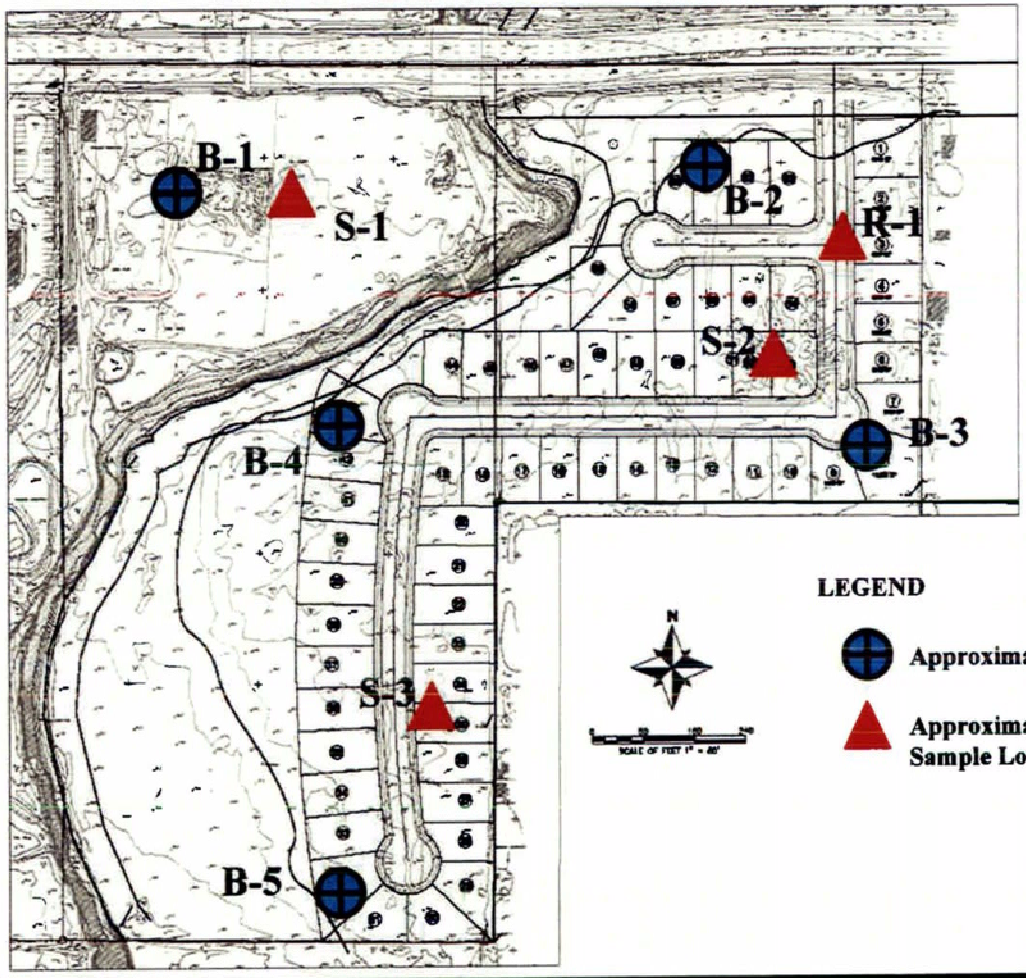
CALVINE RD.

CITY OF ELK GROVE, CA.

SITE LOCATION



VICINITY MAP



LEGEND

Approximate Boring Location

Approximate R-value & Sulfate Sample Locations

GUIDE ENGINEERING

LAND ENGINEERING AND PLANNING

1590 EUREKA RD. STE 150

ROSEVILLE, CA 95661

PHONE: 916.788.3455

FAX: 916.677.3754

KC ENGINEERING COMPANY

865 Cotting Lane, Suite A

Vacaville, CA 95688

707-447-4025

Project No. VV3459

Proposed Residential Subdivision

Calvine Road, Elk Grove, California

FIGURE NO. 2 – SITE PLAN

LOG OF TEST BORING
BORING NO.: 5

PROJECT: Proposed 61-Lot Residential Subdivision
CLIENT: Blue Mountain Land Company
LOCATION: 9540 Calvine Road, Elk Grove, CA
DRILLER: RAM Geotechnical Drilling
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ⏚ :

PROJECT NO.: VV3459
DATE: 18 February 2013
ELEVATION:
LOGGED BY: DVC
BORING DIAMETER: 4 inches
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)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Brown Silty CLAY; moist to wet, firm to stiff.	CL				
	5-1					27	90.4	25.0	ϕ=45 c=0 psf
				Light Brown Silty SAND w/few gravels; moist, medium dense.	SM				
5	5-2					12			<200=14%
10				Brown Sandy SILT; hard, moist.	ML				
	5-3					50-6"			
15									
20	5-4			As Above.		50-4"	87.9	32.1	
				Boring terminated @ 21 feet. No groundwater encountered.					
25									

This information pertains only to this boring and is not necessarily indicitive of the whole site.

KC ENGINEERING CO.

Figure 7

LOG OF TEST BORING
BORING NO.: 1

PROJECT: Proposed 61-Lot Residential Subdivision
CLIENT: Blue Mountain Land Company
LOCATION: 9540 Calvine Road, Elk Grove, CA
DRILLER: RAM Geotechnical Drilling
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ : 20'

PROJECT NO.: VV3459
DATE: 15 February 2013
ELEVATION:
LOGGED BY: DVC
BORING DIAMETER: 4 inches
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)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0	1-1			Dark Yellowish Brown Silty Sandy CLAY; moist, stiff to very stiff.	CL	19	116.7	16.1	UCC=4678 psf Qp=2.25 tsf
5	1-2			Brown Clayey SAND; moist, dense.	SC	49	111.9	18.1	
				Layered gravels @ 9 feet.					
10				Gray & Brown Sandy SILT; moist, hard.	ML				
15	1-3					55-6"	84.2	33.3	
20				▽					
	1-4					50-6"			
25				Boring terminated @ 23 1/2 feet. Groundwater encountered @ 20 feet.					

This information pertains only to this boring and is not necessarily indicitive of the whole site.

KC ENGINEERING CO.

Figure 3

LOG OF TEST BORING
BORING NO.: 2

PROJECT: Proposed 61-Lot Residential Subdivision
CLIENT: Blue Mountain Land Company
LOCATION: 9540 Calvine Road, Elk Grove, CA
DRILLER: RAM Geotechnical Drilling
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ :

PROJECT NO.: VV3459
DATE: 15 February 2013
ELEVATION:
LOGGED BY: DVC
BORING DIAMETER: 4 inches
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)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Brown Silty Sandy CLAY; moist, firm to stiff.	CH				
	2-1					22			LL=58% PI=39 Qp=2.25 tsf <200=79%
5				Gray Brown Clayey SILT; moist, hard, w/some sands.	ML				
	2-2			As Above.		52-6"			
10									
15					ML				
	2-3			Reddish Brown Sandy SILT; moist, hard.		41			<200=63%
				Boring terminated @ 17 1/2 feet. No groundwater encountered.					
20									
25									

This information pertains only to this boring and is not necessarily indicitive of the whole site.

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Figure 4

LOG OF TEST BORING
BORING NO.: 3

PROJECT: Proposed 61-Lot Residential Subdivision
CLIENT: Blue Mountain Land Company
LOCATION: 9540 Calvine Road, Elk Grove, CA
DRILLER: RAM Geotechnical Drilling
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ :

PROJECT NO.: VV3459
DATE: 18 February 2013
ELEVATION:
LOGGED BY: DVC
BORING DIAMETER: 4 inches
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)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Brown Clayey SILT/Silty CLAY; wet, stiff to very stiff.	CL-ML				
	3-1			Light Brown Clayey SAND; moist, dense w/fine gravels.	SC	31	119.9	12.7	Qp=2.0 tsf
5				Brown Sandy CLAY; moist, hard.	CL				
	3-2					50-6"	103.9	20.8	Qp=4.0 tsf
10									
	3-3			As Above; increasing silt.		50-6"			
				Boring terminated @ 13 feet. No groundwater encountered.					
15									
20									
25									

This information pertains only to this boring and is not necessarily indicitive of the whole site.

KC ENGINEERING CO.

Figure 5

LOG OF TEST BORING
BORING NO.: 4

PROJECT: Proposed 61-Lot Residential Subdivision
CLIENT: Blue Mountain Land Company
LOCATION: 9540 Calvine Road, Elk Grove, CA
DRILLER: RAM Geotechnical Drilling
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ :

PROJECT NO.: VV3459
DATE: 18 February 2013
ELEVATION:
LOGGED BY: DVC
BORING DIAMETER: 4 inches
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)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Brown Clayey SILT; wet, stiff.	ML				
	4-1			Brown Silty SAND/Sandy SILT; moist, hard.	SM	55-6"			
	4-2					50-4"			
5									
10	4-3			As Above.		51			<200=43%
15				Brown Sandy SLIT; moist, hard.	ML				
20	4-4					61			
				Boring terminated @ 21 1/2 feet. No groundwater encountered.					
25									

This information pertains only to this boring and is not necessarily indicitive of the whole site.

KC ENGINEERING CO.

Figure 6

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOLS		TYPICAL NAMES
COARSE GRAINED SOILS More than half of material is larger than 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, poorly graded gravel-sand-silt mixtures (PI<4 or below "A" line)
			GC		Clayey gravels, poorly graded 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, poorly graded sand-silt mixtures (PI<4 or below "A" line)
			SC		Clayey sands, poorly graded sand-clay mixtures (PI>7 & on or above "A" line)
FINE GRAINED SOILS Half or more of the material is smaller than No. 200	SILTS AND CLAYS Liquid Limit is less than 50%		ML		Inorganic silts and very fine sands, silty or clayey fine sands, clayey silts with slight plasticity (PI<4)
			CL		Inorganic clays of low to med. plasticity, gravelly clays, sandy clays, silty clays, lean clays (PI>7)
			OL		Organic silts and clays of low plasticity
	SILTS AND CLAYS Liquid Limit is 50% or more		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, 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

MTI-KC ENGINEERING COMPANY
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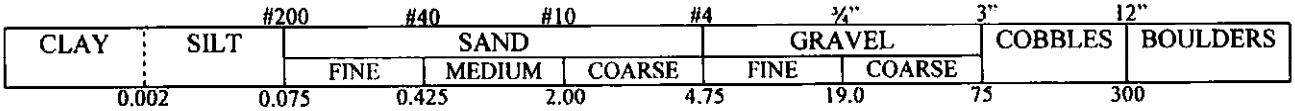
8798 Airport Road, Redding, CA 96002

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
Φ=Friction Angle
C=Cohesion
UCC=Unconfined Compression
R value=Resistance Value
Consol=Consolidation Test

SOIL GRAIN SIZE
U.S. STANDARD SIEVE OPENINGS



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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Redding, California 96002
(530) 222-1116, fax 222-1611

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Vacaville, California 95688
(707) 447-4025, fax 447-4143

Client: Blue Mountain Land Company
707 Aldridge Road, Suite B
Vacaville, CA 95688

Client No: VV3459-001
Report No: 0300-001
Date: 02/28/13

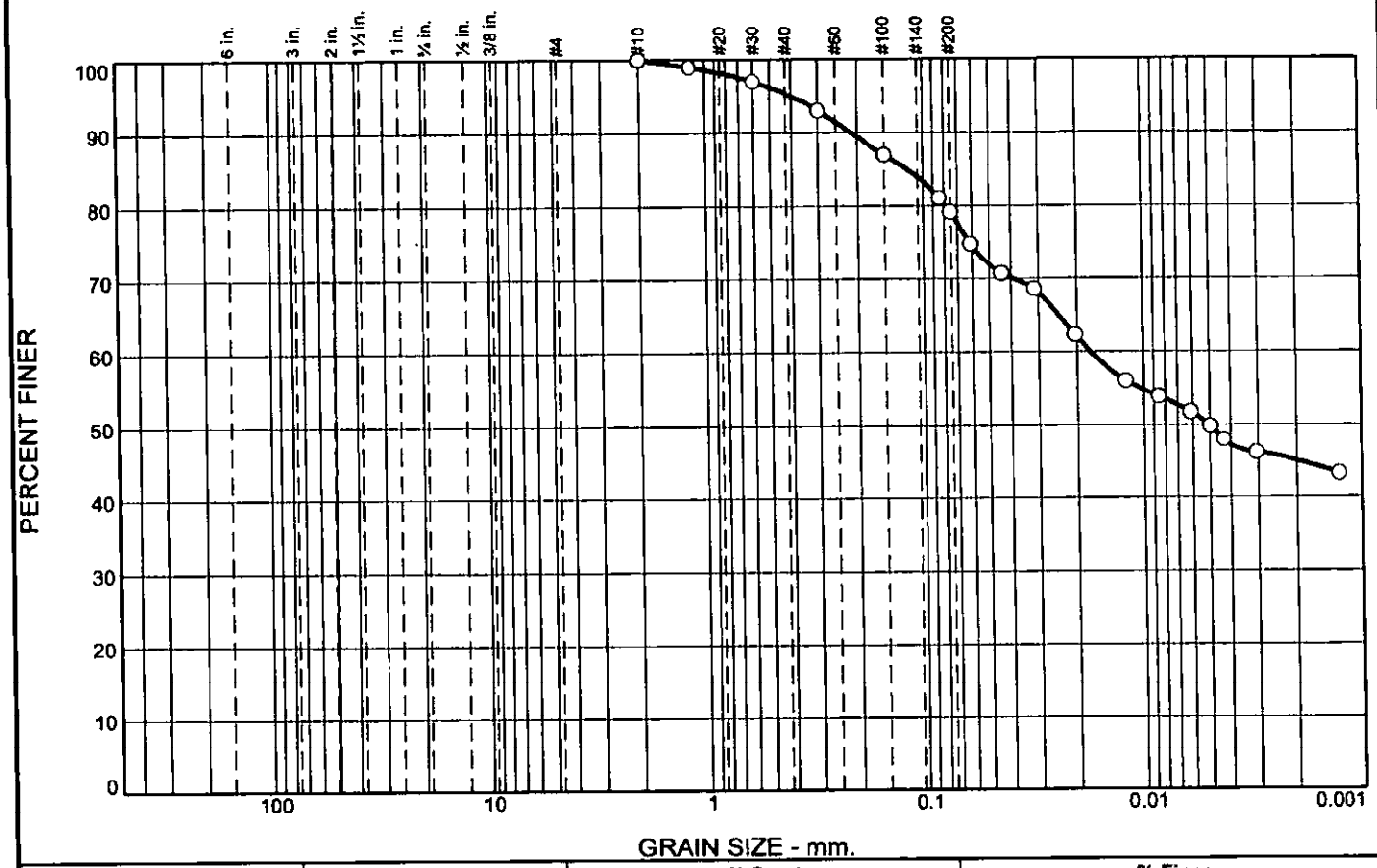
Project: Calvine Road
Elk Grove, California

Submitted by: KC Engineering

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
1-1 @ 2.0'	Yellowish Brown Silty Sandy Clay (Visual)	116.7	16.1	---	---	---
1-2 @ 6.0'	Brown Clayey Sand (Visual)	111.9	18.1	---	---	---
1-3 @ 13.0'	Brown Sandy Silt (Visual)	84.2	33.3	---	---	---
2-1 @ 3.0'	Brown Sandy Clay (Visual)	104.7	21.7	58	19	39
3-1 @ 2.0'	Brown Clayey Sand (Visual)	119.9	12.7	---	---	---
3-2 @ 6.0'	Brown Sandy Clay (Visual)	103.9	20.8	---	---	---
5-1 @ 1.5'	Brown Silty Sand with Gravel (Visual)	90.4	25.0	---	---	---
5-4 @ 20.0'	Olive Brown Sandy Silt (Visual)	87.9	32.1	---	---	---

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	5	16	29	50

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100		
#16	99		
#30	97		
#50	93		
#100	87		
#200	79		

* (no specification provided)

Material Description

Brown Sandy Clay

Atterberg Limits

PL= 19 LL= 58 PI= 39

Coefficients

D_{90}= 0.2110 D_{85}= 0.1177 D_{60}= 0.0174
D_{50}= 0.0050 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO= A-7-6(31)

Remarks

Material tested in accordance with ASTM D422.

Location: 2-1
Sample Number: 5 **Depth:** 3.0'

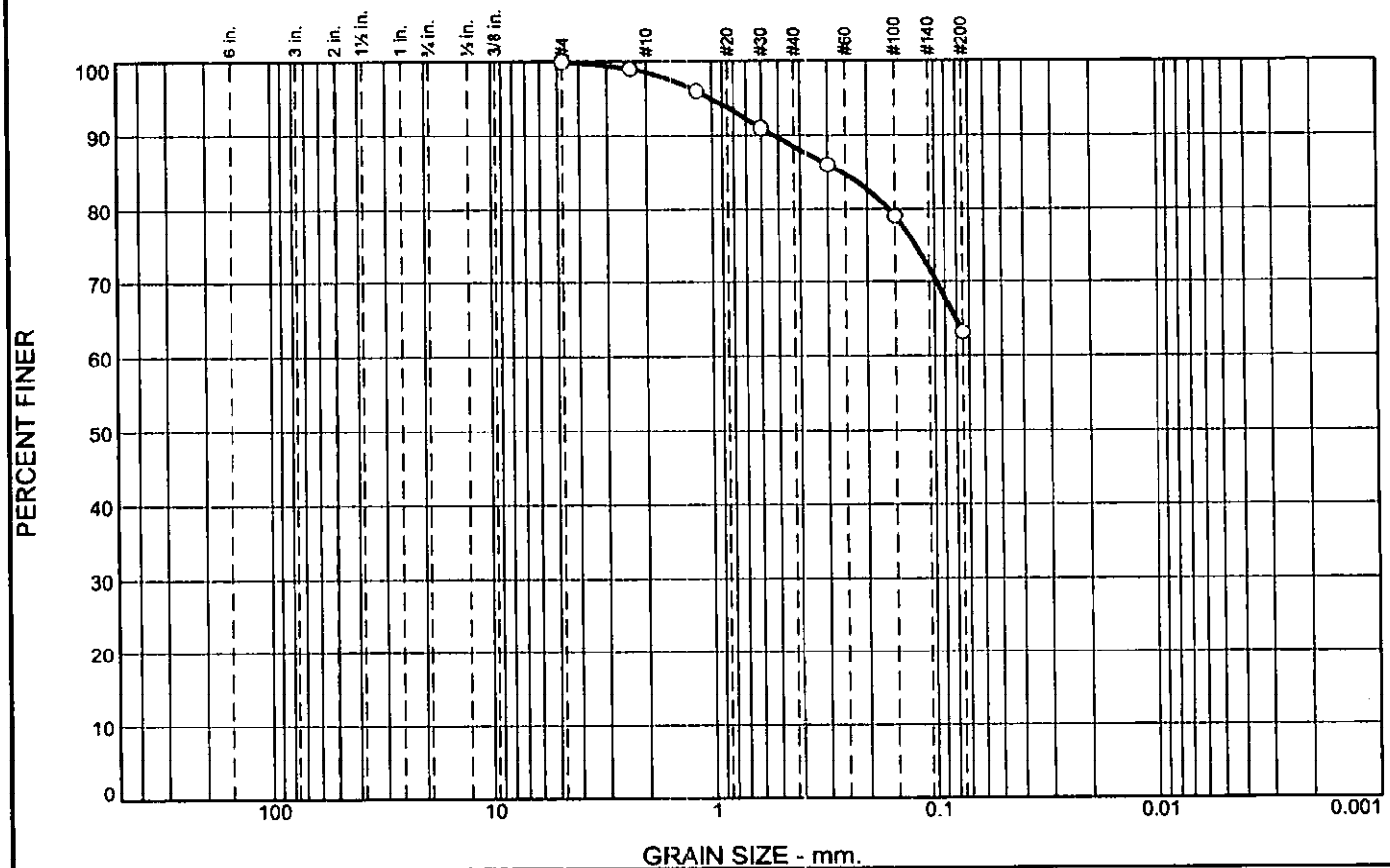
Date: 02/28/13

Materials Testing, Inc.

Client: Blue Mountain Land Company
Project: Calvine Road
Elk Grove, CA
Project No: VV3459-001

Figure 0300-002

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	1	11	25	63	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100		
#8	99		
#16	96		
#30	91		
#50	86		
#100	79		
#200	63		

* (no specification provided)

Material Description

Reddish Brown Sandy Silt (Visual)

Atterberg Limits

PL= --- LL= --- PI= ---

Coefficients

D_{90}= 0.5255 D_{85}= 0.2604 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO=

Remarks

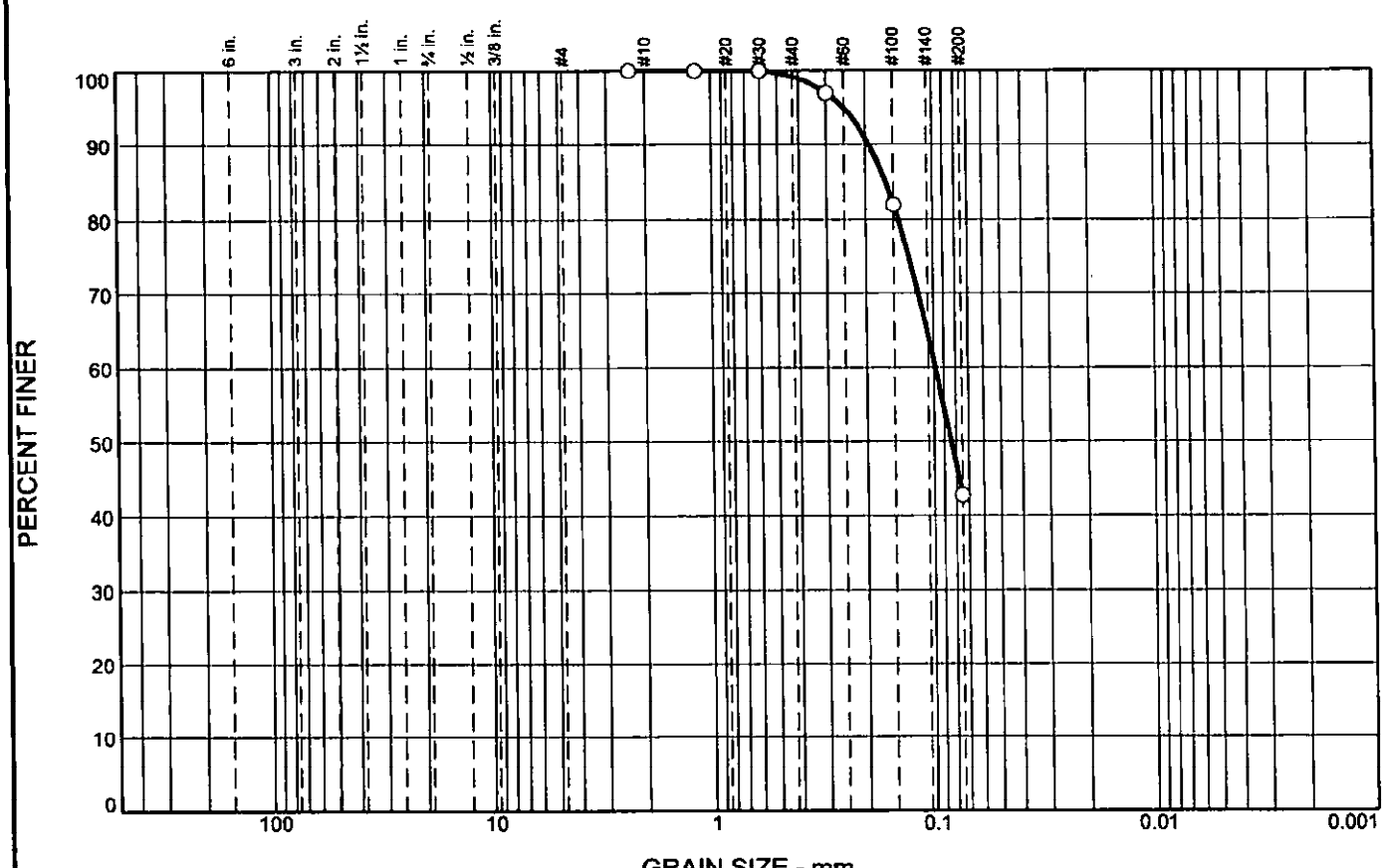
Material Tested in Accordance with ASTM D6913.

Location: 2-3
Sample Number: 6 **Depth:** 16.0' **Date:** 02/28/13

Materials Testing, Inc.

Client: Blue Mountain Land Company
Project: Calvine Road
Elk Grove, CA
Project No: VV3459-001 **Figure** 0400-003

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	1	56	43	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#8	100		
#16	100		
#30	100		
#50	97		
#100	82		
#200	43		

* (no specification provided)

Material Description

Brown Silty Sand (Visual)

Atterberg Limits

PL= --- LL= --- PI= ---

Coefficients

D_{90}= 0.1924 D_{85}= 0.1625 D_{60}= 0.0983
D_{50}= 0.0839 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

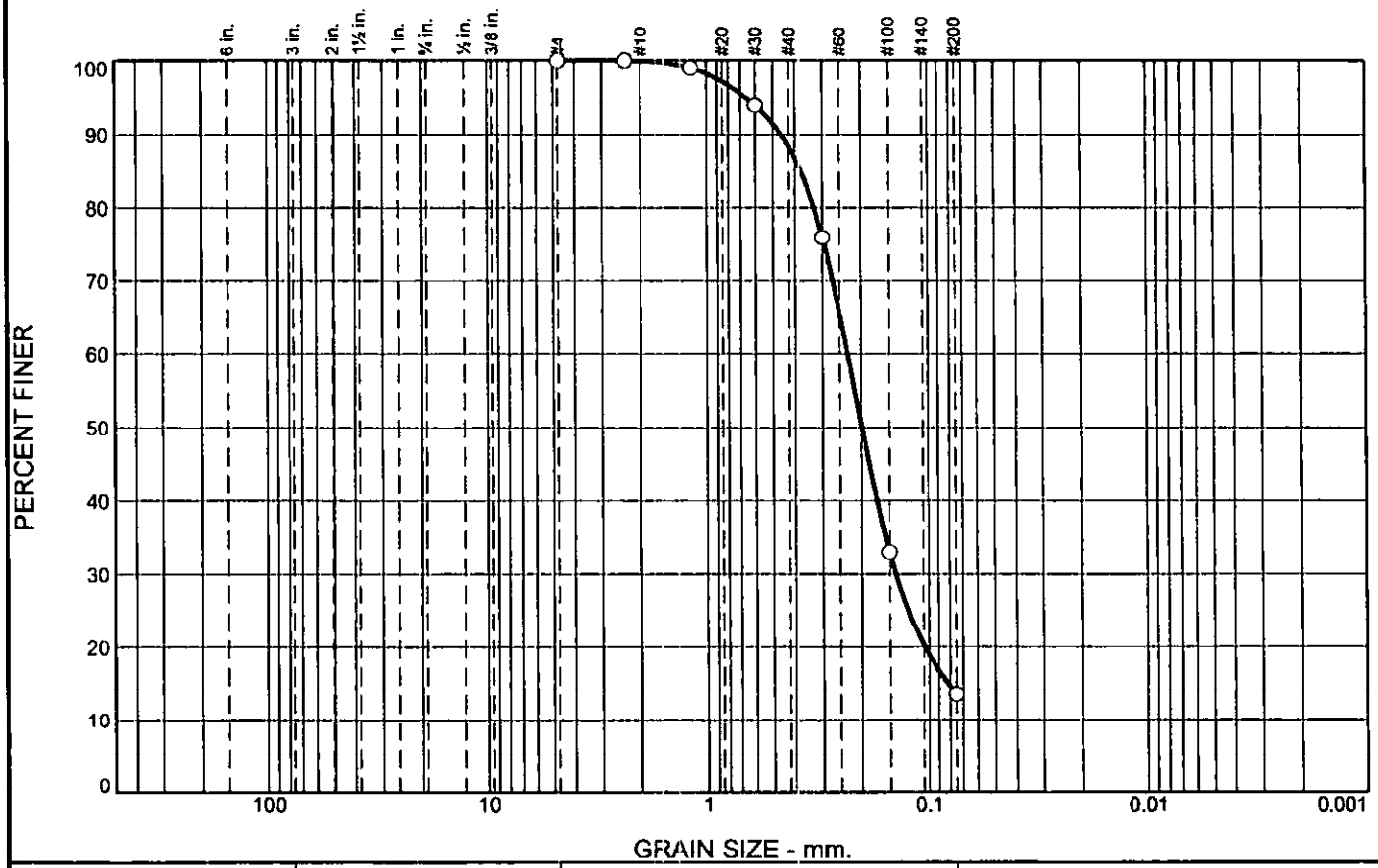
Material tested in accordance with ASTM D6913.

Location: 4-3
Sample Number: 10 **Depth:** 10.0' **Date:** 02/28/13

Materials Testing, Inc.

Client: Blue Mountain Land Company
Project: Calvine Road
Elk Grove, CA
Project No: VV3459-001 **Figure** 0400-004

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	12	74	14	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100		
#8	100		
#16	99		
#30	94		
#50	76		
#100	33		
#200	14		

* (no specification provided)

Material Description

Brown Silty Sand (Visual)

Atterberg Limits

PL= --- LL= --- PI= ---

Coefficients

D_{90}= 0.4575 D_{85}= 0.3749 D_{60}= 0.2301
D_{50}= 0.1984 D_{30}= 0.1409 D_{15}= 0.0819
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

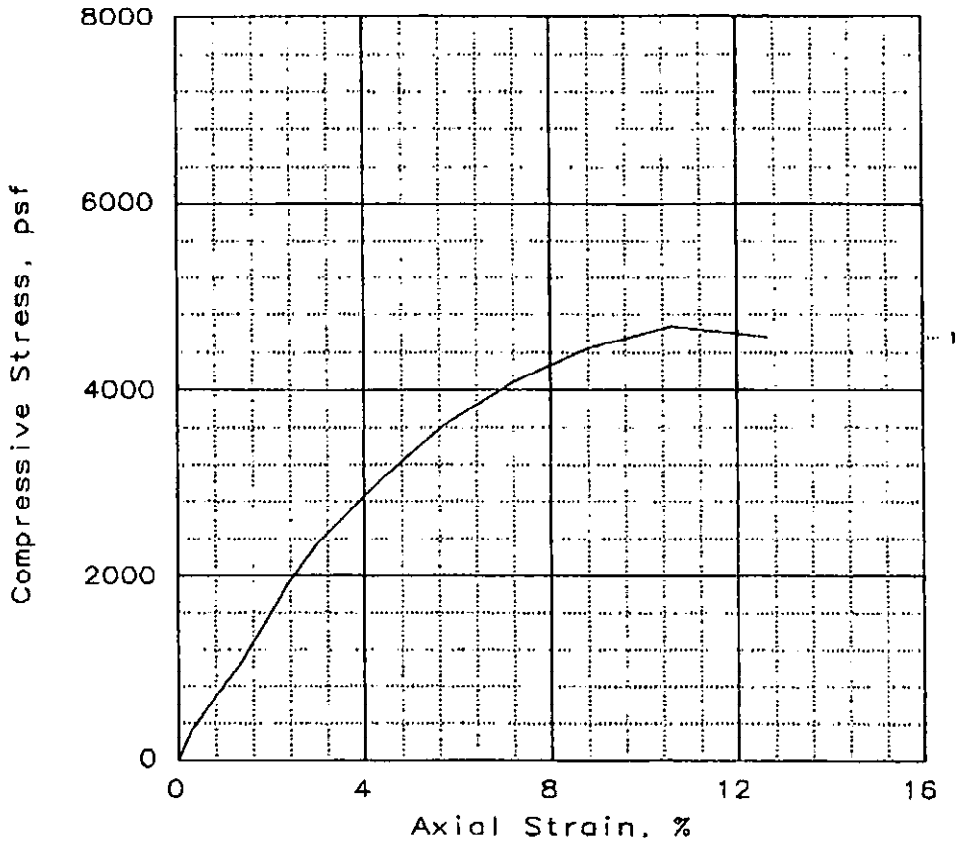
Material tested in accordance with ASTM D6913.

Location: 5-2
Sample Number: 12 **Depth:** 5.0' **Date:** 02/28/13

Materials Testing, Inc.

Client: Blue Mountain Land Company
Project: Calvine Road
Elk Grove, CA
Project No: VV3459-001 **Figure** 0400-005

UNCONFINED COMPRESSION TEST



SAMPLE NO.:	1			
Unconfined strength, psf	4678			
Undrained shear strength, psf	2339			
Failure strain, %	10.6			
Strain rate, %/min				
Water content, %	16.1			
Wet density, pcf	135.6			
Dry density, pcf	116.7			
Saturation, %	91.7			
Void ratio	0.4905			
Specimen diameter, in	2.41			
Specimen height, in	4.70			
Height/diameter ratio	1.95			

Description: Yellowish Brown Silty Sandy Clay

GS= 2.787 | Type: Tube

Project No.: VV3459-001
Date: 02/28/13
Remarks:
ASTM D2166

Type of Failure: Bulge

Fig. No.: 0300-006

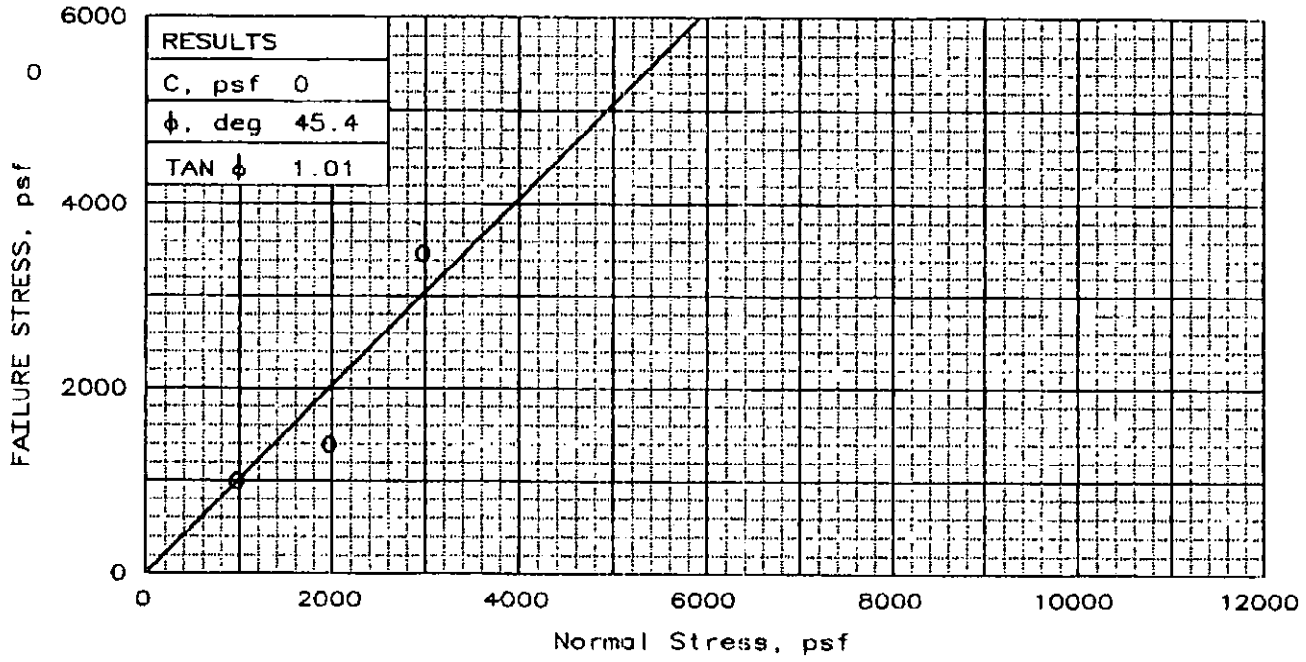
Client: Blue Mountain Land Company

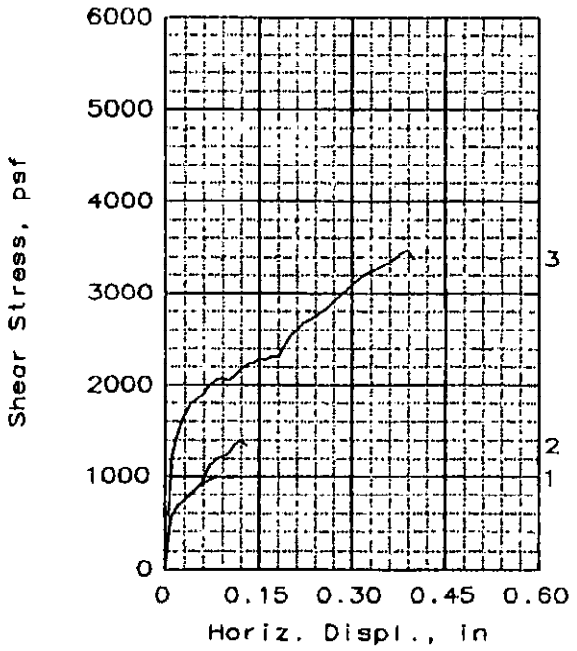
Project: Calvine Road, Elk Grove, CA

Location: 1-1 @ 2.0'

UNCONFINED COMPRESSION TEST

MATERIALS TESTING, INC.





SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	25.0	25.0	25.0
	DRY DENSITY, pcf	60.3	60.6	60.3
	SATURATION, %	38.4	38.7	38.4
	VOID RATIO	1.691	1.678	1.691
	DIAMETER, in	2.41	2.41	2.41
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	45.9	49.8	50.2
	DRY DENSITY, pcf	61.5	63.6	60.5
	SATURATION, %	72.8	83.4	77.6
	VOID RATIO	1.640	1.552	1.682
	DIAMETER, in	2.41	2.41	2.41
	HEIGHT, in	0.98	0.95	1.00
NORMAL STRESS, psf		1000	2000	3000
FAILURE STRESS, psf		998	1392	3472
DISPLACEMENT, in		0.09	0.12	0.39
ULTIMATE STRESS, psf				
DISPLACEMENT, in				
Strain rate, %/min		0.00		

SAMPLE TYPE: Tube
DESCRIPTION: Brown Silty Sand with Gravel

SPECIFIC GRAVITY= 2.6
REMARKS: ASTM D3080

Fig. No.: 0300-007

CLIENT: Blue Mountain Land Company

PROJECT: Calvine Road, Elk Grove, CA

SAMPLE LOCATION: 5-1 @ 1.5'

PROJ. NO.: W3459-001 DATE: 02/28/13

DIRECT SHEAR TEST REPORT

MATERIALS TESTING, INC.

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: Blue Mountain Land Company
707 Aldridge Road, Suite B
Vacaville, CA 95688

Client No: VV3459-001
Report No: 0300-008
Date: 02/28/13

Project: Calvine Road
Elk Grove, California

Submitted by: KC Engineering

"R" VALUE TEST REPORT (CTM-301)

Sample: 1
Description: Brown Clay
Location: R-1 @ 0.0 - 2.0'

SIEVE ANALYSIS

Sieve Size	2"	1-1/2"	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	11.7	119.6	330	0	0	31
2	12.6	119.2	243	0	0	19
3	14.0	116.7	143	0	0	12

R-Value @ 300 PSI Exudation Pressure = 25
R-Value @ Expansion = ---

F. Drainage

Planning Level Drainage Study

APN 121-0180-007, 051, 052

Calvine Meadows
in Sacramento County the city of Elk Grove, CA

City Project No. EG 2013-018

PREPARED BY

Guide ENGINEERING
5930 Granite Lake Drive, SUITE #150
Granite Bay, CA 95746
(916) 759-2453
Mike Anderson & Jared Brown

December 13, 2013

RECEIVED
DEC 16 2013
CITY OF ELK GROVE
PLANNING

Table of Contents

INTRODUCTION

This site is in Sacramento County, within the city of Elk Grove limits. The project is located south of Calvine Road, west of Bradshaw Road, and east of Waterman Road (east of highway 99). The total site is approximately 30 acres proposed to be developed as 61 residential lots and 3 open space lots. The drainage study was done to calculate the Sacramento precipitation zone #2 event and confirm that all HGL's are 0.5' below the DI grates.

Our project can overland release to the west via the seven Infiltration Basins or IBs, then on directly into Laguna Creek. An infiltration basin is a shallow impoundment which is designed to infiltrate stormwater into the soil. This practice is believed to have a high pollutant removal efficiency and can also help recharge the ground water, thus increasing baseflow to stream systems. Infiltration basins can be challenging to apply on many sites, however, because of soils requirements. In addition, some studies have shown relatively high failure rates compared with other management practices.

There are many ways to maintain an IB. The City of Elk Grove or Cosumnes Community Services District [CSD] will be responsible for long term maintenance of these. Table 1 from the EPA is below:

Activity	Schedule
Inspect facility for signs of wetness or damage to structures Note eroded areas. If dead or dying grass on the bottom is observed, check to ensure that water percolates 2-3 days following storms. Note signs of petroleum hydrocarbon contamination and handle properly.	Semi-annual inspection
Spring time Mowing and remove litter and debris. Stabilize of eroded banks. Repair undercut and eroded areas at inflow and outflow structures.	Standard maintenance (as needed)
Disc or otherwise aerate bottom. Dethatch basin bottom.	Annual maintenance
Scrape bottom and remove sediment. Restore original cross-section and infiltration rate. Seed or sod to restore ground cover.	5-year maintenance

Sufficient capacity is available in the new seven Infiltration Basins to receive hold and treat project runoff flows.

ANALYSIS

The project is a total of approximately 30 acres and is relatively flat. The ex. site generally drains from north east to south west. The residential lots and roads amount to a little over 13 Acres. The remaining 17 Ac are part of the Laguna creek floodplain and 3 new open space lots. See Tentative Subdivision Map.

We assumed the following:

1 n = 0.015

2 All inlets must have at least 0.5' of freeboard

3 DI FL – 0.12' = DI GRT

4 Sacramento County Public Works Agency, Improvement standards
Standard Drawing 9-3
For Zone 3 Residential, use
0.2 cfs / ac

One scenario for the shed on this project was run using CS Drainage Studio (CSDS) software, a graphic computer-modeling program, as development by Civil Solutions of Sacramento, CA; founder Thomas S. Plummer P.E. The 10 year event was analyzed.

The Nolte which really works out to about a 2-year storm is usually referred to as the 10-year storm by mistake.

All full flowing velocities are greater than 2 fps
Real velocities were calculated and some fall less than 2 fps, so consider this:

$Q = A * v$

As the contributing area decreases, so too does the flow or velocity
Therefore the velocity will ultimately approach zero (0) fps

Since the city requires a minimum 12" diameter pipe size within the street / ROW, there may be instances where the velocity will fall below 2 fps, such as in cases of backwater effect. It must also be acceptable whenever one has very small contributing areas

Per the applicative and current FEMA Firm maps, it is suggested that all pads be set to a minimum elevation of 59' to 60' above sea level.

CONCLUSION

All DI's and MH's had a nolte HGL of at least 0.5' lower than the grate or 1' lower than the sdmh rim elevation.

As a footnote, based on the recent update to the New Standards for development projects, regarding stormwater quality, a residential subdivision less than 20 acres in size does not require treatment control. Our site 30 Ac gross therefore multiple Infiltration Basins have been incorporated into the design.

Source Control is required, and some type of runoff reduction or treatment control is strongly recommended. Since the City of Elk Grove or Cosumnes Community Services District [CSD] will ultimately take over ownership of the public roads within this subdivision, no Treatment Agreement is necessary.

Regular roadway sweeping is a suggested BMP /sediment load control device proposed at this time.

EXHIBITS

From: Thomas Plummer [thomas@civilsolutions.com]
Sent: Friday, January 20, 2006 5:34 PM
To: mike a
Subject: RE: Last Question

Why does it not calc the real velocity?

It does calc the real velocity. You have specified a downstream WS elevation, which forces a backwater condition. The pipes are flowing full, not partial per normal depth. Flow divided by area equals velocity. I checked it works.

When I do it manually I get a higher velocity?

See above. You are calculating for normal depth... remove the downstream specified WS elevation and you will get a better answer for velocity.

Also why does it not calc the Tc for the last 2 conveys?

Time of concentration is not used when you directly specify a flowrate. Therefore, the program does not bother to calculate a Tr for any nodes for which an area is not provided.

- Thomas

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.
www.mti-kcgeotech.com

MEMORANDUM

Project No. VV3459
3 October 2013

To: Ken Moody, Blue Mountain Land
Jared Brown, Guide Engineering

From: David Cymanski, G.E. 2585

Subject: Proposed Infiltration Basins
Residential Subdivision @ 9450 Calvine Road, Elk Grove

REGISTERED PROFESSIONAL ENGINEER
DAVID V. CYMANSKI
GE 2585
EXP. 6-30-14
GEOTECHNICAL
STATE OF CALIFORNIA

Reference: Geotechnical Exploration Report, dated 3/5/13

Mr. Moody:

At your request, we have reviewed the Preliminary Grading Plan by Guide Engineering, dated 7/20/13, to provide general comments and preliminary infiltration rates for the proposed storm water basins. The plan indicates six infiltration basins are proposed with depths ranging up 6 to 7 feet from existing and proposed grades. The plan appears to show side slopes of 1H:1V to 1.5H:1V (horizontal to vertical). At the proposed basin depths, our borings in these areas and lab data indicate the presence of sandy clays, clayey silts and silty sand materials.

Based on our review, we offer the following comments and preliminary criteria.

1) The side slopes of the basins should not be steeper than 3H:1V.
2) Based on typical infiltration rates, as presented in the Sacramento County Code, Section 14.10.110 "Soil Infiltration Rates", for the different soil types present at the site, we anticipate infiltration rates ranging from 0.31 inches per hour to 0.94 inches per hour (see attached table).
3) We recommend that the lower bound infiltration rates be utilized. Higher infiltration rates may be utilized if verified by field testing.
4) An overflow catch basin or other system should be incorporated in the design.

Should additional criteria be required, please call.

14.10.110 Soil Infiltration Rates.

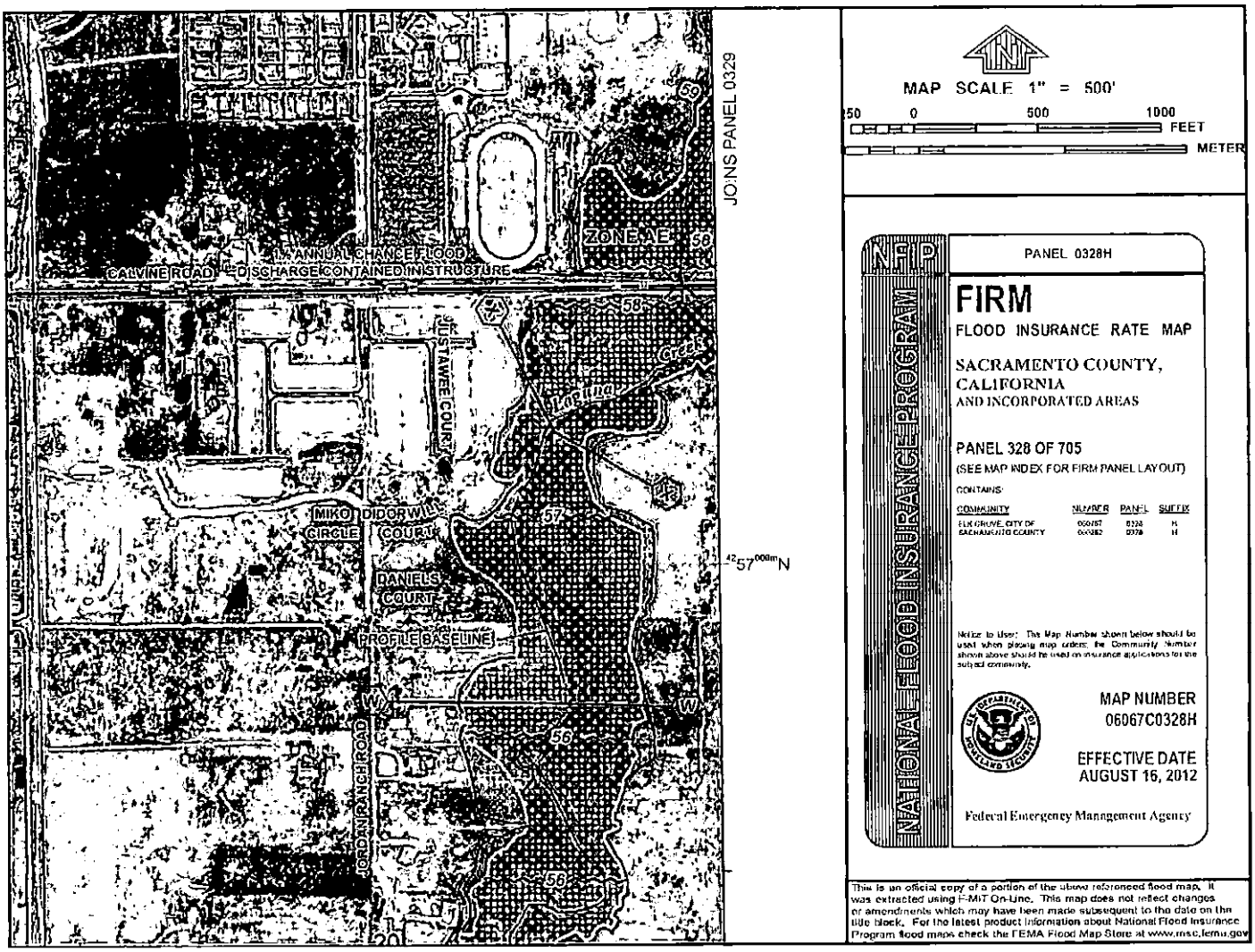
Infiltration Rate (IR)

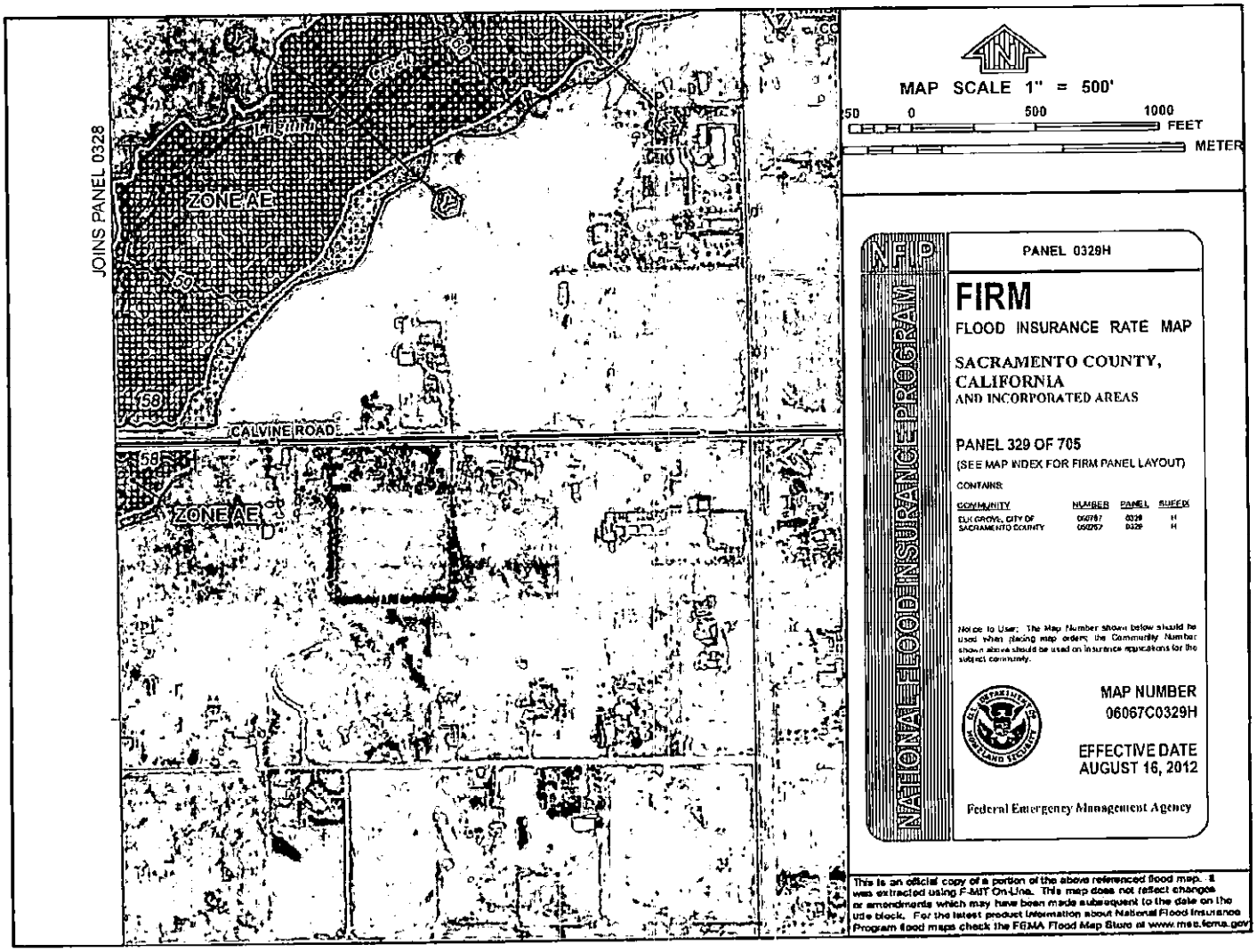
Inches/Hour

	Percent of Slope				
Soil Texture, Type	**0-4%**	**5-8%**	**8-12%**	**12-16%**	**Over 16%**
Coarse Sand	1.25	1.00	.75	.50	.31
Medium Sand	1.06	.85	.64	.42	.27
Fine Sand	.94	.75	.56	.38	.24
Loamy Sand	.88	.70	.53	.35	.22
Sandy Loam	.75	.60	.45	.30	.19
Fine Sandy Loam	.63	.50	.38	.25	.16
V. Fine Sandy Loam	.59	.47	.35	.24	.15
Loam	.54	.43	.33	.22	.14
Silt Loam	.50	.40	.30	.20	.13
Silt	.44	.35	.26	.18	.11
Sandy Clay	.31	.25	.19	.12	.08
Clay Loam	.25	.20	.15	.10	.06
Silty Clay	.19	.15	.11	.08	.05
Clay	.13	.10	.08	.05	.03

Note: Rates based on full cover. These figures decrease with time and percent of cover. Derived from USDA information.

(SCC 0812 § 1, 1990.)




JOINS PANEL 0328
ZONE AE
158
CALVINE ROAD
ZONE AE
MAP SCALE 1" = 500'
500 0 500 1000
FEET
METER
NATIONAL FLOOD INSURANCE PROGRAM
PANEL 0329H
FIRM
FLOOD INSURANCE RATE MAP
SACRAMENTO COUNTY, CALIFORNIA
AND INCORPORATED AREAS
PANEL 329 OF 705
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
ELK GROVE, CITY OF 060767 0329 H
SACRAMENTO COUNTY 060262 0329 H
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.
MAP NUMBER
06067C0329H
EFFECTIVE DATE
AUGUST 16, 2012
Federal Emergency Management Agency
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Up Node Name	Down Node Name	Trib. Area at Up Node (acre)	Cumul. Area (acre)	Total Computed Time of Concentration Up Node (min.)	Total Flow at Convey (cfs)	Convey Size (in or ft)	Average Slope (ft/ft)	Total Length (feet)	Full Flow Capacity of Conduit (cfs)	Computed Flow at Convey (cfs)	Exit Velocity (fps)	Travel Time at Convey (min.)	Rim/Grate at Up Node (feet)	Up HGL (feet)	Down HGL (feet)	Up (RIM-HGL) (feet)	Energy Slope (ft/ft)	Up EGL (feet)	Down EGL (feet)
Node 5	Node 4	1.24	1.24	21.16	2.08	12	0.0100	25.00	3.09	2.08	2.64	0.13	N/A	54.72	54.57	N/A	0.0058	54.84	54.69
Node 6	Node 7	0.38	0.38	10.44	0.8	12	0.0100	14.00	3.09	0.80	1.26	0.15	N/A	54.47	54.48	N/A	0.0011	54.52	54.50
Node 8	Node 7	0.46	0.46	25.15	0.94	12	0.0100	14.00	3.09	0.94	1.50	0.12	N/A	54.46	54.46	N/A	0.0014	54.52	54.50
Node 7	Node 4	0.	0.84	25.27	1.52	15	0.0050	50.00	3.96	1.52	1.57	0.44	N/A	54.42	54.39	N/A	0.0014	54.50	54.43
Node 4	Node 2	0.	2.08	21.29	3.15	18	0.0050	140.00	6.44	3.15	3.70	0.56	N/A	54.15	53.50	N/A	0.0050	54.43	53.73
Node 2	Node 3	0.	2.08	21.85	3.15	18	0.0073	51.00	7.75	3.15	4.16	0.16	N/A	53.44	53.07	N/A	0.0072	53.73	53.36
Node 9	Node 10	1.16	1.16	12.48	1.97	15	0.0100	29.00	5.60	1.97	2.16	0.09	N/A	53.45	53.47	N/A	0.0047	53.69	53.55
Node 10	Node 11	0.55	1.71	12.95	2.69	15	0.0100	20.00	5.60	2.69	2.83	0.08	N/A	53.26	53.30	N/A	0.0053	53.55	53.44
Node 16	Node 15	0.	4.36	19.74	5.7	18	0.0049	85.00	6.40	5.70	3.22	0.41	N/A	53.40	52.99	N/A	0.0048	53.58	53.17
Node 12	Node 13	2.03	2.03	18.38	3.09	15	0.0140	20.00	6.62	3.09	2.51	0.13	N/A	55.25	55.19	N/A	0.0030	55.36	55.30
Node 14	Node 13	2.33	2.33	17.99	3.45	15	0.0200	14.00	7.92	3.45	2.81	0.08	N/A	55.22	55.16	N/A	0.0038	55.35	55.30
Node 13	Node 18	0.	4.36	18.07	5.7	18	0.0050	252.00	6.44	5.70	3.22	1.24	N/A	55.12	53.87	N/A	0.0050	55.30	54.05
Node 18	Node 17	0.	4.36	19.31	5.7	18	0.0052	31.00	6.54	5.70	3.22	0.10	N/A	53.86	53.72	N/A	0.0044	54.04	53.90
Node 19	Node 22	0.66	0.66	13.01	1.25	12	0.0267	18.00	5.04	1.25	1.59	0.19	N/A	54.91	54.88	N/A	0.0016	54.96	54.93
Node 20	Node 22	0.98	0.98	15.18	1.72	12	0.0100	48.00	3.09	1.72	2.19	0.37	N/A	54.99	54.84	N/A	0.0031	55.08	54.93
Node 21	Node 22	0.76	0.76	15.72	1.4	12	0.0100	48.00	3.09	1.40	1.79	0.45	N/A	54.97	54.87	N/A	0.0021	55.03	54.93
Node 22	Node 23	0.	2.4	15.54	3.53	18	0.0042	361.00	5.89	3.53	2.00	3.01	N/A	54.86	54.31	N/A	0.0015	54.93	54.38
Node 23	Node 24	1.32	3.72	18.53	5.02	24	0.0024	29.00	9.63	5.02	1.60	0.30	N/A	54.34	54.32	N/A	0.0007	54.38	54.36
Node 24	Node 25	1.16	4.88	18.84	6.24	24	0.0032	28.00	11.12	6.24	1.99	0.24	N/A	54.29	54.26	N/A	0.0010	54.36	54.33
Node 26	Node 27	0.	4.88	21.25	6.24	18	0.0050	195.00	6.45	6.24	3.53	0.85	N/A	53.90	52.92	N/A	0.0050	54.11	53.13
Node 17	Node 16	0.	4.36	19.41	5.7	N/A	0.0150	20.00	N/A	5.70	0.57	0.41	N/A	53.72	53.73	N/A	0.0000	53.73	53.73
Node 25	Node 26	0.	4.88	19.07	6.24	N/A	-0.0136	55.00	N/A	6.24	0.58	2.56	N/A	54.30	54.29	N/A	0.0000	54.30	54.30

Calvine Meadows

IB= infiltration basin
Assume depths = 3' min. for all IBs
See concrete pond weir detail.
See typical image and detail here at http://swmaintenance.com/?page_id=1160

from SacCalc 100 yr 12 hr storm TOTAL EXCESS = 2.8"

shed ID				area AC	inches	factor	cu.ft.
1	s02			2.08	2.86	3630	21,594
2	s11			1.71	2.86	3630	17,753
3	s17	6.76	2.4	4.36	2.86	3630	45,265
4	s25	2.48	2.4	4.88	2.86	3630	50,663
				13.03			135,275

IB ID	shed	Area bottom sf	trial D	vol cu.ft.	cum vol cu.ft.		rain cu.ft.		delta cu.ft.
1	s02	4850	3	14550					
2	s02	2150	3	6450	21000		21,594		(594)
3	s11	7250	3	21750	21750		17,753		3,997
4	s17	6050	3	18150					
5	s17	8500	3	25500	43650		45,265		(1,615)
6	s25	6800	3	20400					
7	s25	6900	3	20700	41100		50,663		(9,563)
1	s02	4850	3.5	16975					
2	s02	2150	3.5	7525	24500	0.56	21,594	0.50	2,906
3	s11	7250	3.5	25375	25375	0.58	17,753	0.41	7,622
4	s17	6050	3.5	21175			-	-	
5	s17	8500	3.5	29750	50925	1.17	45,265	1.04	5,660
6	s25	6800	3.5	23800			-	-	
7	s25	6900	3.5	24150	47950	1.10	50,663	1.16	(2,713)
						3.41		3.11	

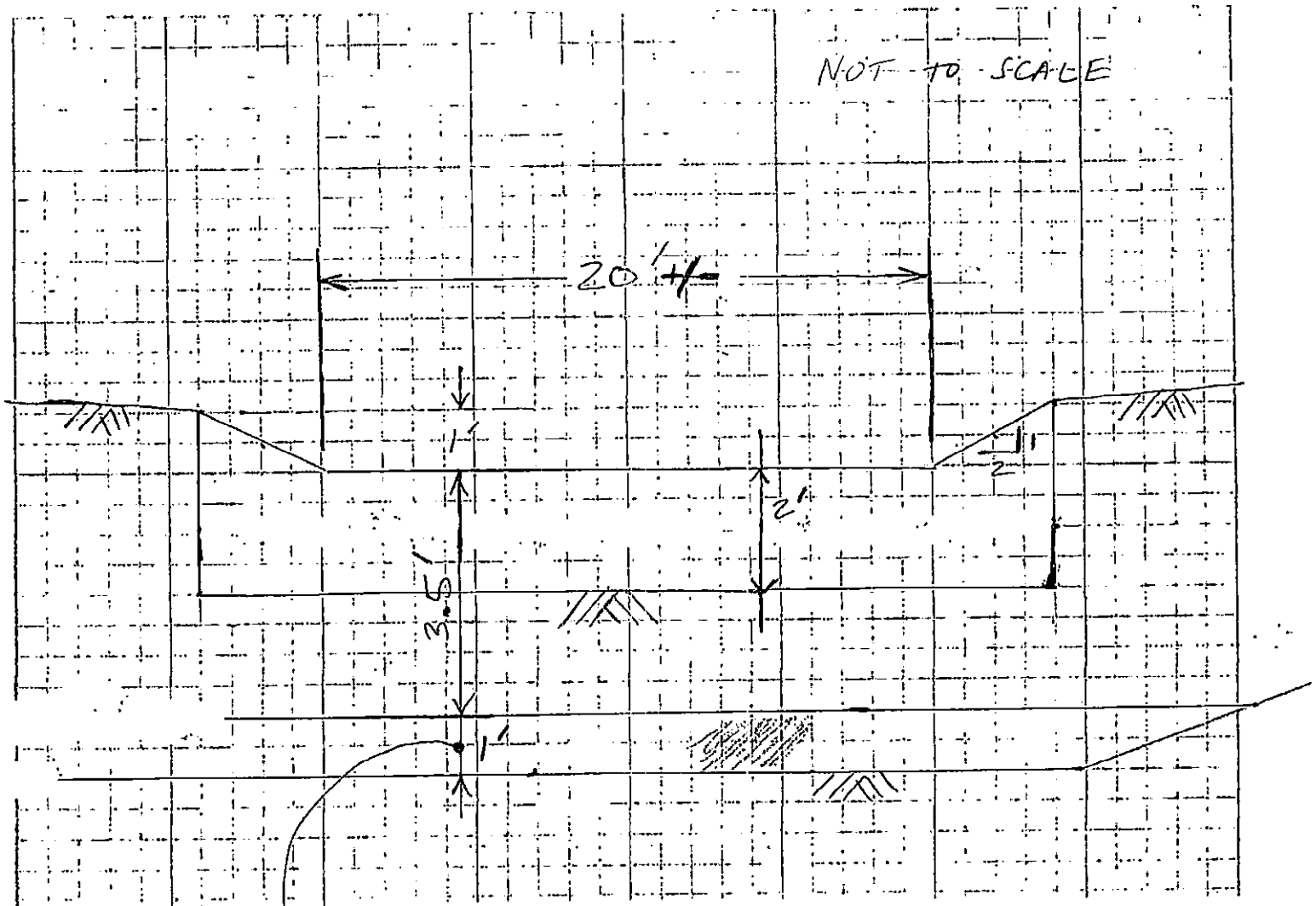
		sub		infiltration
sub		shed		basin
shed		area	vol	capacity
ID	IB ID #	AC	AC-ft	AC-ft
s02	1,2	2.08	0.50	0.56
s11	3	1.71	0.41	0.58
s17	4,5	4.36	1.04	1.17
s25	6,7	4.88	1.16	1.20
totals	---->	13.03	3.11	3.51

Note: assumed depth = 3.5' minimum

EEWeb

→ CONC. POND HIGH FLOW OUTLET OR WEIR

TITLE	
NAME mra	DATE 12-12-13



1' over excavate basin bottom and replace with 1' lift of sand

Steel reinforcement tbd

Width = 12"

use a concrete strength = 3,500 to 4,000 psi or 6 sacks

Sacramento Hydrologic Calculator Report

December 12, 2013 15:30

Project Title: Calvine Meadows
Comments:
Prepared by: Mike Anderson

Method: Sacramento County HEC-1 method
Date: 12/12/2013

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
WS001	6.76	59	Travel Time	-	-	-	Computed	-	Specified	50

Travel Time Component Method Data for Lag Time Computation

	Overflow		Gutter Flow			Channel and Pipe Flow					
Watershed	Land Use	Slope (ft/ft)	Length (ft)	Slope (ft/ft)	Side Slope (ft/ft)	Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Design or Flow (cfs)	Mannings "n"
WS001	Residential	-	-	-	-	-	-	-	-	-	-

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
WS001	B																		
	C																		
	D									6.76									

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

S:\Job Files\Elk Grove\9450 Calvine Rd\sc.hecout
Jump to: runoff summary | index

```
 INPUT  FILENAME ====>S:\Job Files\Elk Grove\9450 Calvine Rd\sc.dat
 OUTPUT FILENAME ===>S:\Job Files\Elk Grove\9450 Calvine Rd\sc.hecout
 DSS FILENAME --=>hcalc.dss
```

```
*****************************************                                     ****************************************
*                                       *                                     *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1L)  *                                     *   U.S. ARMY CORPS OF ENGINEERS       *
*           JULY    1998                *                                     *   HYDROLOGIC ENGINEERING CENTER      *
*           VERSION 4.1(L)              *                                     *        609 SECOND STREET             *
*                                       *                                     *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE   12DEC13  TIME   15:19:31  *                                     *          (916) 756-1104              *
*                                       *                                     *                                      *
*****************************************                                     ****************************************
```

```
X     X  XXXXXXX   XXXXX            X   X
X     X  X        X     X          XX   X
X     X  X        X                 X   X
XXXXXXX  XXXX     X         XXXXX   X   X
X     X  X        X                 X   X
X     X  X        X     X           X   X
X     X  XXXXXXX   XXXXX           XXX  XXXX
```

```
Special version of HEC-1 with Extra-large array
Modified by David Ford Consulting Engineers (2000)
 Program dimensions:
 Number of hydrograph ordinates: 20000
 Unit hydrograph ordinates: 3000
```

```
THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM
```

```
                                         HEC-1L INPUT                                                 PAGE  1

 LINE       ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

            * SacCalc, developed by David Ford Consulting Engineers
            * File generated 12/12/2013 15:19:31
            *
   1        ID
            * Lag computation for station WS001
            *   Travel times: To:    9.00, Tq:    0.00, Tp+Tc:    0.00
            *   Resulting lag:     9.0 minutes
            * End of lag computations
            *
            *   NMIN  JXDATE  JXTIME      NQ            CENT
   2        IT       1 31DEC99     2400      783                   1900
            *   IPRT    IPLT
   3        IO       3       0
            *

   4        KK  WS001
            *  JXMIN    Time interval for input data
   5        IN       5
   6        KM
            *
            * Design storm construction details
            *
            * Regional multiplier (zone 2) applied:  1.000
            * Areal adjustment using area:  0.004
            *   multiplier from table 4-4: 1.0000
            *
            * Adjusted depths for each duration from table 4-1: frequency: 100
            * Duration----Regional------Elev-----Areal (adjustments)
            * 5 min          0.4400     0.4400     0.4400
            * 10 min         0.6200     0.6200     0.6200
            * 15 min         0.7300     0.7300     0.7300
            * 30 min         0.9400     0.9400     0.9400
            * 1 hour         1.2100     1.2100     1.2100
            * 2 hours        1.5900     1.5900     1.5900
            * 3 hours        1.8500     1.8500     1.8500
            * 6 hours        2.5000     2.5000     2.5000
            * 12 hours       3.3000     3.3000     3.3000
            * 24 hours       4.2500     4.2500     4.2500
            * 36 hours       5.0900     5.0900     5.0898
            * 2 days         5.7000     5.7000     5.7000
```

```
                      * 3 days          6.8000      6.8000      6.8000
                      * 5 days          8.4200      8.4200      8.4197
                      * 10 days        11.0100     11.0100     11.0096
                      * Storm duration:  12, length:  144 ordinates
     7                PB       0
     8                PI  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111
     9                PI  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111
    10                PI  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111
    11                PI  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0181  0.0181  0.0181  0.0181
    12                PI  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181
    13                PI  0.0181  0.0181  0.0181  0.0181  0.0217  0.0217  0.0217  0.0217  0.0217  0.0217
    14                PI  0.0317  0.0317  0.0317  0.0317  0.0317  0.0317  0.0450  0.0450  0.0450  0.0700
    15                PI  0.1100  0.4400  0.1800  0.0700  0.0700  0.0450  0.0450  0.0450  0.0317  0.0317
    16                PI  0.0317  0.0317  0.0317  0.0317  0.0217  0.0217  0.0217  0.0217  0.0217  0.0217
    17                PI  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181
```

```
                                          HEC-1L INPUT                                          PAGE  2

 LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

    18                PI  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181  0.0181  0.0111  0.0111
    19                PI  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111
    20                PI  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111
    21                PI  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111  0.0111
    22                PI  0.0111  0.0111  0.0111  0.0111
                      *
                      * Precipitation losses computation (Chapter 5)
                      *   Computing CNSTL (infiltration rate) from soil type and table 5-2
                      *  TAREA   subbasin area (sq mi)
    23                BA  0.0039
                      *  STRTL   CNSTL   RTIMP
    24                LU    0.10   0.070  50.000
                      *
                      * Runoff hydrograph computation (Chapter 6)
                      *   Using basin lag:   9.0 minutes
                      *   Using unit duration (Step 2): 1. min
                      *   Lag Time + Unit Duration / 2 (Step 3):  9.50000
                      *   Volume of runoff (Step 4) V=     0.104194
    25                UI   1.093   2.459   4.056   5.927   8.159  10.879  12.909  13.017  11.715   9.493
    26                UI   7.930   6.648   5.729   4.935   4.259   3.733   3.282   2.906   2.586   2.324
    27                UI   2.104   1.891   1.718   1.591   1.476   1.356   1.259   1.173   1.078   1.003
    28                UI   0.929   0.859   0.803   0.742   0.686   0.642   0.594   0.553   0.511   0.475
    29                UI   0.435   0.402   0.375   0.347   0.324   0.305   0.284   0.263   0.242   0.222
    30                UI   0.208   0.194   0.180   0.167   0.158   0.145   0.138
    31                ZW   C=FLOW F=100YR-12HR A=CALVINE
    32                ZZ
```

```
***************************************                          ***************************************
*                                     *                          *                                     *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1L) *                          *    U.S. ARMY CORPS OF ENGINEERS     *
*            JULY    1998             *                          *  HYDROLOGIC ENGINEERING CENTER      *
*         VERSION 4.1(L)              *                          *        609 SECOND STREET            *
*                                     *                          *     DAVIS, CALIFORNIA 95616         *
* RUN DATE   12DEC13  TIME  15:19:31  *                          *        (916) 756-1104               *
*                                     *                          *                                     *
***************************************                          ***************************************
```

```
  3 IO           OUTPUT CONTROL VARIABLES
                       IPRNT            3  PRINT CONTROL
                       IPLOT            0  PLOT CONTROL
                       QSCAL           0.  HYDROGRAPH PLOT SCALE

    IT           HYDROGRAPH TIME DATA
                        NMIN            1  MINUTES IN COMPUTATION INTERVAL
                       IDATE      31DEC99  STARTING DATE
                       ITIME         0000  STARTING TIME
                          NQ          783  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE       1JAN 0  ENDING DATE
                      NDTIME         1302  ENDING TIME
                       ICENT           19  CENTURY MARK

                  COMPUTATION INTERVAL    0.02 HOURS
                       TOTAL TIME BASE   13.03 HOURS

        ENGLISH UNITS
            DRAINAGE AREA           SQUARE MILES
            PRECIPITATION DEPTH     INCHES
            LENGTH, ELEVATION       FEET
            FLOW                    CUBIC FEET PER SECOND
            STORAGE VOLUME          ACRE-FEET
            SURFACE AREA            ACRES
            TEMPERATURE             DEGREES FAHRENHEIT

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
```

```
              ***************
              *             *
   4 KK       *    WS001    *
              *             *
              ***************

   5 IN             TIME DATA FOR INPUT TIME SERIES
                         JXMIN          5  TIME INTERVAL IN MINUTES
                         JXDATE   31DEC99  STARTING DATE
                         JXTIME      2400  STARTING TIME

                   SUBBASIN RUNOFF DATA

  23 BA             SUBBASIN CHARACTERISTICS
                          TAREA,      0.00  SUBBASIN AREA

                    PRECIPITATION DATA

   7 PB                   STORM       3.30  BASIN TOTAL PRECIPITATION

   8 PI               INCREMENTAL PRECIPITATION PATTERN
```

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.02	0.02	0.02	0.02	0.02	0.09	0.09	0.09	0.09	0.09
0.04	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

```
24 LU          UNIFORM LOSS RATE
                  STRTL        0.10  INITIAL LOSS
                  CNSTL        0.07  UNIFORM LOSS RATE
                  RTIMP       50.00  PERCENT IMPERVIOUS AREA

23 UI          INPUT UNITGRAPH,  57 ORDINATES,  VOLUME = 0.99
                  1.1     2.5     4.1     5.9     8.2    10.9    12.9    13.0    11.7     9.5
                  7.9     6.6     5.7     4.9     4.3     3.7     3.3     2.9     2.6     2.3
                  2.1     1.9     1.7     1.6     1.5     1.4     1.3     1.2     1.1     1.0
                  0.9     0.9     0.8     0.7     0.7     0.6     0.6     0.6     0.5     0.5
                  0.4     0.4     0.4     0.3     0.3     0.3     0.3     0.3     0.2     0.2
                  0.2     0.2     0.2     0.2     0.2     0.1     0.1

                                                 ***

   ***           ***           ***           ***           ***

                  HYDROGRAPH AT STATION   WS001

 TOTAL RAINFALL =   3.30, TOTAL LOSS =   0.44, TOTAL EXCESS =   2.86

PEAK FLOW     TIME                      MAXIMUM AVERAGE FLOW
  (CFS)       (HR)              6-HR       24-HR       72-HR     13.03-HR
     7.       6.08      (CFS)      1.          1.          1.          1.
                      (INCHES)  2.266       2.836       2.836       2.836
                       (AC-FT)     0.          1.          1.          1.

                 CUMULATIVE AREA =    0.00 SQ MI
```

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	WS001	7.	6.08	1.	1.	1.	0.00		

*** NORMAL END OF HEC-1L ***

Index to station computation sections
WS001

References

http://www.egpublicworks.org/pdfs/sdmp-volume-ii.pdf

http://www.beriverfriendly.net/docs/files/File/NewDev/2013-DRAFT_SWQ-Design-Manual.pdf

http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=69

http://swmaintenance.com/?page_id=1160

INTRODUCTION

The California Environmental Quality Act (CEQA) Guidelines, Section 15091(d), requires public agencies, as part of the certification of an environmental impact report, to adopt a reporting and monitoring program to ensure that changes made to the project as conditions of project approval to mitigate or avoid significant environmental effects are implemented. The Mitigation Monitoring and Reporting Program (MMRP) contained herein is intended to satisfy the requirements of CEQA as they relate to the Calvine Meadows Project (Project) in the City of Elk Grove (City). The MMRP is intended to be used by City staff and mitigation monitoring personnel during implementation of the Project.

The MMRP will provide for monitoring of construction activities as necessary, in-the-field identification and resolution of environmental concerns, and reporting to City staff. The MMRP will consist of the components described below.

COMPLIANCE CHECKLIST

Table 1 contains a compliance-monitoring checklist that identifies all newly adopted mitigation measures, identification of agencies responsible for enforcement and monitoring, and timing of implementation.

FIELD MONITORING OF MITIGATION MEASURE IMPLEMENTATION

During construction of the Project, the City of Elk Grove's designated construction inspector will be responsible for monitoring the implementation of mitigation measures. The inspector will report to the City of Elk Grove Department of Public Works, and will be thoroughly familiar with all plans and requirements of the project. In addition, the inspector will be familiar with construction contract requirements, construction schedules, standard construction practices, and mitigation techniques. Aided by Table 1, the inspector will typically be responsible for the following activities:

1. On-site, day to day monitoring of construction activities;
2. Reviewing construction plans to ensure conformance with adopted mitigation measures;
3. Ensuring contractor knowledge of and compliance with all appropriate conditions of project approval;
4. Evaluating the adequacy of construction impact mitigation measures, and proposing improvements to the contractors and City staff;
5. Requiring correction of activities that violate project mitigation measures, or that represent unsafe or dangerous conditions. The inspector shall have the ability and authority to secure compliance with the conditions or standards through the City of Elk Grove Public Works Department, if necessary;
6. Acting in the role of contact for property owners or any other affected persons who wish to register observations of violations of project mitigation measures, or unsafe or dangerous conditions. Upon receiving any complaints, the inspector shall immediately contact the construction representative. The inspector shall be responsible for verifying any such observations and for developing any necessary corrective actions in consultation with the construction representative and the City of Elk Grove Public Works Department;
7. Maintaining prompt and regular communication with City staff;

8. Obtaining assistance as necessary from technical experts, such as archaeologists and wildlife biologists, to develop site-specific procedures for implementing the mitigation measures adopted by the City for the Project. For example, it may be necessary at times for a wildlife biologist to work in the field with the inspector and construction contractor to explicitly identify and mark areas to be avoided during construction; and

9. Maintaining a log of all significant interactions, violations of permit conditions or mitigation measures, and necessary corrective measures.

PLAN CHECK

Many mitigation measures will be monitored via plan check during Project implementation. City staff will be responsible for monitoring plan check mitigation measures.

MITIGATION MONITORING AND REPORTING PROGRAM

MM Number	Mitigation Measure	Timing/ Implementation	Enforcement/ Monitoring	Verification (date and Signature)
AIR-1	To ensure generation of PM_{10} does not exceed standards, ground-disturbing activities during construction shall not exceed the SMAQMD's screening criterion of 15 acres on any day.	During construction activities	City of Elk Grove Planning Department	
BIO-1	**Implementation of Standard Avoidance Measures for Giant Garter Snake.** The Project proponent shall implement all of the minimization and avoidance measures found in Appendix C of the 1997 *Programmatic Consultation with the US Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California* (USFWS file #1-1-F-97-149), except the restriction of construction only occurring between May 1 and October 1. a) Exclusionary fencing shall be installed at the limits of the temporary construction zone to protect adjacent, undisturbed giant garter snake habitat. The exclusionary fencing shall be maintained by the construction contractor during all phases of construction. Any breaches in the fencing shall be fixed within a 24-hour period. b) The Project proponent or contractor shall prohibit the use of plastic, monofilament, jute, or similar erosion control matting that could entangle snakes at the Project site. c) Within 24 hours of the commencement of ground-disturbing activities, the Project site shall be inspected for giant garter snakes by a qualified biologist. The survey shall be repeated if a lapse in construction activities of two	Prior to construction activities	City of Elk Grove Planning Department	

MM Number	Mitigation Measure	Timing/ Implementation	Enforcement/ Monitoring	Verification (date and Signature)
	weeks or greater occurs. If a giant garter snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or until it has been determined that the snake will not be harmed. All sightings and incidental take shall be reported to the USFWS immediately via telephone at (916) 414-6600. d) After completion of construction activities, the Project proponent or contractor shall remove any temporary fill and construction debris and restore temporarily disturbed areas to pre-Project conditions. Restoration work may include such activities as reseeding upland areas that have been disturbed.			
BIO-2	**Western Pond Turtle Preconstruction Surveys.** Prior to implementation of construction activities within 100 feet of Laguna Creek, the Project applicant shall retain qualified biologists to conduct a survey for western pond turtle no more than three days prior to initiation of construction activities. If this species is documented near any proposed construction areas, the individual(s) shall be moved at least 500 feet downstream to suitable habitat. If individuals are observed during construction activities, all construction activities shall be halted, a qualified biologist shall be notified, and the qualified biologist shall relocate the individual prior to continuing construction activities. If active nest sites are identified during the survey, the Project applicant shall impose a limited operating period (LOP) within 100 feet of all active nest sites prior to commencement of any construction activities to avoid construction or access-related disturbances to western pond turtles. An LOP constitutes a period during which Project-related activities (i.e., vegetation removal, earth moving, and construction) shall not occur and shall be	Prior to construction activities	City of Elk Grove Planning Department	

MM Number	Mitigation Measure	Timing/ Implementation	Enforcement/ Monitoring	Verification (date and Signature)
	imposed within 100 feet of any active nest sites until the eggs hatch or the nest is moved to an appropriate location as authorized by the CDFW.			
BIO-3	**Western Spadefoot Preconstruction Surveys.** Prior to the start of construction activities that would disturb western spadefoot habitat (within 1,000 feet of seasonal wetlands), a biological monitor shall survey for the presence of adult spadefoots. If adult spadefoots are present, they shall be relocated prior to disturbance of habitat, if feasible. This relocation shall be done in consultation with the CDFW.	Prior to construction activities	City of Elk Grove Planning Department	
BIO-4	**Burrowing Owl Preconstruction Surveys.** If clearing and construction activities will occur during the nesting period for burrowing owls (February 1–August 31), a qualified biologist shall conduct preconstruction surveys for burrowing owls on and adjacent to the Project site within 14 days prior to construction initiation. Surveys shall be conducted in accordance with the CDFW's *Staff Report on Burrowing Owl Mitigation* (Staff Report), published March 7, 2012. Surveys shall be repeated if Project activities are suspended or delayed for more than 15 days during nesting season. If no burrowing owls are detected, no further mitigation is required. If active burrowing owls nest sites are detected, the Project proponent shall implement the avoidance, minimization, and mitigation methodologies outlined in the CDFW's Staff Report prior to initiating Project-related activities that may impact burrowing owls.	Prior to construction activities	City of Elk Grove Planning Department	
BIO-5	**Raptor Surveys.** If clearing and/or construction activities will occur during the raptor nesting season (January 15–August 15), preconstruction surveys to identify active raptor nests shall be conducted by a qualified biologist within 14 days of construction initiation. Focused surveys must be performed by a qualified biologist for the purposes of determining presence/absence of	Prior to construction activities	City of Elk Grove Planning Department	

MM Number	Mitigation Measure	Timing/ Implementation	Enforcement/ Monitoring	Verification (date and Signature)
	active nest sites within the proposed impact area, including construction access routes and a 1,000-foot buffer (if feasible). If no active nests are found, no further mitigation is required. Surveys shall be repeated if construction activities are delayed or postponed for more than 30 days. If active white-tailed kite or other raptor (excluding Swainson's hawk) nest sites are identified within 1,000 feet of Project activities, the applicant shall impose a 500-foot setback to all active nest sites prior to commencement of any Project construction activities to avoid construction or access-related disturbances to nesting raptors. Project-related activities (i.e., vegetation removal, earth moving, and construction) shall not occur within the setback until the nest is deemed inactive. Activities permitted within setbacks and the size of setbacks may be adjusted through consultation with the City. If active Swainson's hawk nest sites are identified within 1,000 feet of Project activities, the applicant shall impose a 1,000-foot setback to all active nest sites prior to commencement of any construction activities to avoid construction or access-related disturbances to nesting raptors. Project-related activities (i.e., vegetation removal, earth moving, and construction) shall not occur within the setback until the nest is deemed inactive. Activities permitted within setbacks and the size of setbacks may be adjusted through consultation with the CDFW.			
BIO-6	**Nesting Bird Surveys.** If clearing and/or construction activities will occur during the migratory bird nesting season (April 15–August 15), preconstruction surveys to identify active migratory bird nests shall be conducted by a qualified biologist within 14 days prior to construction initiation. Focused surveys must be performed by a qualified biologist for the purposes of determining the presence/absence of active nest sites within the proposed impact	Prior to construction activities	City of Elk Grove Planning Department	

MM Number	Mitigation Measure	Timing/ Implementation	Enforcement/ Monitoring	Verification (date and Signature)
	area, including construction access routes and a 200-foot buffer (if feasible). If active nest sites are identified within 200 feet of Project activities, the applicant shall impose an LOP for all active nest sites prior to commencement of any Project construction activities to avoid construction- or access-related disturbances to migratory bird nesting activities. An LOP constitutes a period during which Project-related activities (i.e., vegetation removal, earth moving, and construction) shall not occur, and shall be imposed within 100 feet of any active nest sites until the nest is deemed inactive. Activities permitted within and the size (i.e., 100 feet) of LOPs may be adjusted through consultation with the City.			
BIO-7	**Swainson's Hawk Foraging Habitat.** The Project applicant shall mitigate for the loss of Swainson's hawk foraging habitat at a 1:1 ratio. Mitigation can be accomplished through the City of Elk Grove Swainson's Hawk Impact Mitigation Fees Ordinance (if applicable) or through the conservation of farmland of equal or greater forage value. A conservation easement approved by the City must be established for conserved farmlands.	Prior to construction activities	City of Elk Grove Planning Department	
BIO-8	**Biological Monitoring and Worker Environmental Awareness Training.** A qualified biologist(s) shall monitor construction activities that could potentially cause significant impacts to sensitive biological resources. In addition, the Project proponent shall retain a qualified biologist to conduct mandatory contractor/worker awareness training for construction personnel. The awareness training shall be provided to all construction personnel to brief them on the identified location(s) of sensitive biological resources, including how to identify species with the potential to occur in the construction area and the need to avoid impacts to biological resources (e.g., wildlife and jurisdictional waters), and to brief them on the penalties for not complying with biological mitigation	Prior to and ongoing during construction	City of Elk Grove Development Services	

MM Number	Mitigation Measure	Timing/ Implementation	Enforcement/ Monitoring	Verification (date and Signature)
	requirements. If new construction personnel are added to the Project, the contractor shall ensure that they receive the mandatory training before starting work.			
GHG-1	Prior to building permit approval, the City of Elk Grove Planning Department shall require that the Project implement the following to reduce GHG emissions, based on the referenced measures from the City's Climate Action Plan: a) All buildings shall achieve Tier 1 of Title 24, Part 1 green building standards to exceed minimum Title 24 energy efficiency standards by 15 percent, consistent with CAP Measure BE-6. b) All buildings shall achieve Tier 1 of Title 24, Part 1 green building standards to required 65 percent waste diversion, consistent with CAP Measure RC-1. c) All buildings shall include prewiring for solar photovoltaic (PV), consistent with CAP Measure BE-10. The intent of prewiring for solar PV systems is to reduce barriers to later installation of on-site solar PVs. Future development under the proposed Project may also satisfy the intent of this mitigation by installing on-site solar PV systems.	Prior to final design, building permit issuance	City of Elk Grove Planning Department	
GEO-1	Prior to issuance of a grading permit, the final construction plans shall be designed in accordance with the recommendations of the geotechnical exploration report prepared by KC Geotechnical Engineering Consultants on March 5, 2013 (**Appendix E**), such as stripping of surface soils and recompacting in accordance with accepted standards.	Prior to issuance of a grading permit	City of Elk Grove Planning Department	
NOI-1	The Project shall include a sound wall to reduce exterior noise levels in outdoor activity areas of Lots 1 through 5. The height of	Prior to issuance of building	City of Elk Grove	

MM Number	Mitigation Measure	Timing/ Implementation	Enforcement/ Monitoring	Verification (date and Signature)
	the wall shall be determined by a qualified acoustical professional, to achieve a 60 dB L_{dn} exterior noise level, if feasible, in outdoor activity areas. If a 60 dB L_{dn} exterior noise level is not feasible with a wall height that is consistent with applicable design standards, a wall that achieves up to a maximum of 65 dB L_{dn}, as determined by an acoustical engineer, may be installed	permit	Planning Department	

TENTATIVE SUBDIVISION MAP

CALVINE MEADOWS

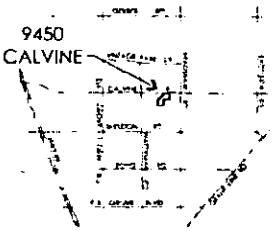
CITY OF ELK GROVE, CALIFORNIA

JANUARY 8, 2016

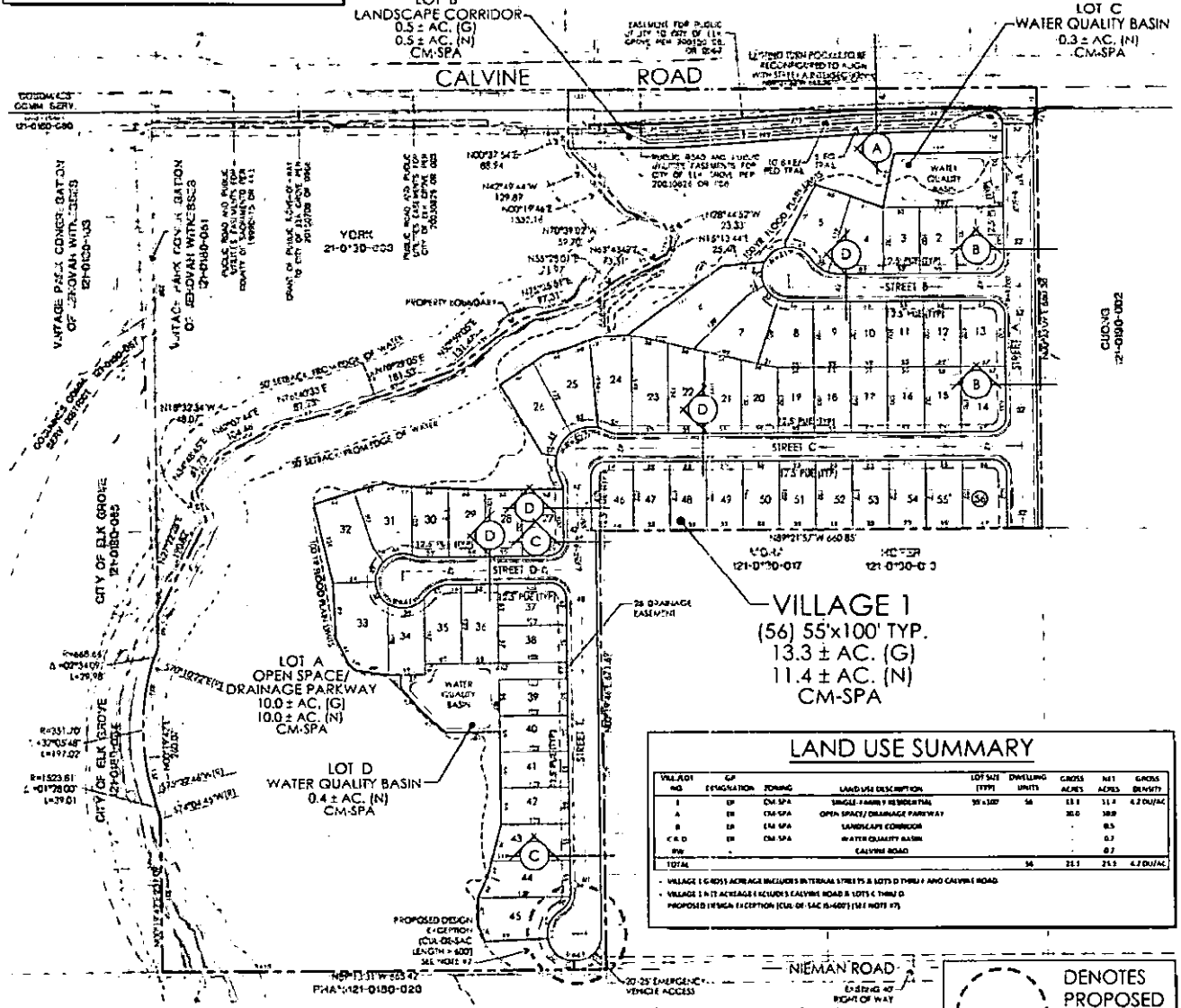
PROJECT NOTES

LEGAL DESCRIPTION

LOCATION MAP



LAND SURVEYOR STATEMENT

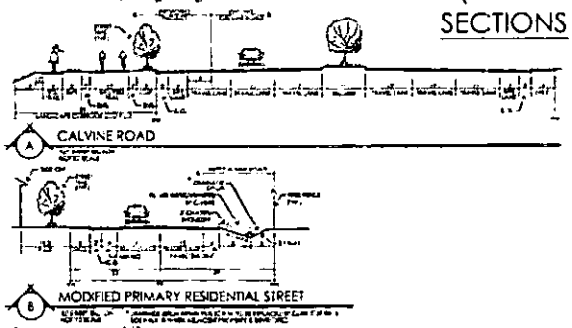


LAND USE SUMMARY

VILLAGE NO.	GP DESIGNATION	ZONING	LAND USE DESCRIPTION	LOT SIZE (TYP.)	DWELLING UNITS	GROSS ACRES	NET ACRES	GROSS DENSITY
1	SF	CM-SPA	SINGLE-FAMILY RESIDENTIAL	55'x100'	56	13.3	11.4	4.2 DU/AC
A	SF	CM-SPA	OPEN SPACE/ DRAINAGE PARKWAY			10.0	10.0	
B	SF	CM-SPA	LANDSCAPE CORRIDOR			1.0	0.5	
C & D	SF	CM-SPA	WATER QUALITY BASIN			0.7	0.7	
R/W	-	-	CALVINE ROAD			-	0.7	
TOTAL					56	25.0	23.3	4.2 DU/AC

- VILLAGE 1 GROSS ACREAGE INCLUDES INTERNAL STREETS & LOTS D THRU F AND CALVINE ROAD.
- VILLAGE 1 NET ACREAGE EXCLUDES CALVINE ROAD & LOTS C THRU D.
- PROPOSED DESIGN EXCEPTION (CAL OF SAC IS-400') (SEE NOTE #7)

SECTIONS



DENOTES PROPOSED DESIGN EXCEPTION

ENGINEER

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C St, Bldg. 100-B Tel 916.341.7760
Sacramento, CA 95816 Fax 916.341.7767

Exhibit D
Conditions of Approval
EG-13-018 – Calvine Meadows Tentative Subdivision Map

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
On-Going				
1.	The development approved by this action is for a Tentative Subdivision Map to create the following, as illustrated in the attached Exhibit B (hereinafter the "Project") and as modified or conditioned by these conditions of approval: • 56 lots for standard single family (Village 1) • 1 open space/drainage parkway lot (Lot A) • 1 landscape corridor lot (Lot B) • 2 water quality basin lots (Lots C and D) Deviations from the approved plans shall be reviewed by the City for substantial compliance and may require amendment by the appropriate hearing body.	On Going	Planning	
2.	This action does not relieve the Applicant of the obligation to comply with all codes, laws, statutes, regulations, and procedures.	On Going	Planning	
3.	The Applicant/Property Owner and any Successors in Interest (hereby referred to as the "Applicant") shall indemnify, protect, defend, and hold harmless the City, its officers, officials, agents, employees, and volunteers from and against any and all claims, damages, demands, liability, costs, losses or expenses including without limitation court costs, reasonable attorney's fees and expert witness fees arising out of this Project including challenging the validity of this approval or any environmental or other documentation related to approval of this Application.	On Going	Planning	
4.	Except as otherwise specified or provided for on the Tentative Subdivision Map or in these conditions, the Project shall conform to the development standards and design requirements provided in the City of Elk Grove Municipal Code (EGMC), specifically including but not limited to the following: • The Calvine Meadows Special Planning Area (CMSPA) • The Elk Grove Zoning Code (Title 23 of the EGMC) • EGMC Chapter 19.12 (Tree Preservation and Protection) • EGMC Chapter 14.10 (Water Efficient Landscape Requirements) • Citywide Design Guidelines	On Going	Planning Public Works	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
5.	The open space (Lot A) and the ditches within the right-of-way shown on the tentative map shall be privately maintained to the satisfaction of the City.	On-Going	Engineering	
6.	The Applicant shall design and construct all improvements in accordance with the City of Elk Grove Improvement Standards, as further conditioned herein, and to the satisfaction of Engineering. All street improvements shall include vertical curb and gutter, except adjacent to lots where front-on residential access is provided, in which case street improvements shall include rolled curb and gutter. Specific locations on median(s) that require emergency vehicle access will be evaluated during review and acceptance of the Improvement Plans. Public sewer, water, and other utility infrastructure shall be designed and constructed in accordance with the standards of the appropriate utility.	On Going	Public Works EGWS SASD SMUD PG&E	
7.	The Applicant shall pay all plan check fees, impact fees, or other costs as required by the City, the Cosumnes Community Services District (CCSD), Sacramento Area Sewer District (SASD), Sacramento County Water Agency (SCWA), Elk Grove Water Service (EGWS), or other agencies or services providers as established by law.	On-Going	Planning Public Works CCSD EGWS Sewer	
8.	Approval of this Project does not relieve the Applicant from the requirements of subsequent permits and approvals, including but not limited to the following: • Master home plan design review • Commercial design review • Grading Permit and Improvement Plan • Final Map • Building Permit and Certificate of Occupancy • Section 404, 401, 1602, or other State or Federal environmental permit • Requirements of the Sacramento Metropolitan Air Quality Management District • Fire permit	On-Going	Planning Public Works Building CCSD EGWS Sewer	
Prior To or In Conjunction With Improvement and/or Grading Plan Approval				

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
9.	The development approved by this action is subject to the Mitigation Monitoring and Reporting Program (MMRP) adopted as part of the Project. A deposit of $5,000 for monitoring mitigation measures applicable to this development shall be paid to the City in order to assure MMRP compliance. If actual City monitoring costs exceed the initial estimate, a revised estimate and/or supplemental bill(s) shall be submitted to the Applicant. If actual City monitoring costs are less than the initial estimate, the difference will be refunded to the Applicant. If the Project is constructed in phases between multiple parties, additional deposit(s) shall be required to the satisfaction of the Planning Director.	Prior to issuance of any plans or permits associated with this project, the Applicant shall submit the deposit to the City of Elk Grove.	Planning	
10.	The Planning Division shall be notified immediately if any prehistoric, archaeological, or paleontological artifact is uncovered during construction. All construction must stop and an archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology shall be retained to evaluate the finds and recommend appropriate action. A note stating the above shall be placed on the Improvement Plans.	Improvement Plan	Planning	
11.	All construction must stop if any human remains are uncovered, and the County Coroner must be notified according to Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the procedures outlined in CEQA Section 15064.5 (d) and (e) shall be followed. A note stating the above shall be placed on the Improvement Plans	Improvement Plans	Planning	
12.	Applicant shall prepare and submit a drainage study to the satisfaction of the City and in accordance with City of Elk Grove Storm Drainage Master Plan, Improvement Standards, General Plan, and any other applicable drainage master plans or studies.	Improvement Plan or Grading Permit(s) Whichever Occurs First	Engineering	
13.	The Applicant shall prepare and submit a Post-Construction Stormwater Quality Control Plan in accordance with the City of Elk Grove Improvement Standards and most recent version of the *Stormwater Quality Design Manual* for the Sacramento Region. The Applicant shall also submit a separate maintenance manual describing proper maintenance practices for the specific treatment controls to be constructed.	Improvement Plan or Grading Permit(s) Whichever Occurs First	Engineering	
14.	The Applicant shall apply for and obtain an encroachment permit for the on-going maintenance of the ditches that are located within the right-of-way to the satisfaction of the City.	Improvement Plan	Engineering	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
15.	The Applicant shall construct and install landscaped corridors according to the plans and specifications approved by the City and CSD.	Improvement Plans	CSD Parks	
16.	The Applicant shall submit landscape and civil improvement plans and specifications for corridors to the CSD for review and approval.	Improvement Plans	CCSD Parks	
17.	All real property within the boundaries of the proposed project is within a benefit zone of the District Wide Landscape & Lighting Assessment District. Prior to rezoning the property, recording any final maps, approving improvement plans, or issuing any building permits; the owners of all real property within the boundaries of a project shall execute and deliver to the CSD a written petition in an acceptable form approved by the CSD consenting to: (i) the formation of the existing District Wide Assessment District and the methodology adopted to allocate the cost to the various land uses; (ii) when necessary the annexation to the appropriate zone of benefit created to fund urban services, (iii) the budget, formulas and cost of living indexes use to establish the amount of the annual assessments; and (iv) the levying of the annual assessment to fund the maintenance, operation and in some instances the existing capital costs of parks, parkways, corridors, medians, open space, trail systems lakes, creeks and other recreational and aesthetic amenities.	Improvement Plans	Planning CCSD Parks	
18.	Partial open fencing, consisting of half-height block wall and half-height tubular steel, shall be installed on all homeowner parcels along the Open Space/Drainage Parkway (Lot A). The fencing shall be non-combustible and shall be designed consistent with the rural character of the area and to the satisfaction of the Development Services Department, CSD Fire, and CSD Parks. The fence is on the homeowner's property. Accordingly, general maintenance, repair or replacement of the fence is the responsibility of the homeowner.	Improvement Plans	Planning CCSD Parks	
19.	All development shall be serviced by public sewer to the satisfaction of Sacramento Area Sewer District. Each lot with a sewage source shall have a separate connection to the public system. If there is more than one building on any lot and the lot is not proposed for split, then each building on that lot shall have a separate connection to a private on-site sewer line or SASD public sewer line.	Improvement Plans	SASD	
20.	In order to obtain sewer service for this Project, construction of both off-site and on-site SASD sewer infrastructure will be required. SASD Design Standards shall apply to any on- and off-site sewer construction.	Improvement Plans	SASD	
21.	Water supply shall be provided by the Sacramento County Water Agency to each building.	Improvement Plans	SCWA	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
22.	All abandoned wells on the proposed Project site shall be destroyed in accordance with the requirements of the Sacramento County Environmental Health Division. Clearly show all abandoned/destroyed wells on the improvement plans for the Project. Prior to abandoning any existing agricultural wells, Applicant shall use water from agricultural wells for grading and construction.	Improvement Plans	SCWA	
23.	Separate public water service shall be provided to each parcel. All water lines shall be located within the public right-of-way or within easements dedicated to SCWA. Easements shall be reviewed and approved by SCWA prior to Improvement Plan approval or Final Map approval.	Improvement Plans/Final Map	SCWA	
Prior To or In Conjunction With Final Map Recordation				
24.	All parcels to be dedicated in fee to the City, as a condition of this tentative map, shall not be encumbered with any easements nor shall it be subject to a deed of trust at the time of the dedication on the final map. A partial re-conveyance for any deed of trust shall be submitted along with the final map for City Council Approval. The Applicant shall also provide title insurance in conjunction with all fee title dedications to the City of Elk Grove.	Final Map	Engineering	
25.	The granting of any easement to any other person(s) or entity, once the tentative map has been approved is prohibited. Should such grant be inadvertently provided it shall be subordinated to any dedication of streets or easements to the City of Elk Grove as shown on the final map. A subordination document shall be submitted along with the final map for City Council approval.	Final Map	Engineering	
26.	This subdivision is a "Planned Development" under Section 4175 of the California Civil Code where the owners of the individual lots will have rights to the common areas, Lots A and the ditches within the roadway as shown hereon. With those rights comes a burden to maintain those common areas. If a Home Owner's Association (HOA) is properly created, the HOA will be responsible for the maintenance of the common areas including the open space and ditches within the roadway in perpetuity. Should such HOA never be created or decline to take responsibility of the maintenance of the common areas each individual lot shall be responsible for such maintenance. Such responsibility shall be recorded as a covenant on each individual lot to provide notice to the Homeowner of the requirements to maintain the open space and ditches should the HOA not assume such responsibility at any time.	Final Map	Engineering	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
27.	The Applicant shall design and construct maintenance roads to provide entry from the public streets to the floodplain limit. Locations and improvements of the maintenance roads shall be determined at Improvement Plan submittal and shall be to the satisfaction of the City.	Final Map	Engineering	
28.	The Applicant shall dedicate, design, and construct all internal streets as shown on the tentative map to the satisfaction of the City.	Final Map	Engineering	
29.	The Applicant shall dedicate an easement over Lot 'A' to the City for all purposes including, but not limited to, floodway, drainage, and future access road/trail to the satisfaction of the City.	Final Map	Engineering	
30.	The Applicant shall dedicate the drainage basins (Lots 'C' and 'D') to the City in fee title. A deposit of $5,000 shall be paid to the City to establish an initial fund for the on-going maintenance costs of the basins.	Final Map	Engineering	
31.	The Applicant shall dedicate a 12.5 foot utility easement to the City of Elk Grove for underground facilities and appurtenances adjacent to all public streets except along the east side of Streets A and E.	Final Map	Engineering	
32.	The Applicant shall dedicate, design and improve the southerly half-section of Calvine Road, measured 48' from the approved centerline based on a 96' thoroughfare street, including a 36' landscape corridor and the multi-use trail (Lot B), in accordance with the City of Elk Grove Improvement Standards, Trails Master Plan, and to the satisfaction of the City. The landscape corridor shall be dedicated to the City in fee title. The City may agree to defer some or all of these improvements and collect a contribution in-lieu of design and construction of the improvements in accordance with City Municipal Code Chapter 12.03. The in-lieu estimate shall include all costs necessary to deliver the ultimate improvements, including but not limited to road widening, curb, gutter, sidewalk, landscaping & irrigation, design/engineering, permitting, construction management, contingencies, etc. The estimate shall be prepared, signed, and stamped by a registered Civil Engineer and shall be reviewed and accepted by the City prior to making the payment.	Final Map	Engineering	
33.	The Application shall install stop signs at intersections of internal streets. Location(s) of stop signs will be determined during Improvement Plan review.	Final Map	Engineering	
34.	Prior to any Final Map approval, the Applicant can satisfy their public improvement obligations by entering into a Subdivision Improvement Agreement with the City and provide security for those improvements covered in the Agreement.	Final Map	Engineering	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
35.	For all single family corner lots, an access restriction shall be placed on the property from the driveway around the corner to the property line of the side yard.	Final Map	Engineering	
36.	The Applicant shall dedicate, design, and construct a gated emergency vehicle access (EVA) at the end of Street 'E' and Nieman Road as shown on the map. Improvements related to the EVA shall be in accordance with the Improvement Standards and to the satisfaction of the Development Services Department and the Cosumnes Community Services District Fire Department. Dedication of the EVA shall be in form of an easement.	Final Map	Engineering	
37.	A long-term management plan for ongoing maintenance of Lot A shall be submitted to the satisfaction of Public Works.	Final Map	Public Works	
38.	Developing the property will require the payment of sewer impact fees. Impact fees shall be paid prior to filing and recording the Final Map or issuance of Building Permits, whichever is first.	Final Map/First Building Permit	SASD	
39.	Prior to the recordation of the final map or certificate of compliance, the property owner(s) shall approve an annual Mello-Roos Community Facilities District special tax to fund a portion of the cost of the District's fire and emergency services, maintenance, operation, and repair and replacement of fire station facilities and fire and emergency equipment. In the event that the property owner(s) fails to approve the annual special tax, no building permits for the property shall be issued.	Final Map	CCSD Fire	
40.	Prior to recording of a final subdivision map, the Project area shall annex into the **Maintenance Mello-Roos Community Facilities District 2006-1 (CFD)**, to fund the project's fair share of landscape related maintenance costs associated with public parkways, public parks, open space, landscape setbacks, bike and other paths, landscaped medians in and adjacent to roadways, maintenance and operation of a community center, sports (including aquatic) facilities, cultural arts center, and water features, and maintenance of other related facilities. The annexation process can take several months, so applicants should plan accordingly. The application fee and completed application for the annexation is due prior to the Resolution of Intention to Annex the Property and Levy the Special Tax. For further information regarding this CFD, see http://www.elkgrovecity.org/city_hall/departments_divisions/finance/mello_roos_cfds/	Final Map	Finance	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
41.	Prior to recording of a final subdivision map, the Project area shall annex into the **Police Services Community Facilities District 2003-2 (CFD)**, to fund the Project's fair share of Public Safety costs. The annexation process can take several months, so applicants should plan accordingly. The application fee and completed application for the annexation is due prior to the Resolution of Intention to Annex the Property and Levy the Special Tax. For further information regarding this CFD, see http://www.elkgrovecity.org/city_hall/departments_divisions/finance/mello_roos_cfds/	Final Map	Finance	
42.	Prior to issuance recording of a final subdivision map, the project area shall annex into the **Street Maintenance Assessment District No. 1, Zone 3**, to fund a portion of the additional costs for long-term roadway maintenance related to serving the new development. The annexation process can take several months, so applicants should plan accordingly. The application fee and completed application for the annexation is due prior to the Resolution of Intention to Levy Street Maintenance Assessments. For further information on this District, see http://www.elkgrovecity.org/city_hall/departments_divisions/finance/mello_roos_cfds/	Final Map	Finance	
43.	Prior to recording of a final subdivision map, the Project area shall annex into the **Storm Water Drainage Fee Zone 2** to fund a portion of the additional costs for storm water drainage and run-off maintenance related to serving the new development. The annexation process can take several months, so applicants should plan accordingly. The completed application for the annexation is due prior to the Resolution of Intention to Levy Storm Water Drainage Fee Zone 2 assessments. For further information on this District, see http://www.codepublishing.com/CA/elkgrove/#!/ElkGrove15/ElkGrove1510.html#15.10	Final Map	Finance	
Prior To or In Conjunction With Building Permit				
44.	All building, apartment, and suite numbers addressing shall be approved by the City of Elk Grove Building Department in consultation with the Cosumnes CSD Fire Department.	Prior to Issuance of 1st Building Permit	Building Department CCSD Fire Department	
45.	The Applicant shall submit a Flood Elevation Certification for Parcels and Lots that are located within and abutted to the 100-year flood plain limit. Alternative documentation of flood and lot elevations may be submitted if determined to be adequate by the City.	Building Permit	Engineering	
46.	The Applicant shall be responsible for all costs associated with off-site right-of-way acquisition, including any costs associated with the eminent domain process, if necessary (for improvements on APN 121-0190-002).	Building Permit	Engineering	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
47.	The Applicant shall reconstruct any damaged curb, gutter, sidewalk and/or pavement caused by construction-related activities associated with the Project. If pavement replacement is necessary, as determined by the City, the Applicant may be required to grind, overlay, and/or slurry seal the damage portion(s) in accordance with the City Improvement Standards and to the satisfaction of Engineering. The Applicant shall schedule an inspection with the City to document the pre-construction condition of existing surface infrastructure adjacent to and near the Project.	Building Permit	Engineering	
48.	The Applicant shall reconstruct any existing ADA compliance improvements adjacent to the Project to meet current standards.	Building Permit	Engineering	
49.	A street name, from the City of Elk Grove Veterans Street Name Program, shall be assigned to the Project for use on a street within the subdivision in accordance with City Policy and to the satisfaction of the City.	Building Permit	Engineering	
50.	Identification signage issued by the City shall be mounted by the Applicant during streetlight installation in accordance with the approved plans and to the satisfaction of the City.	Acceptance of Public Improvements	Engineering	

CERTIFICATION
ELK GROVE CITY COUNCIL RESOLUTION NO. 2016-057

STATE OF CALIFORNIA)
COUNTY OF SACRAMENTO) ss
CITY OF ELK GROVE)

I, Jason Lindgren, City Clerk of the City of Elk Grove, California, do hereby certify that the foregoing resolution was duly introduced, approved, and adopted by the City Council of the City of Elk Grove at a regular meeting of said Council held on March 23, 2016 by the following vote:

AYES : COUNCILMEMBERS: Davis, Detrick, Hume

NOES: COUNCILMEMBERS: None

ABSTAIN : COUNCILMEMBERS: None

ABSENT: COUNCILMEMBERS: Ly, Suen

Jason Lindgren, City Clerk
City of Elk Grove, California