Draft Initial Study/Proposed Mitigated Negative Declaration

for the Meadows of Isleton

November 2022

City of Isleton Planning Department

101 2nd Street, Isleton, CA 95641

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PROJECT DESCRIPTION AND BACKGROUND

Project Title: Meadows of Isleton RV Resort

Lead agency name: City of Isleton

Address: 101 2nd Street, Isleton, CA 95641

Contact person: Yvonne Zepeda, City Clerk **Phone number:** 916-777-7770

Project sponsor's name: Sandeep Lidder **Phone Number:** 832-474-4655

Project Owner: Meadows of Isleton, LLC.

Project Location: 301, 401, 501 Jackson Slough Rd, Isleton, CA 95641

APN(s): 157-0100-069-0000, 157-0100-070-0000 & 157-0100-071-0000

Environmental Review: This activity is considered a project that is subject to discretionary review by both the Planning Commission and the City Council so it is subject to CEQA evaluation (refer to Land Use Section of this report). This evaluation is being conducted to determine the levels of environmental significance the project will have and whether or not an Environmental Impact Report will be required.

Description of project:
The proposed project would include the construction of a 135-site recreational vehicle (RV) park, 121 RV sites and 14 small home cabins with an approximately 3,250-square foot one-story lodge on a 13.73-acre site. (Figure 1) Site Plan). The lodge would consist of a great room, conference room, fitness center, laundry area, showers, and small storage area. Other on-site amenities would include a patio, luxury heated pool, splash pad, dog park, children playground, bocce ball court(s), shuffleboard, pickle ball courts, fire pit, and grilling area. Each RV site would have utility hookups for water, electricity, and wastewater disposal. The proposed project would include trees and shrubs along the perimeter of the site and lodge area, as well as along the RV parking areas.

Site Plan: The site plan shows the development of a 121 space Recreational Vehicle (RV) park (96 back-in RV sites, 25 pull through) for short term camping on +14 acres. In addition to the RV camping spaces, 14 tiny home cabins would be constructed. (See Figure 1 RV Park Resort Site Plan).

The typical RV spaces are a concrete pad approx. 10 feet wide by 45 feet in length. The back in RV pads are 10 feet in width by 45 feet in length accessible from both sides. Each RV pad has an adjoining concrete patio 8 feet x14 feet in length. A concrete vehicle parking area of 9 feet by 18 feet in length adjoins the RV parking facilities for owner vehicles.

Access, Parking and Circulation: As shown on Figure 1, the site would be accessed via a main gated entrance on Jackson Slough Road and gated emergency-only access at Georgiana Avenue.

Clubhouse: Additional user amenities would be located within the main clubhouse building of approximately ±3,250-square square feet including restrooms laundry facilities, recreation room, lounge area, check-in services, and a mini store to provide essential supplies for guests of the RV Resort. The clubhouse is proposed for guests of the RV Park Resort solely.

Recreational Amenities: The RV Park Resort will offer many amenities including a walking path throughout, a dog-friendly area, restrooms with showers, office check in, game room, coin laundry, bocce ball, fire pit areas, BBQ/picnic areas, an outdoor luxury pool, clubhouse/Lodge and, general store. The RV Park spaces will include full-service hookups, including electric, water, and sewer. Each space will consist of a concrete pad with landscaping framing each of the sites. Three (3) restroom facilities with showers will be situated throughout the site, including the clubhouse.

Visual &. Landscaping: The majority of the property is an open field vegetation within the southernmost that consists mostly of non-native annual grassland with an extensive mix of ruderal (weedy) species. It should be noted that there is 0.8-acres within the southernmost portion of the project site that has been used in a manner like a community garden (Figure 3, Land Cover Types). The Facebook site for the Meadows of Isleton (https://www.facebook.com/The-Meadows-of-Isleton-108952914104891/) shows this portion of the project site was previously used to grow lavender [Lavandula sp.] for flower harvesting. It currently remains partially covered in geotextile fabric with grow zones between the fabric. The grow zones have not been maintained. These areas currently support some lavender but are in the process of being overgrown by the weedy species described above for the southernmost portion of the project site.

Most of the remaining cover type within the project site consists of managed turf. As described above, the latter vegetation is six inches or less in height, dominated by annual grasses typically used for turf, and shows evidence of mowing. Much of the northern 4.4 acres of the project site also shows evidence of partitioning (fencing) for individual use by recreational vehicles and campers. In addition, there is electrical infrastructure and lighting associated with some of the partitioned areas. It is apparent that this area supported recreational uses in the recent past. The northernmost portion of the project site supports working farm infrastructure including dwelling units and holding pens. Land cover types located offsite but immediately adjacent to this area include an abandoned ballpark, other park infrastructure, and single-family homes.

The RV Park Resort will be visible from Jackson Slough Road. The topography of the site and surrounding areas are relatively flat. Landscaping has been designed to screen the RV Park Resort along Jackson Slough Road and Road and parking areas.

The landscaping plan includes ground cover, shrubs, and decorative trees throughout the RV Park Resort project site. A typical RV pad detail is provided illustrating concrete lounging areas framed by tree, shrubs and ground cover.

Architectural Building Design - The project proposes a clubhouse building of approximately ±3,250 square feet plus two additional restroom buildings of approximately ±398 square feet each. Architectural details have been incorporated into the design consistent with the City's Design Standards. The clubhouse is approximately ±20 feet in height from finished grade to the ridgeline of the building and approximately ±23 feet to the top of the boxed frame chimney. Various materials are proposed such as ashlar stone at the entryway, natural stained re-sawn wood posts, charcoal gray Hardi-board & batten siding, and dark charcoal corrugated metal roofing. The restrooms are approximately ±14 feet in height to the ridgeline. Materials consist of vertical Hardi-board & batten siding, horizontal Corten metal siding with a corrugated metal roof.

Each restroom will contain 4 toilets, 4 sinks and 4 shower stalls, including an ADA accessible toilet room and ADA accessible shower room.

Topography - The RV Resort Park parcel is relatively flat ranging between ±6 above Mean Sea Level (MSL) in the areas adjacent to Jackson Slough Rd. In general, the project site slopes towards the center then to the south / southwest.

Grading: The preliminary grading plan (Figure 7) calls for ±24,823 cubic yards of cut and ±19/198 cubic yards of fill resulting in an excess of ±5,625 cubic yards of soil. The excess material is proposed to be used on-site for landscaping. Due to the relatively level topography/ no retaining walls are proposed with the project. The site will be graded in compliance with ADA site accessibility standards.

Drainage: A Preliminary Drainage Analysis was prepared by Ron D. Beard and Associates in May 2022. Storm water treatment facilities were sized using a storage requirement of one inch of the total impervious area. See Figure 7.

Water Quality Treatment Methods: Storm drainage will be collected and routed through a storm drain system that will direct runoff to multiple bioretention treatment areas and a storm drainage swale.

Utilities – Domestic Water Supply: Treated water is available and will be provided by Cal Water.

Utilities Fire Supply: Fire hydrants will be installed centrally in the subject property. These fire hydrants will be feed from a dedicated 6” water supply line to meet the required fire flow requirements. This fire supply line will be fed by Cal Water’s distribution system. Cal Water’s system will meet the required 1,500 gpm for a 2-hour duration in accordance with City of Isleton’s Fire Department standards. See approval from California American Water Letter in **Appendix G.**

Utilities Sanitary Sewer. Every RV site is proposed to have sewer hookup. The project may or may not connect to the City’s sanitary sewer service. If City sewer is utilized, the closest tie-in to the City’s sewer system is approximately ±150 feet from the site/ near the Georgiana Dr. / 4th Ave Road intersection. However, if the project doesn’t not connect to City Sewer, the project site can accommodate a septic system. Figure 9 shows a plan for sewer line utilities on the site.

Dry Utilities: Dry utilities (i.e., natural gas, electrical supply, telephone/ cable) are located along. The exiting overhead powerlines that run north/south through the property will be undergrounded and rerouted on-site concurrently with site development.

Surrounding land uses and setting: The site is bounded to the southeast by Jackson Slough Road, to the northeast by vacant lot and single-family residences, to the northwest by farmland, and to the southwest by a single-family residence beyond which is farmland. Topography across the site is relatively level.

Offsite Improvements:
The following offsite improvements are required of the RV Park Resort Project:

- If connected to the City’s sewer system, sewer line extension and possibly forced main improvements will be required.

Other project details:
Other improvement details for the project are shown in other figures, such as Figure 8, Power and Lighting Plan, Figure 9, Sewer Plan and Figure 10, Water Distribution Plan.

Figure 1: Site Development Plan

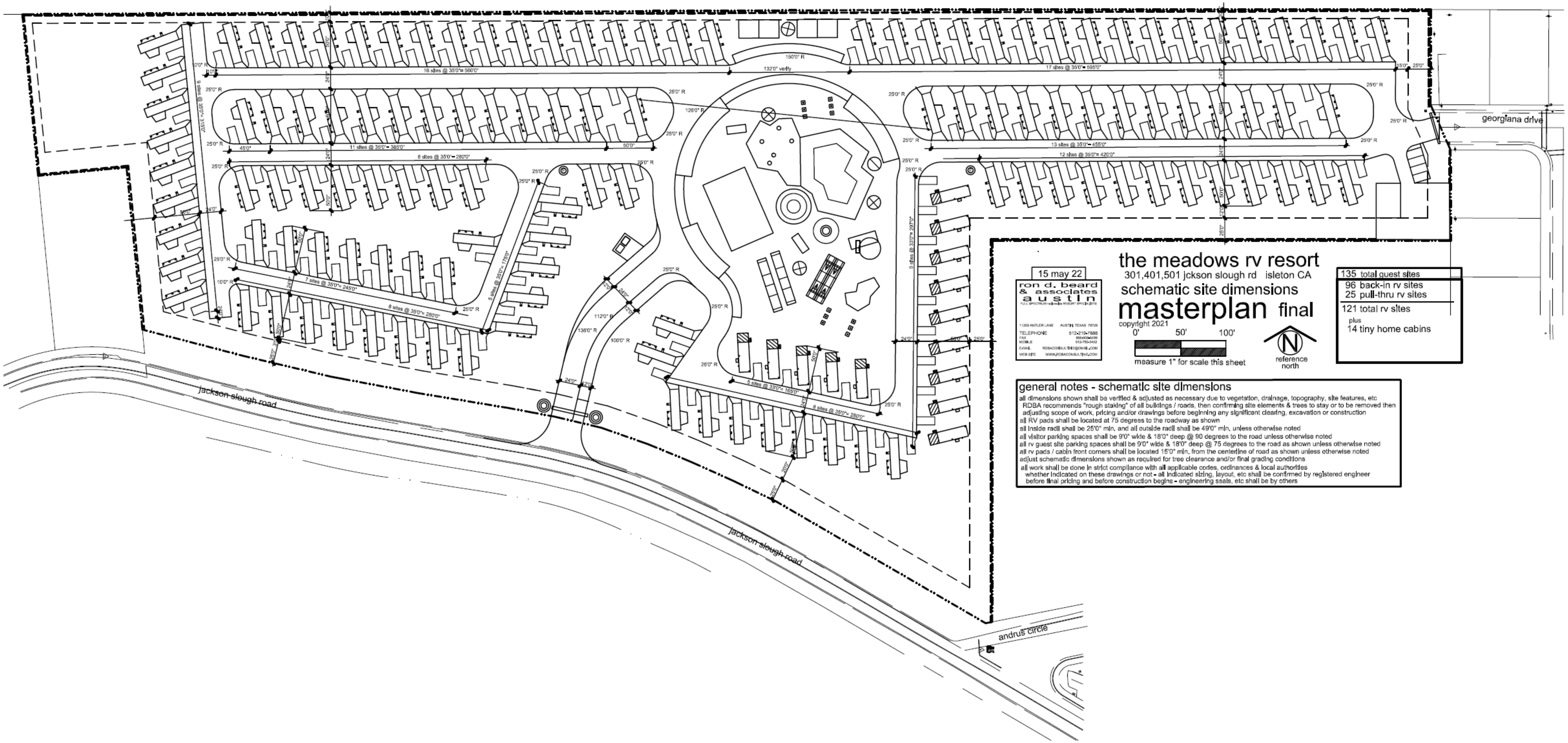
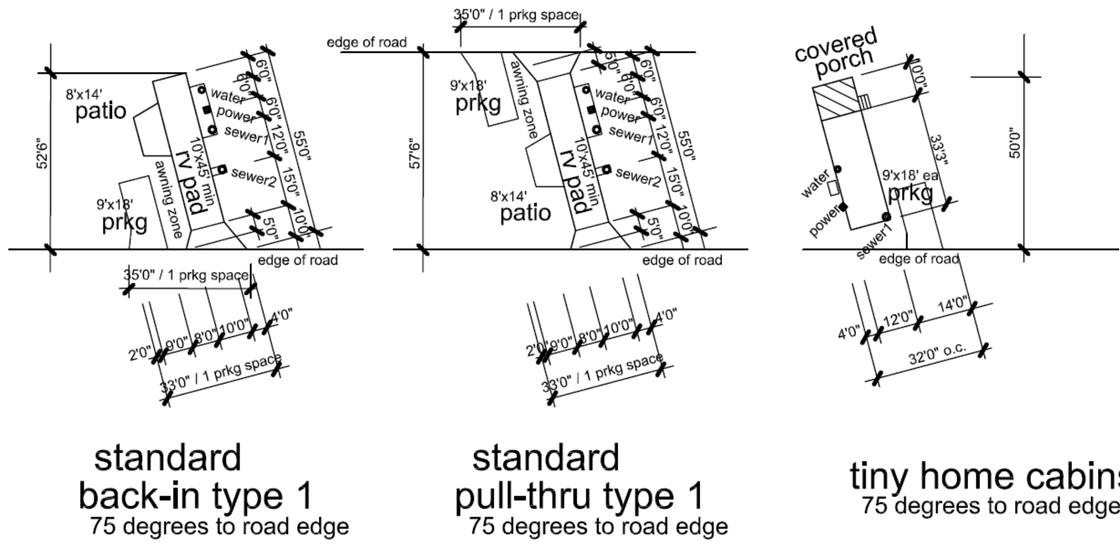


Figure 1: Site Plan

RV PAD DETAILS:



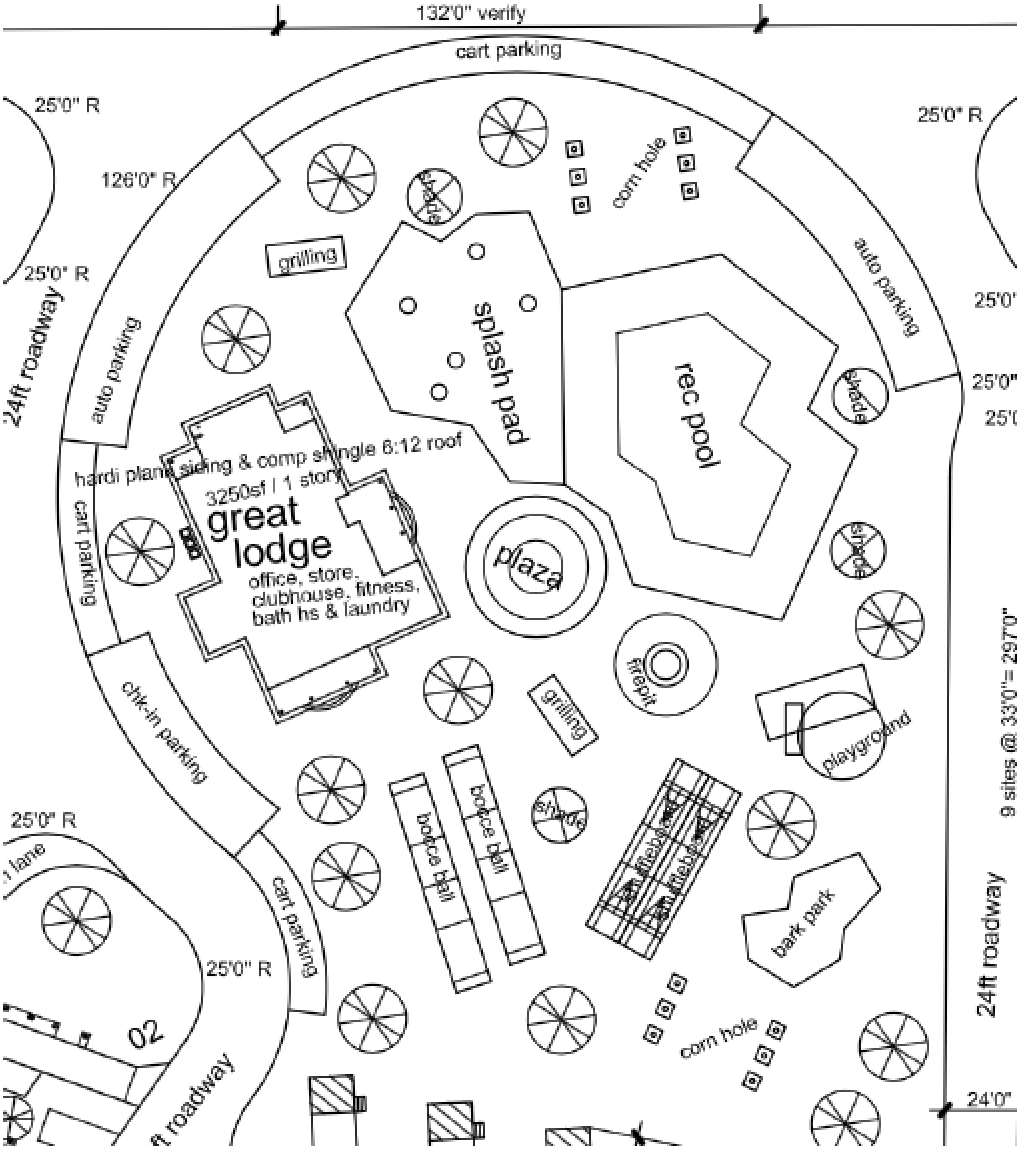
isleton rv park

isleton CA

0' 20' 40' 60'

measure 1" for scale this sheet

15 may 22


132'0" verify
cart parking
25'0" R
126'0" R
25'0" R
25'0" R
24ft roadway
auto parking
shade
corn hole
grilling
splash pad
rec pool
auto parking
25'0"
25'0"
hardi plank siding & comp shingle 6:12 roof
3250sf / 1 story
great
lodge
office, store,
clubhouse, fitness,
bath hs & laundry
cart parking
plaza
shade
firepit
grilling
playground
9 sites @ 33'0"= 297'0"
chk-in parking
bocce ball
bocce ball
shade
bark park
25'0" R
cart parking
25'0" R
02
corn hole
24ft roadway
24'0"

Photos of Project Site:

Figure 2: View looking southwest towards the southern half of the BSA. RV campground access road and abandoned garden in the foreground.

Figure 3: View looking northeast across the BSA from the southwest corner. Agricultural ditch and riparian canopy on the left.

Figure 4: View looking north towards the northern extent of the BSA. Llama corral and chicken coups in the foreground. Agricultural ditch begins just beyond the large weeping willow tree on the left.

Figure 5: View looking south across the BSA. RV campground and access roads in the foreground. Agricultural ditch on the right.

Figure 6:Picture of example RV Park in the California Delta.

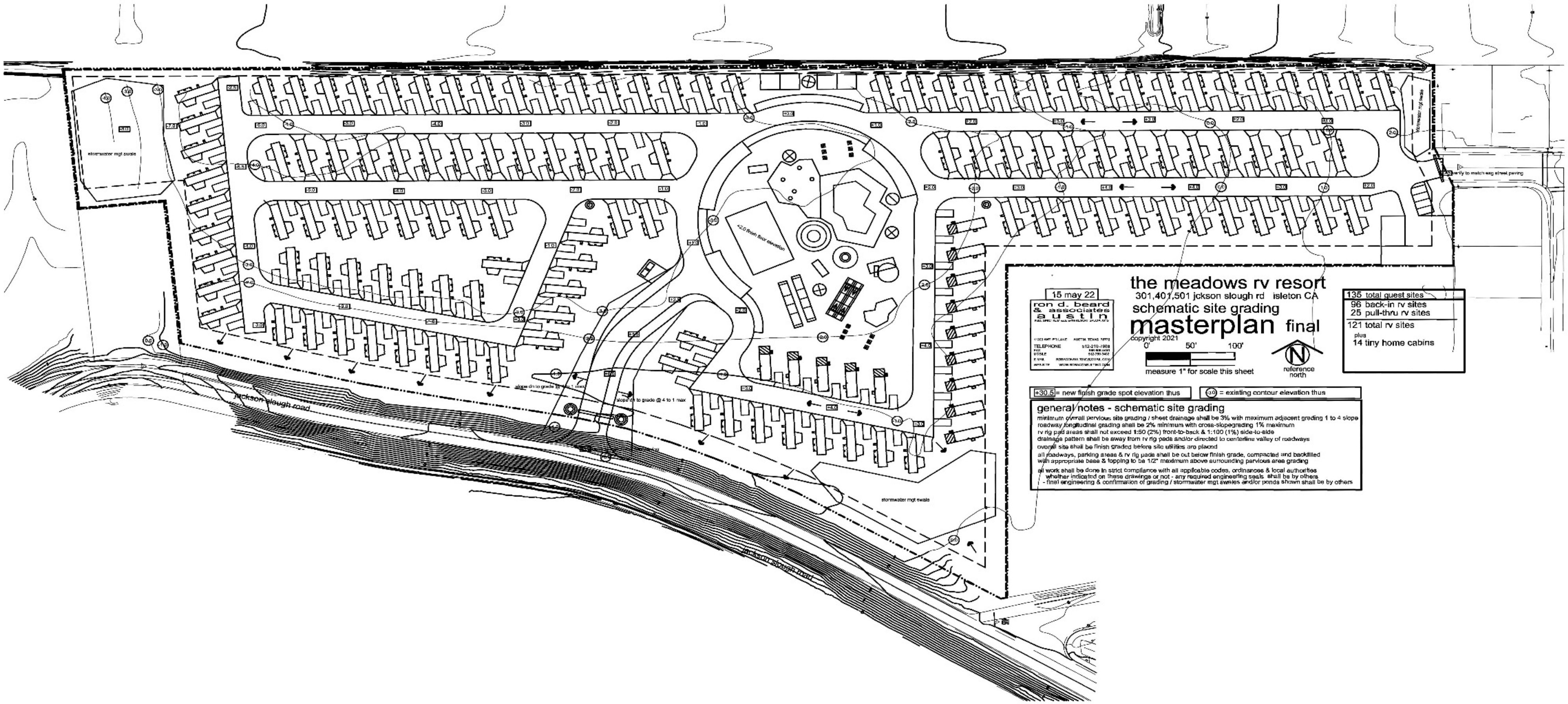


Figure 7:Grading Plan

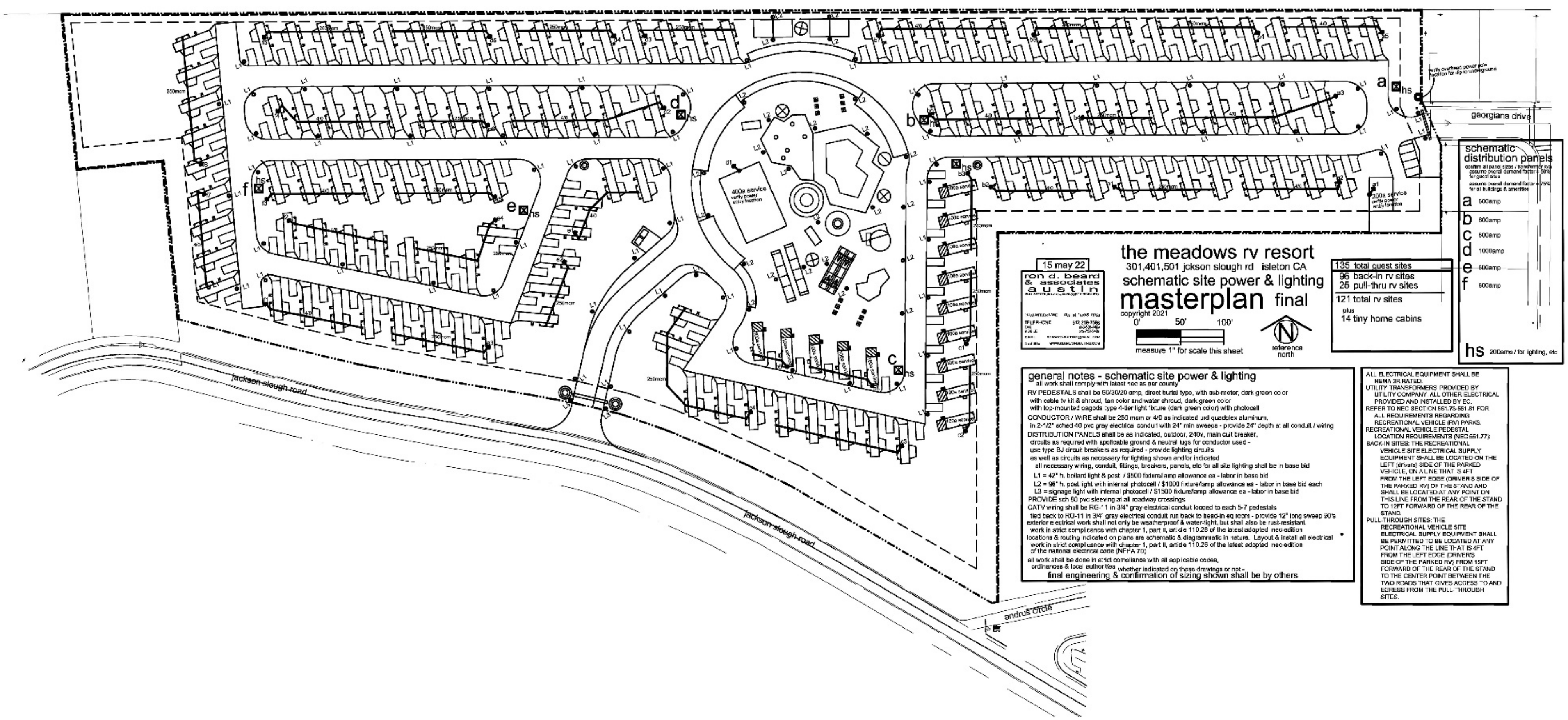


Figure 8:Power and Lighting Plan

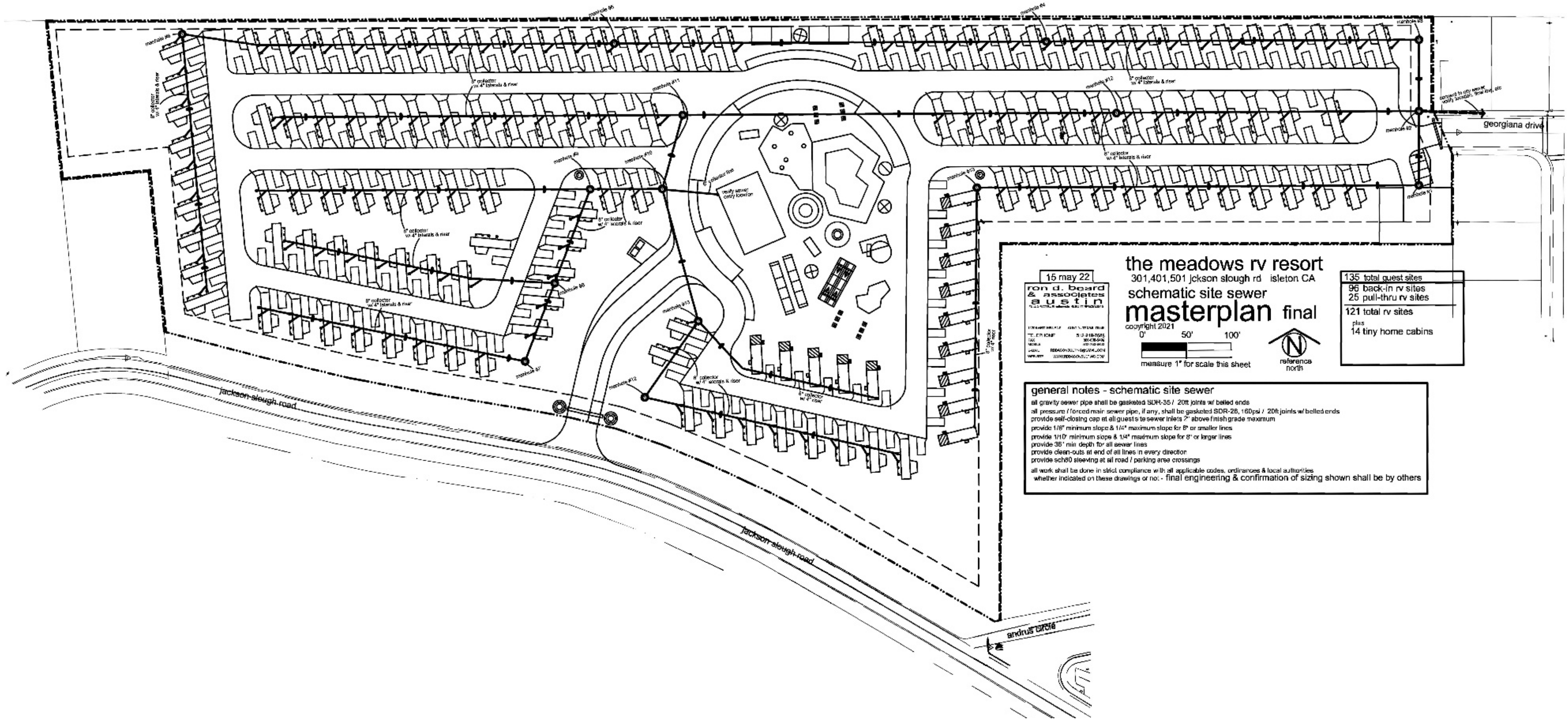


Figure 9:Sewer Plan

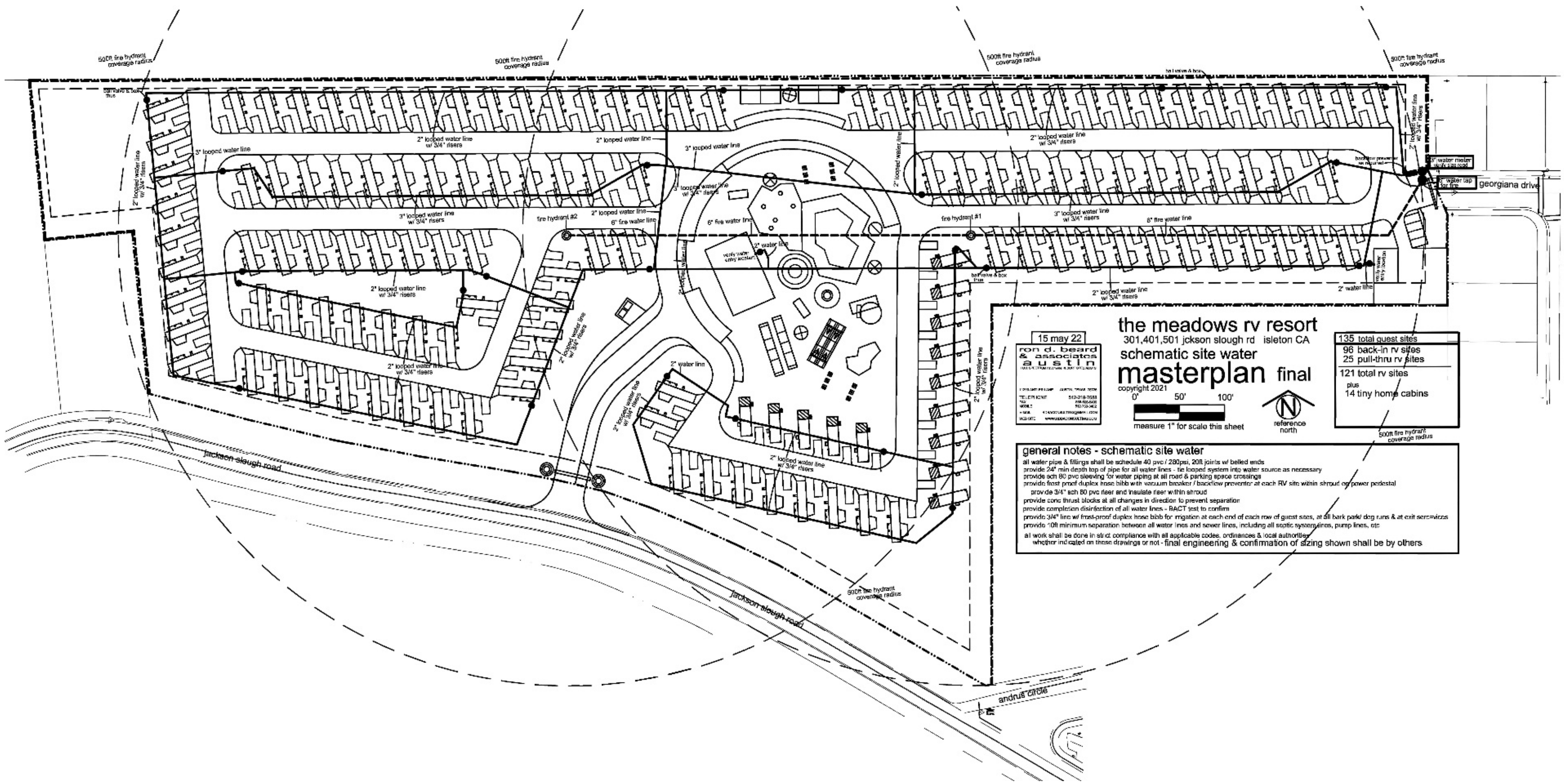


Figure 10: Water Plan

California Environmental Quality Act Application - The CEQA analysis of the project includes anticipated environmental impacts of the specific RV Park Resort Project impacts on the ±14-acre site.

Specifically, per CEQA Guidelines Section 15145 if after a thorough investigation, a lead agency finds that a particular impact is too speculative for evaluation, the lead agency should note its conclusion and terminate discussion of the impact.

Additionally, in accordance with Section 15146, the "Degree of Specificity" rule is used in the potential environmental impacts of the project.

Other public agencies whose approval is Regulatory Setting and Required Agency Approvals

The following City of Isleton / Responsible and/or Trustee Agency permits are required prior to construction of the RV Park Resort Project:

- Project Initial Study/Mitigated Negative Declaration City of Isleton
- City of Isleton Department of Public Works - Improvement Plan, Grading Plan, Encroachment Permit and Tree Permit approvals.
- City of Isleton Planning Department - Site Plan and Building Plan
- Approvals and Conditions of Approval/Mitigation Measure compliance verification.
- State Department of Housing and Community Development (HCD) - Building, Plumbing, Mechanical, and Electrical Permits in accordance with the California Codes.
- City of Isleton Fire Department - Site Plan/ Improvement Plan and Building Plan Approvals.
- A Storm Water Pollution Prevention Plan (SWPPP) shall be approved by the Regional Water Quality Control Board in accordance with the Clean Water Act.
- A Dust Mitigation Plan shall be approved by the Sacramento Metropolitan Air Quality Management District.
- Army Corps of Engineer (Section 404 permits) - A Section 404 Clean Water Act (CWA) Permit is required for the potential NID water line wetlands.
- Sacramento County Environmental Health Division - An operator's permit shall be obtained from the Health Division for the project including the general store and RV dumping station if required.
- Cal American Water Company-Water connection permit.

NATIVE AMERICAN CONSULTATION

Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code (PRC) section 21080.3.1?

☐ **Yes** ☒ **No**

If yes, ensure that consultation and heritage resource confidentiality follow PRC sections 21080.3.1 and 21080.3.2 and California Government Code 65352.4

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission’s Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

Note: Cultural Study, which included site survey, did not find any tribal resources on the project site.

Initial Study Attachments

Appendix A. Air Quality, Noise and GHG and Energy Study, Gandini Group, July 2022.
Appendix B. Biological Resources Assessment, RMM Environmental Planning, April 2022
Appendix C. Wetland Reconnaissance, RMM Environmental Planning, April 2022
Appendix D. Cultural Resources Survey, RMM Environmental Planning, September 2022
Appendix E. Geotechnical Engineering Report, Mid Pacific Engineering, Inc. April 2022
Appendix F. Traffic Impact Analysis, Gandini Group, August 2022
Appendix G. California American Water Letter, Spencer Phillips, February 2, 2022

Evaluation of Environmental Impacts:

1) A brief explanation is required for all answers except "NO Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to a project like the one involved (e.g., the project falls outside a fault rupture zone). A "NO Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved/ including off-site as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) "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 Environmental Impact Report (EIR) is required.

4) "Potentially Significant Unless Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than

Significant Impact. " The lead agency must describe the mitigation measures/ and briefly explain how they reduce the effect to a less than significant level.

5) "Less-Than-significant Impact:" Any impact that is expected to occur with implementation of the project, but to a less than significant level because it would not violate existing standards.

6) "No Impact:" The project would not have an impact to the environment.

7) Earlier analyses may be used where, pursuant to Tiering, Program EIR/ or other CEQA process, an effect has been adequately analyzed in an earlier EIR or Negative Declaration.

8) Lead agencies are encouraged to incorporate into the checklist reference to information sources for potential impacts (e.g., general plans/ zoning ordinances). Reference to a previously prepared or outside document should/ where appropriate, include a reference to the page or pages where the statement is substantiated

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project. Please see the checklist beginning on page 4 for additional information.

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

DETERMINATION

On the basis of this initial evaluation (choose one):

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

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

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

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

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier 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.

Charles Bergson		
Print Name	Signature	Date

CEQA Environmental Checklist

This checklist identifies physical, biological, social and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included either following the applicable section of the checklist or is within the body of the environmental document itself. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:

Question	CEQA Determination
a) Have a substantial adverse effect on a scenic vista?	No Impact
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	No Impact
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	Less Than Significant Impact
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Less Than Significant Impact

<u>Environmental Setting or Reference</u>

The aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area (Federal Highway Administration, 1983). The visual quality component can best be described as the overall impression that an individual viewer retains from residing in, driving through/ walking through, or flying over an area. Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, the number of views seen, the distance of the viewers, and the viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular view shed (U.S. Bureau of Land Management, 1980).

The project is located in the City of Isleton, a small community on the Sacramento – San Joaquin River Delta. Isleton is located on State Route 160 (SR 160) and near State Highway 12 (SH 12) and not on a scenic highway.

The RV project site has ±980 feet of frontage along Jackson Blvd and no other major frontage. No other scenic resources, including but not limited to trees, rock outcroppings, and historic buildings are located on the subject ±14 acre project site.

Sources of existing light and glare in the project area are streetlights/ residential lighting and stadium lighting from baseball field. Other sources of light and glare include vehicles traveling along Jackson Blvd.

Evaluation of Potential Aesthetic Impacts:

a-b) No Impact. There are no designated scenic vistas or any significant scenic resources in the project area that may be impacted by the project. Therefore, no impacts are expected.

c-d) Less than Significant Impact. The project would not degrade the existing visual character or quality of the site or the surroundings, nor would it create a new source of substantial light or glare. Future development of the site would include new RV parking and tiny cabins, which would be subject to City standards for light and glare, and would be visually consistent with the rural character of the area (Figure 6 provides an example of a finished RV project). This type of development is consistent with the Zoning and General Plan for the project site. Therefore, impacts would be less than significant because the new (future) development will remain residential in nature.

AGRICULTURE AND FOREST 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 Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

Question	CEQA Determination
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	No Impact
d) Result in the loss of forest land or conversion of forest land to non-forest use?	No Impact
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	No Impact

Environmental Setting or Reference

The Department of Conservation's map entitled "Sacramento County Important Farmland 2018" designates the site as "Other Land" on the project site. "Other Land" is defined as land which does not meet the criteria of any other category. Common examples include low density rural development, wetlands, dense brush and timberlands, gravel pits, and small water bodies.

California Government Code Section 51104(g) defines "Timber," "Timberland," and "Timberland Production Zone" for the purposes of CEQA as either trees of any species maintained for eventual harvest for forest production purposes ("Timber"); privately owned land, or land acquired for State Forest purposes, used for growing and harvesting timber ("Timberland"); or "Timberland

Production Zone" which means an area zoned and used for growing and harvesting timber. The project site is not considered "Timber" or "Timberland".

Evaluation of Potential Agriculture and Forestry Impacts

a - e) No Impact. The site is not designated as Prime, Unique, or Farmland of Statewide Importance. Furthermore, the site is not under a Williamson Act contract and is not currently zoned for agricultural uses. Therefore, the proposed project will not result in adverse impacts to agricultural resources.

AIR QUALITY

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

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

Environmental Setting or Reference

The project site is located within the Sacramento Metropolitan Air Quality Management District (SMAQMD), which is part of the Sacramento Valley Air Basin. The Sacramento Valley Air Basin has been further divided into Planning Areas called the Northern Sacramento Valley Air Basin (NSVAB) and the Greater Sacramento Air region, designated by the U.S. Environmental Protection Agency (EPA) as the Sacramento Federal Ozone Non-attainment Area. The Nonattainment area consists of all of Sacramento and Yolo counties, and parts of El Dorado, Solano, Placer, and Sutter counties.

SMAQMD is responsible for limiting emissions that can be generated throughout the County by various stationary and mobile sources. Specific rules and regulations have been adopted by the SMAQMD Board of Directors that limit the emissions that can be generated by various uses and/or activities, and identify specific pollution reduction measures that must be implemented in association with various uses and activities. These rules not only regulate the emissions of the six criteria pollutants, but also toxic emissions and acutely hazardous materials. Emissions sources subject to these rules are regulated through the SMAQMD's permitting process. Through this permitting process, the SMAQMD also monitors stationary emissions being generated and uses this information in developing new clean air plans. The proposed project would be subject to SMAQMD rules and regulations to reduce specific emissions and to mitigate potential air quality impacts. Sacramento County is a known area of non-attainment for state and federal standards for ozone and particulate matter less than 10 microns in diameter (PM10). Implementation of the project would result in increases in both construction emissions and increases in reactive organic gases (ROG) and NOx, which are precursor components of ozone, and PM10.

Evaluation of Potential Air Quality Impacts:

a) No Impact. The Meadows RV resort project does not conflict with or obstruct implementation of an air quality plan prepared by The Sacramento Metropolitan Air Quality Management District (SMAQMD).

b through d) Less than Significant Impact with Mitigation Incorporated. The project will be required to comply with SMAQMD standard threshold regulations and air quality mitigations and therefore will not result in a cumulative considerable net increase in any pollutant for which the project region is non-attainment under applicable federal or state ambient air quality standards.

Initial construction of the RV park resort will impact air quality. Construction-related emissions vary substantially depending on the level of construction activity, length of the construction period, specific construction operations, types of equipment, number of personnel, wind, precipitation conditions, and soil moisture content. In its developed condition as a transient recreational use, air pollutant emissions would be generated by, but not limited to emissions from proposed firepits, energy emission from the operation of natural gas-or propane fueled water and space heating systems, and area source emissions from the use of consumer products, RVs, gas appliances, gas-powered landscaping equipment, and vehicle exhaust of residents and guests.

Construction emission are temporary in nature but have the potential to represent a significant short term air quality impact. Operation of off-road construction equipment and vehicles, mobile sources (e.g., delivery vehicles, construction worker vehicles), and architectural coatings generate PM, NOx, and ROG emissions. Generation of these emissions are a function of the types and number of heavy-duty and off-road equipment used and the intensity and frequency of their operation, as well as vehicle trips per day associated with delivery of construction materials, importing and exporting of soil, vendor trips, and worker commute trips, and the ROG concentration of architectural coatings. Fugitive dust emissions are also among the pollutants of greatest concern during construction activities and depend greatly on required operations, number and type of vehicles, vehicle speeds, local soil and weather conditions, and extent of site disturbance.

The project will be required to comply with SMAQMD Rule 403 for the reduction of fugitive dust emissions. As stated previously, because the Sacramento Valley Air Basin is in nonattainment for ozone, PM10, and PM2.5, the SMAQMD requires the implementation of the following Basic Construction Emission Control Practices (BCECPs), regardless of the project's significance determination under CEQA.

Energy use emissions are generated by on-site natural gas and propane consumption for space and water heating and cooling. Area source emissions are generated by landscape maintenance equipment, consumer products, and architectural coatings. Finally, stationary source emissions are generated by the operation of portable generators.

Operational emissions include mobile source emissions, energy use emissions, and area source emissions. Mobile source emissions are generated by motor vehicle trips to and from the project site associated with operation of the project. The vehicle trips associated with the proposed project have been analyzed by inputting the project-generated vehicular trips from the Meadows of Isleton RV Resort Traffic and Vehicle Miles Traveled Assessment (Traffic and VMT Assessment) prepared by Ganddini Group, Inc. (August 2022) into the CalEEMod Model. The Traffic and VMT Assessment found that the proposed project would create approximately 311 vehicle trips per day with a trip generation rate of 2.7 trips per occupied campsite per day.

In review of the project, the *California Emission Estimator Model 2022.1*, emissions modeling program was used to estimate air pollutant emissions associated with The RV park resort project.

CalEEMod quantifies construction emissions associated with the use of off-road equipment, on-road worker commute, construction delivery and haul trucks, and application of architectural coatings. The software calculates construction emissions by construction phase based primarily on anticipated equipment (e.g., graders, dozers, forklifts), hours of use, estimated area of disturbance, number of vehicles, and distance of vehicles trips. According to *CalEEMod* modeling results, air quality impacts for both construction and long-term operational (occupancy) phases would be less than significant for all regulated air pollutants.

The construction-related criteria pollutant emissions for each phase are shown below in **Table 1 & Table 2 i**dentifying that none of the project's emissions will exceed SMAQMD thresholds.

Table 1 - Construction-Related Regional Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)			
	ROG	NOx	PM10	PM2.5
Maximum Daily Emissions[1,2]	10.00	40.60	5.54	3.09
SMAQMD Thresholds	-	85	80 [3]	82 [3]
Exceeds Thresholds?	No	No	No	No

Notes: Source: CalEEMod Version 2022.1
(1) On-site emissions from equipment operated on-site that is not operated on public roads. On-site grading PM-10 and PM-2.5 emissions include watering twice a day for compliance with SMAQMD Rules 403 and BCECPs.
(2) Paving and painting phase may overlap with construction phase.
(3) Only applies to projects for which all feasible best available control technology (BACT) and best management practices (BMPs) have been applied. Projects that fail to apply all feasible BACT/BMPs must meet a significance threshold of 0 lbs/day.

Table 2 Regional Operational Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)				
	ROG	NOx	CO	PM10	PM2.5
Maximum Daily Emissions	1.99	2.44	19.50	1.26	0.25
SMAQMD Thresholds[1]	65	65	-	80 [2]	82 [2]
Exceeds Threshold?	No	No	No	No	No

Notes: Source: CalEEMod Version 2022.1; the higher of either summer or winter emissions.
(1) As shown in Table 5, the concentration threshold for CO is the CAAQS, 20 ppm 1-hour standard (23 mg/m3); 9 ppm 8-hour standard (10 mg/m3).
(2) Only applies to projects for which all feasible best available control technology (BACT) and best management practices (BMPs) have been applied. Projects that fail to apply all feasible BACT/BMPs must meet a significance threshold of 0 lbs/day.

As shown in **Tables 1 & 2** daily emissions generated by construction and operation of the proposed project would not exceed the thresholds of significance in the SMAQMD Guidelines. As a result, the proposed project would not result in potentially significant air quality impacts and would not conflict with or obstruct implementation of the SMAQMD air quality plan and standards. Moreover, the proposed RV park resort project would not violate the thresholds of significance established by SMAQMD for ozone precursors and PM10, the two criteria pollutants which the region is classified as non-attainment.

The project will be required to comply with the BCECPs. Furthermore, the CalEEMod modeling for the proposed project included watering twice a day for compliance with both SMAQMD Rule 403 and the BCECPs. In addition, per SMAQMD Rule 442 as republished March 24, 2016, the architectural coatings will be limited to an average of 50 grams per liter or less of VOCs for building coatings and 100 grams per liter or less of VOCs for traffic coatings.

For purposes of CEQA, the SMAQMD considers a sensitive receptor to be facilities that house or attract children, the elderly, and people with illnesses or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors. The nearest sensitive receptors to the project site include the existing single-family detached residential property lines located adjacent to the north and south of the project site boundaries. In addition, Isleton Baseball Field is located adjacent to the northeast corner of the project site boundaries. Other air quality sensitive land uses are located further from the project site and would experience lower impacts. Since operational emissions would be in accordance with accepted thresholds and construction related emissions would be short-term, with implementation of SMAQMD's recommended mitigation measures, the proposed project's emissions are not anticipated to expose sensitive receptors to substantial pollutant concentrations. Therefore, impacts are anticipated to remain less than significant with implementation of standard SMAQMD mitigation measures.

d) Less than Significant Impact with Mitigation Incorporated. The RV The RV Park Resort includes odor generating uses such as a dog park, restrooms and showers, coin laundry, pool, hot tub and a BBQ area with outdoor kitchen facilities. Refuse collection stations (dumpsters) have the potential to create odors; however, the refuse enclosures would be emptied on a weekly basis and include lids to contain odors and spillage. The refuse enclosures are located at designated areas throughout the project site, and one sewer dump station would be located in the southern portion of the project site, near the southern site entrance. Access to the RV Park Resort site would be restricted to future patrons and employees; therefore, the garbage and sewer dump facilities would not be used by the general public.

Moreover, operation of the project would involve food preparation activities, smoke from firepits, sewage deposits from RV reservoirs, bathroom and laundry room use and garbage collection. Odors generated from food preparation activities, firepit smoke, RV dump station, bathroom and laundry room use and garbage collection would not likely result in a public nuisance occurrence as odors would be localized and would not be anticipated to be detected at the nearest existing residences north of the project site. Odors generated by these activities could be detected by future patrons of the RV Resort project; however, future patrons would not be considered long-term receptors as the RV Park Resort constitutes transient lodging. Additionally, the most potent odors potentially generated by the RV Park Resort project are sewage and garbage odors, which are limited due to the refuse locations within the site. For instance, the garbage collection dumpsters are located in the interior of the project site, spread out among the project site at each access. he RV Park Resort project would not constitute a land use that is typically associated with substantial odor generation and would not introduce new long-term odor receptors which may be exposed to existing odor sources. These potential impacts are less than significant.

Construction activities associated with the proposed project would have the potential to generate air emissions, TAC emissions, and odor impacts. Assumptions for the phasing, duration, and required equipment for the construction of the proposed project were obtained from the project applicant. The construction activities for the proposed project are anticipated to include: grading of approximately 13.73 acres; construction of an RV Resort with 135 guest sites [including 121 RV site and 14 tiny home cabins (each tiny home cabin is approximately 320 square feet)], a 1,000 square foot shop, and a 3,250 square foot lodge; paving of approximately 18,700 cubic yards (approximately 3.9 acres) of the site for parking areas, on-site roadways, and driveways etc.; and application of architectural coatings. Grading of the proposed project is anticipated to balance. See **Appendix A.** for more details.

The Traffic and VMT Assessment prepared for the project (Ganddini Group, 2022) utilized the land use of Campground Recreational Vehicle Park (ITE 416) for the proposed RV Resort; however, this land use is not available in CalEEMod's database. Therefore, the next closest land use of City Park (ITE 911) was utilized for the proposed RV Resort land use.

The proposed project is anticipated to start construction no sooner than the beginning of November 2022 and be completed by mid-August 2023. The project is anticipated to be operational in 2023.

The Sacramento Metropolitan Air Quality Management District (SMAQMD) has adopted guidelines for determining potential adverse impacts to air quality in the region. The SMAQMD guidelines state that construction of 27 Single Family Residential units or more is considered a potentially significant adverse impact.

Although the development is proposed as part of this project, future development of the site will include 14 tiny homes. Given that the proposed project is well below the SMAQMD threshold, impacts to air quality are considered less than significant.

In addition, effects on air quality can be divided into short term construction-related effects and those associated with long term operation of the project. Construction activities, such as grading and vehicular traffic, may generate temporary or short-term increase in dust and particulate matter, and are expected to be minor due to the small size of the proposed project. The air pollutants generated by the proposed project would be primarily dust and particulate matter during construction of the project. No sensitive receptors would be exposed to minor amounts of construction dust and equipment emissions for short or long-term exposure nor would there be objectionable odors created by this proposed project.

Uses on the new parcel's RVs and as such, would not create objectionable odors affecting a substantial number of people.

Implementation and adherence to Mitigation Measures AIR 1 through AIR 8 will reduce potential impacts to less than significant.

Mitigation measures:

AIR 1: Construction activities shall be conducted with adequate dust suppression methods, including watering during grading and construction activities to limit the generation of fugitive dust or other methods approved by the Sacramento Metropolitan Air Quality Management District (SMAQMD). Prior to initiating soil removing activities for construction purposes, the applicant shall pre-wet affected areas for adequate dust control.

AIR 2: Driveways, access roads and parking areas shall be surfaced in a manner so as to minimize dust. The applicant shall obtain all necessary encroachment permits for any work within the right-of-way. All improvement shall adhere to all applicable federal, State and local agency requirements.

AIR 3: Any disposal of vegetation removed as a result of lot clearing shall be lawfully disposed of, preferably by chipping and composting, or as authorized by the Sacramento Metropolitan Air Quality Management District (SMAQMD) and the City Fire Chief.

AIR-4: During construction activities, the applicant shall remove daily accumulation of mud and dirt from any roads adjacent to the site.

AIR-5: Grading permits shall be secured for any applicable activity from the City of Isleton Building Department. Applicable activities shall adhere to all grading permit conditions, including Best Management Practices. All areas disturbed by grading shall be either surfaced in manner to minimize dust, landscaped or hydro seeded. All BMPs shall be routinely inspected and maintained for lifer of the project.

AIR-6: Construction activities that involve pavement, masonry, sand, gravel, grading, and other activities that could produce airborne particulate should be conducted with adequate dust controls to minimize airborne emissions. A dust mitigation plan may be required should the applicant fail to maintain adequate dust controls.

AIR-7: If construction or site activities are conducted within Serpentine soils, a Serpentine Control Plan may be required. Any parcel with Serpentine soils must obtain proper approvals from LCAQMD prior to beginning any construction activities. Contact LCAQMD for more details.

AIR-8: All engines must notify Sacramento Metropolitan Air Quality Management District (SMAQMD) prior to beginning construction activities and prior to engine Use. Mobile diesel equipment used for construction and/or maintenance must be in compliance with State registration requirements.

BIOLOGICAL RESOURCES

Would the project:

Question	CEQA Determination
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, U.S. Fish and Wildlife Service, or NOAA Fisheries?	Less Than Significant with Mitigation Incorporated
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Less Than Significant with Mitigation Incorporated
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	No Impact
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?	Less Than Significant Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Less Than Significant Impact
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 Impact

Environmental Setting or Reference

A Biological Resource Evaluation was prepared by Bumgardner Biological Consulting in April 2022 for the proposed Meadows of Isleton RV Park project in the City of Isleton, CA. The purpose of the evaluation was to document the review of existing data as well as survey methods, results, and conclusions of a field survey conditioned for the proposed project. The Biological Resource Evaluation / Report is included as **Appendix B** in this ISMND.

Vegetation within the southernmost 9.6 acres of the project site consists mostly of non-native annual grassland with an extensive mix of ruderal (weedy) species (Figure 3, Land Cover Types).

Vegetative cover in this portion of the proposed project is dominated by non-native annual grasses but also includes an extensive mix of wild mustard [*Brassica* sp.], wild radish [*Raphanus raphanistrum*], cheeseweed [*Malva parviflora*], common stork's-bill [*Erodium cicutarium*], and poison hemlock [*Conium maculatum*]. Evidence in the form of cut and matted dry grasses was found throughout the vegetation in this portion of the project site, suggesting that this part of the project site is mowed on an annual or bi-annual basis. It should be noted that there is 0.8-acres within the southernmost portion of the project site that has been used in a manner like a community garden (Figure 3, Land Cover Types). The Facebook site for the Meadows of Isleton (https://www.facebook.com/The-Meadows-of-Isleton-108952914104891/) shows this portion of the project site was previously used to grow lavender [*Lavandula* sp.] for flower harvesting. It currently remains partially covered in geotextile fabric with grow zones between the fabric. The grow zones have not been maintained. These areas currently support some lavender but are in the process of being overgrown by the weedy species described above for the southernmost portion of the project site.

Most of the remaining cover type within the project site consists of managed turf. As described above, the latter vegetation is six inches or less in height, dominated by annual grasses typically used for turf (e.g., fescue [*Festuca* sp.]), and shows evidence of mowing. Much of the northern

4.4 acres of the project site also shows evidence of partitioning (fencing) for individual use by recreational vehicles and campers. In addition, there is electrical infrastructure and lighting associated with some of the partitioned areas. It is apparent that this area supported recreational uses in the recent past. The northernmost portion of the project site supports working farm infrastructure including dwelling units and holding pens. Land cover types located offsite but immediately adjacent to this area include an abandoned ballpark, other park infrastructure, and single-family homes.

All other vegetative cover types associated with the project site occur on the boundaries of the site. The eastern boundary of the project site which is bounded by Jackson Slough Road supports a small number of scattered large valley oaks [*Quercus lobata*] (Figure 3, Land Cover Types). This boundary also supports a single small linear stand of bamboo [*Phyllostachys* sp. ?] (Figure 3, Land Cover Types).

The southern boundary of the project site abuts a single-family home surrounded by several large valley oaks. At least two of these oaks are on the project site.

The western boundary of the project site is located next to a drainage canal on the adjacent property. This is a source of regular water during the growing season that supports more water dependent species. Species that were observed in the narrow linear vegetation stand near the canal include Himalayan blackberry [*Rubus armeniacus*], stinging nettle [*Urtica dioica*], and fennel [*Foeniculum vulgare*]. It should also be noted that the southernmost portion of the above linear vegetation stand supports interior live oak [*Quercus wislizeni*] and willows [*Salix* spp.]. The northernmost portion of the linear stand supports a single large weeping willow [*Salix babylonica*].

Wildlife or their sign observed within the survey area were consistent with species found in and near agricultural lands and edges in Sacramento County. Avian species that were observed or heard on the project site included the following: Anna's hummingbird [*Calypte anna*], northern flicker [*Colaptes auratus*], western kingbird [*Tyrannus verticalis*], California scrub jay [*Aphelocoma californica*], American robin [*Turdus migratorius*], northern mockingbird [*Mimus polyglottos*], red-winged blackbird [*Agelaius phoeniceus*], Brewer's blackbird [*Euphagus cyanocephalus*], spotted towhee [*Pipilo maculatus*], white-crowned sparrow [*Zonotrichia leucophrys*], savannah sparrow [*Passerculus sandwichensis*], and American goldfinch [*Spinus tristis*]. Additional avian species seen or heard immediately offsite included Eurasian collared dove [*Streptopelia decaocto*], American crow [*Corvus brachyrhynchos*], and yellow-rumped warbler [*Setophaga coronata*].

The only other evidence of wildlife species that was observed on the project site was a western fence lizard [*Sceloporus occidentalis*] and a small number of California ground squirrel [*Otospermophilus beecheyi*] burrows. The burrows were all located along the western border of the project site where the vegetative cover is low. This part of the project site is close to a large number of California ground squirrel burrows located immediately offsite along the upper slope of the drainage canal.

Based on the results of the April 1, 2022 survey at and near the proposed project, as well as information from other available sources, there is evidence to suggest that several special-status wildlife species could occur at or be adversely affected by the proposed project. These species are loggerhead shrike, song sparrow, tricolored blackbird, burrowing owl, Swainson's hawk, white-tailed kite, other nesting raptors afforded protection under California Fish and Game Code § 3503.5, and other nesting birds afforded protection under California Fish and Game Code § 3503.

Evaluation of Potential Biological Impacts

a & b,) Less than significant with Mitigation – no special-status wildlife species were observed on the project site. However, a small number of special-status wildlife species, which can be categorized into four groups of avian species, are considered to have a low potential to occur on the project site or offsite but within the potential area of effect associated with the project.

The long linear stand of vegetation dominated by Himalayan blackberry brambles along the western boundary of the project site is potential nesting habitat for loggerhead shrike, song sparrow, and tricolored blackbird. Each of these species, apart from tricolored blackbird, also have suitable foraging habitat at or immediately adjacent to the blackberry brambles. Tricolored blackbird is an exception since there is little to no suitable foraging habitat for the species (annual grassland, alfalfa, and other suitable crops) onsite or within a few miles of the project site. Nonetheless, tricolored blackbird cannot be excluded from the list of species having some potential to nest on the project site or otherwise be adversely affected by the proposed project.

Another group of special-status avian species that has some potential to nest on or near the project site is tree-nesting raptors. This group includes Swainson's hawk, white-tailed kite, and other raptors afforded protection under California Fish and Game Code § 3503.5. Each of these species has at least a low potential to nest in the large valley oaks that occur onsite or nearby, within 500 feet or less of the project site. Though no evidence of prior nesting by species in this group was found during the recent reconnaissance-level survey, this does not preclude future nesting attempts by these species, including prior to the proposed project breaking ground.

Burrowing owl has at least a low potential to occupy the California ground squirrel burrows that occur immediately offsite to the west along the existing drainage canal (within 250 or less of the project site). The presence of the large Himalayan blackberry bramble so close to the California ground squirrel burrows may preclude burrowing owls from utilizing these burrows given the species preference for long line-of-site views from the burrows to detect potential avian or mammalian predators. The species cannot be excluded from the list of species having some potential to be adversely affected by the proposed project.

The last group of special-status avian species that has some potential to nest on or near the project site is species that are not addressed by the CDFW's Special Animals List (2022) but are nonetheless afforded protection when nesting by virtue of compliance with California Fish and Game Code § 3503.

The following avoidance and minimization measures are recommended for these latter species:

Mitigation Measures

Tricolored Blackbird

The following measures shall be implemented to avoid or minimize adverse effects to nesting tricolored blackbird:

BIO -1: Grubbing, grading, or other soil/vegetation disturbance within 250 feet of the Himalayan blackberry brambles will not occur during the tricolored blackbird nesting season (March 15 through July 30). All project soil/vegetation disturbance will occur between August 1 and March 14 to the extent feasible.

Alternatively, if project-related soil/vegetation disturbance is scheduled to occur between March 15 and July 30, surveys will be conducted for prospecting or nesting tricolored blackbird colonies in all potentially suitable nesting habitats that are within and out to 250 feet from the project boundaries. The surveys will be conducted by a qualified biologist during the season immediately preceding initiation of the proposed project. The surveys will be conducted according to the following schedule: a total of two visits during March 15 to July 30 with at least one month between survey visits.

If nesting colonies are found prior to initiation of project soil/vegetation disturbance in the year of the survey, a no work exclusion zone will be established within 250 feet of each active nesting colony until a qualified biologist determines that the young-of-the-year are no longer reliant upon the nest site.

Alternatively, the project applicant may retain a qualified biologist to conduct daily monitoring of any active nesting colonies that are within 250 feet or less from project soil/vegetation disturbance to determine if the individuals are exhibiting any behaviors that would suggest that nest failure could occur. If the qualified biologist determines that disturbance is sufficient to cause nest failure, all activities within 250 feet of the nesting colony will be terminated until the young-of-the-year are no longer reliant upon the nest.

BIO 2: To compensate for the loss of known nesting habitat for tricolored blackbird on the project site, the project applicant will plant Himalayan blackberry at a minimum 2:1 compensation ratio. The compensation stands of Himalayan blackberry will be sited on the nearest suitable land to which the project applicant has access or on nearby alternative land on which the project applicant has acquired a conservation easement acceptable to the CDFW. Compensation sites will be chosen to avoid any loss of existing natural wetland communities. Annual monitoring of the compensation stands will be conducted to determine if tricolored blackbirds are utilizing the compensation habitat. If no evidence of utilization has been found after five years of monitoring, the project applicant will be required to plant additional Himalayan blackberry at a minimum 1:1 compensation ratio on other lands where there is no active episodic human disturbance that would preclude tricolored blackbirds from settling and nesting in the compensation habitat.

The following measures will be implemented to avoid or minimize adverse effects to nesting birds(not including Swainson's hawk, white-tailed kite, and other nesting raptors which are addressed under separate mitigation but including the special-status loggerhead shrike and song sparrow) that nest within or immediately adjacent to the project site (i.e., within 200 feet of the proposed project).

BIO 3: If construction activities occur during the bird nesting season (February 1 – August 31), preconstruction nesting bird surveys (2 visits at least 1 week apart) will be conducted by a qualified biologist within the 14 days prior to construction to detect the presence of any nesting birds within or adjacent to the proposed project (within 200 feet of the project site). If construction/maintenance activities occur during the non-breeding season for birds (September 1 – January 31), preconstruction surveys will not be required.

If the preconstruction nesting bird surveys detect actively nesting birds, the results of the surveys shall be submitted to the CDFW within three days of completing the surveys. If any active nests of loggerhead shrike, song sparrow, or other nesting birds afforded protection under California Fish and Game Code § 3503 are found onsite, the applicant will avoid initiating any construction activities within less than 200 feet from each nest until nesting has been completed and the young are no longer reliant upon the nest as determined by a qualified biologist.

Swainson's Hawk, White-tailed Kite, and Other Nesting Raptors

Adverse effects to nesting Swainson's hawk, white-tailed kite, and other raptors given protection under California Fish and Game Code § 3503.5 will be mitigated as follows:

BIO 4: Preconstruction surveys for nesting Swainson's hawk, white-tailed kite, and other raptors will be conducted consistent with the *Biological Report Regarding Mitigation for Impacts to Swainson's Hawks (Buteo swainsoni) in the Central Valley of California* (CDFG 1994) if construction is initiated between March 1 and September 15.

If an active Swainson's hawk, white-tailed kite, or other raptor nest is detected during preconstruction surveys, a no-disturbance buffer zone of 500 feet will be implemented during the nesting season (March 1 to September 15) or until August 15 if Management Authorization is provided by the CDFW (2000). Furthermore, a nest monitoring plan will be developed and implemented for all active nests within 500 feet. If monitoring demonstrates that nesting individuals are being adversely affected, the no-disturbance zone will be increased in 100-foot increments until all adverse effects are eliminated. No mitigation is required if the proposed project is constructed/initiated during the non-nesting season for Swainson's hawk, white-tailed kite, or other raptors (i.e., September 16 to February 28)

c) No Impact. According to the Wetland Reconnaissance Report prepared by Kingfisher Bio in April 2022 (**Appendix C.** in this ISMND), the project will not have a substantial adverse effect on state or federally protected wetlands, (including, but not limited to, marsh, vernal pool, coastal, etc.). These habitats do not occur at the project site.

d) Less than significant impact. According to the Biological Resource Evaluation prepared by Bumgardner Biological Consulting in April 2022, the project will not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

e) Less than significant impact. The Project is consistent with local policies or ordinances protecting biological resources.

f) No Impact. The project is not located in an area covered under an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. No impact will occur and no mitigation is needed.

CULTURAL RESOURCES

Would the project:

Question	CEQA Determination
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	Less Than Significant Impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	Less Than Significant with Mitigation Incorporated
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	Less Than Significant with Mitigation Incorporated

Environmental Setting or Reference

This section evaluates the proposed Project's potential impacts on archaeological, historical, and paleontological resources. Resources of concern include, but are not limited to, prehistoric and historic artifacts, burials, sites of religious or cultural significance to Native American groups, and historic structures. This section provides a detailed discussion of impacts potentially attributable to the proposed project, and criteria used to determine impact significance to cultural resources.

A cultural survey and an evaluation report was conducted and developed by Tremaine & Associates in April 2022 for the proposed Meadows of Isleton RV Park project in the City of Isleton, CA. The purpose of the survey and evaluation was to identify potential environmental impacts per CEQA regulations. The work included a records search, literature review, and pedestrian survey. The conclusions of the work are summarized in the report included as an **Appendix D.** to this ISMND.

Most, if not all the project site has been previously disturbed from more recent site improvements including new camps and agricultural activity. No known resources were previously discovered on the site during these previous activities. No prehistoric or historic-era cultural resources were identified during the pedestrian survey that was conducted via the survey. The Cultural Resources Survey Report included conducting a records search at the North Central Information Center document that identified one previously recorded cultural landscape within a quarter mile from the project site, consisting of a narrow corridor of the Lower Sacramento River from the confluence with the Mokelumne River at Collinsville, north to the confluence with the Feather River. The primary characteristics of this landscape are waterways, tule habitat, fisheries, and other wildlife. Also, a historic resource was identified 600 feet southeast of the project site consisting of railroad berms connected by a railroad bridge across Georgiana Slough. While no evidence of prehistoric or historic deposits was found within the project stie, the report indicates that there is a potential for buried resources to be present on the site.

The cultural survey report states:

"While no evidence of prehistoric or historic deposits was found within the APE, there remains a moderate to high possibility that buried resources are present for the following reasons: (1) the project is situated in a favorable location along the west bank of former Jackson Slough near the confluence of the Sacramento River; and (2) the National Cooperative Soil Survey shows the project is situated on soils that contain buried paleosols between 2.3 and 5.0 feet deep. Meyer and Rosenthal (2008) have concluded that residential habitation sites began to emerge along the river corridors of the Sacramento Valley during the Late Middle Archaic period. These focused on suitable landforms such as levee and over-bank deposits. Paleosols on such landforms suggest long term stable conditions (i.e., long enough for soils to develop). Materials associated with human habitation are often found preserved in these deposits which have since been blanketed by later floodplain deposits (Rosenthal et al. 2007:152).

Recently, TREMAINE found such a buried site situated on the backside of the Sacramento River levee in Walnut Grove contained mineralized burials."

Since the project site does appear to have a moderate to high possibility that buried resources are present on the site, mitigation measures have been incorporated to reduce the likelihood of impact to buried resource. These mitigation measures include training for contractors and protocols for inadvertent discoveries required. See Mitigation Measures CUL-1 through CUL-4 under Tribal Cultural Resources analysis.

<u>Evaluation of Potential Cultural Resource Impacts</u>

a) Less Than Significant Impact. An intensive pedestrian survey and records search was recently conducted on the project site. No historic resources were discovered on the project site. As a result, no eligible built environment resources occur were present on the project site.

b) Less Than Significant Impact with Mitigation Incorporated. A significant impact would occur if the Project causes a substantial adverse change to an archaeological resource through demolition, construction, conversion, rehabilitation, relocation, or alteration. No archaeological resources were identified within the Project Area. However, archaeological resources may exist within the Project Area according to the assessment above. In the event that archaeological resources are observed during Project construction-related activities, Mitigation Measures CUL-2 through CUL-4 is in place to reduce impacts to a less than significant level. Therefore, the impact on archaeological resources is considered less than significant with mitigation incorporated.

c) Less Than Significant Impact with Mitigation Incorporated. A significant impact may occur if grading or excavation activities associated with the proposed Project would disturb paleontological resources or geologic features that exist within the Project site. No paleontological resources or unique geologic features have been noted on the surface of the Project site. The likelihood of paleontological resources or unique geologic features being present subsurface within the boundaries of the proposed Project is likely given the deposition in the area. The possibility exists that previously unidentified paleontological resources could be encountered during ground-disturbing activities associated with the proposed Project and therefore is considered a potentially significant impact if mitigation measures are not implemented.

The procedures identifiedin State Health and Safety Code Section 7050.5 will reduce potential impact. State Health and Safety Code Section 7050.5 requires that if human remains are found no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98.

Implementation of Mitigation Measure CUL-1, CUL-3 and CUL-4 would ensure that any previously unidentified paleontological resources encountered during ground disturbing activities for the proposed project would be managed in accordance with applicable regulations. Therefore, the impact on paleontological resources is considered less than significant with mitigation incorporated. Implementation and adherence to CUL-1 through CUL-4 will reduce potential impacts to less than significant.

Archaeological clearance is recommended for the project/undertaking as presently proposed through subsurface testing to map the buried landscape and potentially identify areas of former habitation. If pre-construction testing of the subsurface is not conducted, archaeological monitoring was recommended on all ground disturbing activities. Based on the absence of significant historical resources/unique archaeological resources within project area, common practice instituted by lead agencies across the state, the following Mitigation Measures are considered appropriate f

<u>Mitigation Measures</u>

CUL-1: Prior to the start of construction, the Meadows of Isleton shall hold a pre-grading meeting with contractors. A Project Archaeologist (identified by the City) shall attend the pre-grading meeting with contractors to conduct a Cultural Resources Worker Sensitivity Training for all construction personnel working on the proposed Project. The training shall include an overview of potential cultural resources that could be encountered during ground disturbing activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated, and any other appropriate protocols. The City shall also be notified of this training so City staff can attend and/or monitor this training.

CUL-2: If prehistoric or historic-period archaeological deposits are discovered during Project activities, all work within 25 feet of the discovery should be redirected and the archaeologist should assess the situation, consult with agencies as appropriate, and make recommendations regarding the treatment of the discovery. Impacts to archaeological deposits should be avoided by Project activities, but if such impacts cannot be avoided, the deposits should be evaluated for their California Register eligibility. If the deposits are not California Register–eligible, no further protection of the finds is necessary. If the deposits are California Register–eligible, they should be protected from Project-related impacts, or such impacts should be mitigated. Mitigation may consist of, but is not necessarily limited to, systematic recovery and analysis of archaeological deposits, recording the resource, preparation of a report of findings, and accessioning recovered archaeological materials at an appropriate curation facility. Public educational outreach may also be appropriate.

CUL -3: Should paleontological resources be identified on the Project site during any ground disturbing activities related to the Project, all ground disturbing activities within 100 feet of the discovery shall cease and the City of Isleton shall be notified within 24 hours of the discovery. The Project applicant shall retain a qualified paleontologist to provide an evaluation of the find and to prescribe mitigation measures to reduce impacts to a less than significant level. In considering any suggested mitigation proposed by the consulting paleontologist, the Project applicant shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, Project design, costs, specific plan policies and land use assumptions, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for paleontological resources is carried out.

CUL-4: Any human remains encountered during Project ground-disturbing activities should be treated in accordance with California Health and Safety Co de Section 7050.5. The lead agency should inform its contractor(s) of the sensitivity of the Direct Area of Potential Effect for human remains and verify that the following directive has been included in the appropriate contract documents:

> If human remains are encountered during Project activities, the Project shall comply with the requirements of California Health and Safety Code Section 7050.5. There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the county coroner has determined the manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation or to his or her authorized representative. At the same time, an archaeologist shall be contacted to assess the situation and consult with agencies as appropriate. Project personnel/ construction workers shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Native American Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.

ENERGY

Would the project:

Question	CEQA Determination
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	Less Than Significant Impact
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	Less Than Significant Impact

<u>Environmental Setting or Reference</u>

Buildings in California are required to comply with California's Energy Efficiency Standards for Residential and Nonresidential Buildings established by CEC regarding energy conservation standards and found in Title 24, Part 6 of the California Code of Regulations. Energy efficient buildings require less electricity. In general, Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods.

In July 2008, the *California Building Standards Commission* adopted the nation's first green building standards. The *California Green Building Code* (Part II, Title 24) was adopted as part of the *California Building Standards Code (Title 24, California Code of Regulations).* Part II establishes voluntary standards on planning and design for sustainable site development, energy efficiency (in excess of California Energy Code requirements), water conservation, material conservation, and internal air contaminants.

<u>Evaluation of Potential Energy Impacts</u>

a) Less Than Significant Impact. The RV park resort project is subject to compliance with *Title 24* energy efficiency standards and *Green Building Codes* adopted by the City of Isleton. Approved buildings plans will be in accordance with Title 24 and Green Building Standards for energy efficiency standards. The project will not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Due to the Green Building recycling and Title 24 energy provisions, these impacts are considered less than significant.

b) Less Than Significant Impact. See discussion in under a) above.

GEOLOGY AND SOILS

Would the project:

Question	CEQA Determination
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	Less Than Significant Impact
ii) Strong seismic ground shaking?	Less Than Significant Impact
iii) Seismic-related ground failure, including liquefaction?	Less Than Significant Impact
iv) Landslides?	Less Than Significant Impact
b) Result in substantial soil erosion or the loss of topsoil?	Less Than Significant Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	Less Than Significant with Mitigation Incorporated
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	Less Than Significant with Mitigation Incorporated
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	Less Than Significant Impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Less Than Significant with Mitigation Incorporated

Environmental Setting and Reference

There are 11 geomorphic provinces in California. These provinces are naturally defined geologic regions that have distinct landscapes and features based on geology, faults, topographic relief, and climate (California Geological Survey 2002). The Proposed Project occurs within the Great Valley geomorphic province. The Great Valley is an alluvial plain approximately 50 miles wide and 400 miles long (California Geological Survey 2002). The Great Valley is a trough in which sediments have been deposited continuously since the Jurassic period (i.e., approximately 160 million years ago).

Soils in the Project area, are comprised of Delta peat and range from 10 feet to as much as 40 feet in depth (City of Isleton 2000). The soils in the region have undergone, and continue to undergo, varying degrees of subsidence (i.e., sinking or gradual downward settling) as a result of exposure (oxidation).

Seismicity: The seismicity of the Project area is primarily related to the San Andreas Fault system (City of Isleton 2000). The Loma Prieta earthquake on the San Andreas Fault in the Santa Cruz mountains in 1989 seriously damaged structures in the City of Isleton. However, even with major strike-slip faults on the San Andreas systems producing larger and more frequent earthquakes than faults within the Delta, earthquakes from the San Andreas Fault system contribute to lower hazards than faults in the Delta due to their greater distance from the Delta levee system (Unruh and Hitchcock 2009).

The Midland Fault, a subsurface fault, is the closest Delta fault to the Project area (City of Isleton 2000, California Geological Survey 2010a). Although the California Geologic Survey (2010b) identified the Midland Fault as last rupturing during the Quaternary Period (between 11,000 and 1.6 million years ago) and classifies it as “potentially active”, Wong et al. (2010) suggested that the Midland Fault was potentially seismogenic and had a high probability of activity. Wong et al. (2010) further identified a roughly east-west-trending buried structure referred to as the Thornton Arch Source Zone in the vicinity of the Thornton and West-Thornton-Walnut Grove gas fields may be an active fault with a low probability of activity. Seismic hazards are those associated with faulting, ground shaking, liquefaction (i.e., loss of soil strength due to seismic forces), and seiches whereas geologic hazards are those associated with subsidence, expansive soils, landslides, and erosion.

Even with the potential for the Midland Fault to be potentially active, geologic hazards are more prevalent than seismic hazards in Sacramento County.

Soils of the Isleton planning area are Delta peat, ranging from 101 to as much as 40' in depth; These soils have undergone varying degrees of subsidence over the years and subsidence continues as the result of exposure (oxidation) of peat soils to the drying factors of air and subsequent shrinkage and wind erosion. Such subsidence is typical throughout the Delta. These naturally occurring conditions require special engineering evaluation for determining appropriate foundation design for structures.

Evaluation of Potential Geology and Soils Impacts

a) i. **Less than Significant Impact**. There are no known faults crossing through the project site. The site is not located within an Alquist-Priolo earthquake hazard zone. Therefore, less than significant impacts would occur with respect to fault rupture.

ii. **Less than Significant Impact**. The project would be designed and constructed in accordance with the requirements of the Uniform Building Code. As a result, the risk of ground shaking would be reduced to a minimum and is considered to be less than significant.

iii. **Less than Significant Impact**. Liquefaction is a soil strength and stiffness loss phenomenon that typically occurs in loose, saturated cohesionless soils as a result of strong ground shaking during earthquakes. The potential for liquefaction at a site is usually determined based on the results of a subsurface geotechnical investigation and the groundwater conditions beneath the site. Hazards to buildings associated with liquefaction include bearing capacity failure, lateral spreading, and differential settlement of soils below foundations, which can contribute to structural damage or collapse. Due to the clayey nature of the soils encountered, the potential of soil liquefaction is considered low. Therefore, adverse impacts from liquefaction are expected to be less than significant.

iv. **Less than Significant Impact**. The area of the project site proposed for construction is relatively flat; therefore, the likelihood of landslides is minimal. Adverse impacts from landslides are expected to be less than significant.

b) Less Than Significant Impact. Grading of the site during future development may create minor contour changes necessary to direct surface runoff. Construction of improvements to accommodate the project would also result in the placement of paving and concrete. Erosion control will be required to mitigate impacts. As a condition of approval of any grading or building permit, the contractor is required to control dust and wind erosion through a combination of watering and erosion control practices. The project would not result in substantial soil erosion, siltation, or loss of topsoil. Therefore, a less than significant impact is expected.

c) Less than Significant Impact with Mitigation Incorporated. According to xx study field and laboratory work indicate that the undisturbed native soils are under consolidated and in very soft to soft states and of relatively low strength and are anticipated to be highly compressible under loading, resulting in potentially large and unpredictable settlements. The proposed structures will likely require the use of a deep foundation system or ground improvements to provide adequate building support and minimize the effects of total and differential settlements on the structures. The project will need to adhere to the recommendations provided in the Geotechnical Engineering Report prepared by Mid Pacific Engineering, Inc.

d) Less than Significant Impact with Mitigation Incorporated. The project site may have the potential for expansive soils. Laboratory testing conducted by xx indicated that the native on-site clayey organic silt soils possess a medium potential for expansion (expansion index, EI = 60) when tested in accordance with the ASTM D4829 test method. These clayey soils may experience volume changes with varying soil moisture contents and are capable of exerting moderate expansion pressures upon foundations and concrete slabs-on-grade, including exterior flatwork. However, potential impacts of expansive soils can be avoided through appropriate treatments contain in the Geotechnical Engineering Report prepared by Mid Pacific Engineering, Inc. to mitigate impacts to a level of non-significance.

e) Less than Significant Impact. The proposed project is within an area that is identified to utilize septic tank systems and may or may not connect to a public municipal wastewater disposal system. In either case, disposal shall be conducted in a way to minimize impacts to a level of non-significance.

f) Less than Significant Impact. Disturbance of paleontological resources or unique geologic features is not anticipated. However, if a previously unknown unique paleontological resource or unique geological feature is encountered during construction activities, the proposed project could result in a disturbance of such resources. Nonetheless, the potential impact would be reduced to less than significant with the incorporated mitigation measures **CUL-1 and CUL- 2.**

Implementation and adherence to Mitigation Measures will reduce potential impacts to less than significant.

__**Mitigation Measures**__

GEO-1: The project shall adhere to all recommendations and treatments contain in the Geotechnical Engineering Report prepared by Mid Pacific Engineering, Inc. included as **Appendix E**. in this ISMND.

GEO-2: Prior to site plan approval, a preliminary soils report shall be submitted to the City, prepared by a California licensed civil engineer. The report shall include evaluation of adequate test borings. Additional measures may be added by the City to mitigate potential geologic/soil conditions on the site to accommodate development. If the report indicates the presence of critically expansive soils or other soils problems which, if not corrected, would lead to structural defects, a soils investigation may be required by the City Engineer. Such soils investigation shall be done by a California licensed civil engineer, who shall recommend the corrective actions which will prevent structural damage to any structure proposed to be constructed in the area where such soils problem exists.

GEO-3: Prior to any ground disturbance and/or operation, the applicant shall submit Erosion Control and Sediment Plans to the City for review and approval. The project shall incorporate Best Management Practices (BMPs) consistent with the City Code and the State Storm Water Drainage Regulations to the maximum extent practicable to prevent and/or reduce discharge of all construction or post-construction pollutants into the local storm drainage system.

GEO-4: Prior to any ground disturbance, (if applicable), the applicant shall submit and obtain a Grading Permit from the City in accordance with the City of Isleton Municipal code(s). Plans for grading shall include disclosure of location and method of treatment/storage of exported materials.

GEO-5: The applicant shall monitor the site during the rainy season including post-installation, application of BMPs, erosion control maintenance.

GREENHOUSE GAS EMISSIONS

Would the project:

Question	CEQA Determination
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less Than Significant Impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less Than Significant Impact

Environmental Setting

The project site is located within the Sacramento Metropolitan Air Quality Management District (SMAQMD), which is part of the Sacramento Valley Air Basin. The Sacramento Valley Air Basin has been further divided into Planning Areas called the Northern Sacramento Valley Air Basin (NSVAB) and the Greater Sacramento Air region, designated by the U.S. Environmental Protection Agency (EPA) as the Sacramento Federal Ozone Non-attainment Area. The Nonattainment area consists of all of Sacramento and Yolo counties, and parts of El Dorado, Solano, Placer, and Sutter counties.

SMAQMD is responsible for limiting the emissions that can be generated throughout the County by various stationary and mobile sources. Specific rules and regulations have been adopted by the SMAQMD Board of Directors that limit the emissions (including greenhouse gas) that can be generated by various uses and/or activities, and identify specific greenhouse gas reduction measures that must be implemented in association with various uses and activities. The proposed project would be subject to SMAQMD rules and regulations.

CEQA Guidelines Section 15064.4 provides direction to lead agencies in determining the significance of impacts from GHG emissions. Section 15064.4(a) calls on lead agencies to make a good faith effort, based upon available information, to describe, calculate, and estimate the amount of GHG emissions resulting from a project. The lead agency has the discretion to determine, in the context of a particular project, how to quantify GHG emissions.

Greenhouse gasses (GHG) include gases that can affect the earth's surface temperature. The natural process through which heat is retained in the troposphere is call the greenhouse effect. The greenhouse effect traps heat in the troposphere through a process of absorbing different levels of radiation. GHG are effective in absorbing radiation which would otherwise escape back into space. Therefore, the greater the amount of radiation absorbed, the greater the warming potential of the atmosphere. GHG are created through a natural process and/or industrial processes. These gases include water vapor (H2O), carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and sulfur hexafluoride (SF6).

Since 2005, the California legislature adopted several bills, and the Governor signed several Executive Orders, in response to the impacts related to global warming. Assembly Bill 32 states global warming poses a serious threat to California and directs the Air Resources Board to develop and adopt regulations that reduce GHG emissions to 1990 levels by the year 2020. Senate Bill 97 requires an assessment of projects GHG emissions as part of the CEQA process. SB 97 also required the *Office of Planning and Research* to develop guidelines to analyze GHG emissions.

In October 2014, the SMAQMD adopted thresholds of significance for GHG emissions. Due to the nature of global climate change, it is not anticipated that a single project would have a substantial impact on global climate change. Although it is possible to estimate a project's emissions, it is not possible to determine whether or how an individual project's relatively small incremental contribution might translate into physical effects on the environment.

Evaluation of Potential Greenhouse Gas Emissions Impacts

a &b) Less Than Significant Impact. According to the Air Quality, Global Climate Change and Energy Impact Analysis by Ganddini Group for Meadows of Isleton (included as **Appendix A.)** The GHG emissions from the proposed project would not individually generate GHG emissions enough to measurably influence global climate change. However, ongoing occupancy and operation of the Meadows RV park would result in a net increase of CO2 and other greenhouse gas emissions due to vehicle miles traveled, energy use, and solid waste disposal. However, as a recreational use in proximity to services, vehicle miles traveled are anticipated to be reduced. According to the *CalEEMod* Program results enumerated in the Air Quality section of the Initial Study, the following quantified air quality impacts are anticipated with the proposed RV park.

Table 1: Construction-Related Regional Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)			
	ROG	NOx	PM10	PM2.5
Maximum Daily Emissions[1,2]	10.00	40.60	5.54	3.09
SMAQMD Thresholds	-	85	80 [3]	82 [3]
Exceeds Thresholds?	No	No	No	No

Notes: Source: CalEEMod Version 2022.1
(1) On-site emissions from equipment operated on-site that is not operated on public roads. On-site grading PM-10 and PM- 2.5 emissions include watering twice a day for compliance with SMAQMD Rules 403 and BCECPs.
(2) Paving and painting phase may overlap with construction phase.
(3) Only applies to projects for which all feasible best available control technology (BACT) and best management practices (BMPs) have been applied. Projects that fail to apply all feasible BACT/BMPs must meet a significance threshold of 0 lbs/day.

Table 2: Regional Operational Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)				
	ROG	NOx	CO	PM10	PM2.5
Maximum Daily Emissions	1.99	2.44	19.50	1.26	0.25
SMAQMD Thresholds[1]	65	65	-	80 [2]	82 [2]
Exceeds Threshold?	No	No	No	No	No

Notes: Source: CalEEMod Version 2022.1; the higher of either summer or winter emissions.
(1) As shown in Table 5, the concentration threshold for CO is the CAAQS, 20 ppm 1-hour standard (23 mg/m3); 9 ppm 8-hour standard (10 mg/m3).
(2) Only applies to projects for which all feasible best available control technology (BACT) and best management practices (BMPs) have been applied. Projects that fail to apply all feasible BACT/BMPs must meet a significance threshold of 0 lbs/day.

As noted in the Air Quality Section of this Initial Study, the above impacts are within the acceptable level of impacts as viewed by the SMAQMD. In addition, the following project components and California Green Building Code requirements apply to the proposed recreational project:

- Projects with an aggregate landscape area equal to or greater than 500 square feet shall comply with either a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent.
- Toilets and showers shall be low flow.
- All exterior lighting shall be high efficacy and be controlled by a manual on/off switch.
- All high efficacy light fixtures shall be certified as "high-efficacy" light fixtures by the California Energy Commission.
- The Lodge/club house shall be constructed in accordance with Title 24 Energy Standards.
- No portable generators shall be used for the RV sites with full hook-ups.
- All new woodburning devices shall be EPA-certified to the latest standards.
- As a transient recreational project, in proximity to services, reduced Vehicle Miles (VMT) are anticipated to be reduced than otherwise would have occurred.

The above CA Green Building Code requirements coupled with the analysis and conditions of approval in the Air Quality Section of the Initial Study, will assure that Greenhouse Gas impacts remain less than significant project.

HAZARDS AND HAZARDOUS MATERIALS

Would the project:

Question	CEQA Determination
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less Than Significant Impact
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?	Less Than Significant Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Less Than Significant Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	No Impact
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	No Impact
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	Less Than Significant Impact

Environmental Setting or Reference

Based upon a search of the Sacramento County's Environmental Health Department's website, the proposed project site is not listed in any database of hazardous material sites. Hazardous materials stored and used onsite and on surrounding properties would be associated with common construction and household chemicals used. However, these chemicals are purchased legally and do not constitute a health hazard.

The Isleton City Fire Department responds to all calls for emergency services with City limits that include, but are not limited to fires, emergency medical incidents, hazardous materials incidents, public assists, traffic and vehicle accidents and other situations. The City's closest fire station is located on 101 2nd Street, this station is located just .05 miles from the project site.

Industrial and commercial facilities that use, store, or dispose of hazardous materials present the greatest potential hazards. A search of available environmental records conducted indicates that the project site is not listed as a hazardous materials site and no listed sites occur within the project vicinity.

Evaluation of Potential Hazards and Hazardous Materials Impacts

a, b) **Less Than Significant Impact*.*** The use of hazardous substances during normal construction activities is expected to be limited in nature, and would be subject to standard handling and storage requirements. Accordingly, impacts related to the release of hazardous substances are considered less than significant.

***c*) Less Than Significant Impact**. There are no existing or proposed school sites within one-quarter mile of the project site. Further, operation of the proposed project does not propose a use that involves activities that would emit hazardous substances or waste that would affect a substantial number of people and is therefore considered to have a less than significant impact. No mitigation measures are required.

d) No Impact. The project is not located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Staff conducted a record search on the *State's Geotracker, Envirostor, and Department of Conservation* websites and found no evidence of abandoned mine or hazardous waste sites in the project vicinity. As such, the project would not create a significant hazard to the public or the environment. Therefore, there is no impact.

e) No Impact. Isleton is not located within the boundaries of an airport land use plan or within two miles of a public airport. No impact will occur and no mitigation needed.

f) No Impact. The project will not impair implementation of or physically interfere with an emergency response plan or emergency evacuation plan. Existing City standards for the development provide adequate access, fire flows, and other facilities to maintain an appropriate level of fire protection.

g) Less Than Significant Impact. The project is required to comply with the *California Building Code* and *California Fire Code*. Isleton is surrounded by cultivated farmland, and the Sacramento River. The threat of wildland fires is considered to be minimal. Based these standards and location the project is not anticipated to expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fire.

HYDROLOGY AND WATER QUALITY

Would the project:

Question	CEQA Determination
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	Less Than Significant with Mitigation Incorporated
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?	Less Than Significant Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation on- or off-site;	Less Than Significant Impact
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	Less Than Significant Impact
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	Less Than Significant Impact
(iv) impede or redirect flood flows?	Less Than Significant Impact
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	Less Than Significant Impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	Less Than Significant Impact

Environmental Setting and Reference

Isleton is located along the south bank of the Sacramento River, approximately 3.12 miles upstream of its confluence with Steamboat Slough. Isleton's elevation is approximately 5 feet above sea level. The city is confronted with persistent flood hazards due to its iconic location within the California Delta and the surrounding water features such as the Sacramento River, Georgiana Slough, San Joaquin River, and Mokelumne River. Virtually the entire city lies within the 100-year flood zone designated by the Federal Emergency Management Agency (FEMA), as displayed in Figure 11.

Isleton has been flooded by the Sacramento/San Joaquin River systems at least five times since its inception as a City. The most recent 1972 flood, caused by a failed levee on the south side of Brannan-Andrus Levee Maintenance District (BALMD) along the right bank levee of the San Joaquin River, left Isleton under as much as eight feet of water.

Evaluation of Potential Hydrology and Water Quality Impacts

a) Less Than Significant Impact with Mitigation Incorporated. Runoff from the park would be collected in a series of swales, catch basins, and located on the property (including water quality BMPs). The collected site runoff would be conveyed and discharged to the existing via a new drainage ditch or pipe. Construction activities disturbing one acre or more of land are subject to the permitting requirements of the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity. Since the project site involves more than one acre in size the applicant required to submit a Notice of Intent (NOI) to the Regional Water Quality Control Board (RWQCB) that covers the General Construction Permit (GCP) prior to the beginning of construction. The GCP requires the preparation and implementation of a Water Quality Management Plan (WQMP) and a Storm Water Pollution Prevention Plan (SWPPP) both of which must be prepared before construction can begin. The SWPPP outlines all activities to prevent stormwater contamination, control sedimentation and erosion, and compliance with Clean Water Act (CWA) requirements during construction. Implementation of the SWPPP starts with the commencement of construction and continues through to the completion of the project. The WQMP outlines the project site design, source control and treatment control of BMPs utilized throughout the life of the project. Upon completion of project construction, the City, as the applicant must submit a Notice of Termination (NOT) to the RWQCB to indicate that construction is completed. Therefore, with implementation of NPDES and the SWPPP in compliance with the RWQCB, impacts to water quality and discharge requirements. The following standard mitigation measures requiring a grading permit and NPDES permit from the RWCB will reduce potential impacts to a less than significant level:

Mitigation Measures

HY/WQ-1: Prior to the issuance of a grading permit, the applicant shall submit a Storm Water Pollution Prevention Plan (SWPPP) to the City for acceptance, file a Notice of Intent with the California Water Quality Control Board and comply with all provisions of the Clean Water Act. The applicant shall submit the Waste Discharge Identification (WDID) number, issued by the state, to the City of Isleton. This plan shall demonstrate the drainage basin has capacity to accommodate any additional increase in peak runoff from the project beyond what is existing and that any increase of runoff off the site is approved by agencies that control regional drainage.

HY-/WQ-2: Prior to the issuance of a grading permit, a detailed grading, permanent erosion control and landscaping plan shall be submitted for review and approval by the Planning/Engineering Division prior to commencing grading. Erosion control measures shall be implemented in accordance with the approved plans.

b) Less Than Significant Impact. The development of the RV park would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. The RV park would be served by public water. There will be no groundwater extraction from wells on the site. Public water supply is from California America Water Company which maintains the system consisting of three wells, pumps, water treatment equipment, water storage, distribution piping, fire hydrants, valves, and other equipment. The system draws from groundwater with a storage capacity of over 100,000. The water distribution system in the project area is capable of delivering a flow of approximately 1,134 gpm for a 2 hour duration in accordance with the City of Isleton Fire Department's Standards.

c) Less Than Significant Impact. The project site is located in an AE-9 Flood Hazard Zone based on Federal Emergency Management Agency (FEMA) mapping (see Flood Hazard Map next page). Each Tiny home and RV pads will need to be elevated above the base flood elevation in conformance with City of Isleton's municipal code. All construction building pad will be required to comply with Chapter 5.52 of the Municipal Code regarding Flood Damage Protection. This Code outlines standards for construction within flood hazard zones. In addition, as part of the final map recordation clearances may be required obtain a Conditional Letter of Map Revision (CLOMR) to address how the project would affect the hydrologic and/or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway or effective Base Flood Elevations**.**

d) Less Than Significant Impact. As noted in item "c" above, proposed improvements from the project are within the floodplain. All improvements shall be conducted in accordance with Chapter 5.52 of the Municipal Code regarding Flood Damage Protection, which includes avoidance of pollutants into the flood area.

e) Less Than Significant Impact. Addressed in a above.

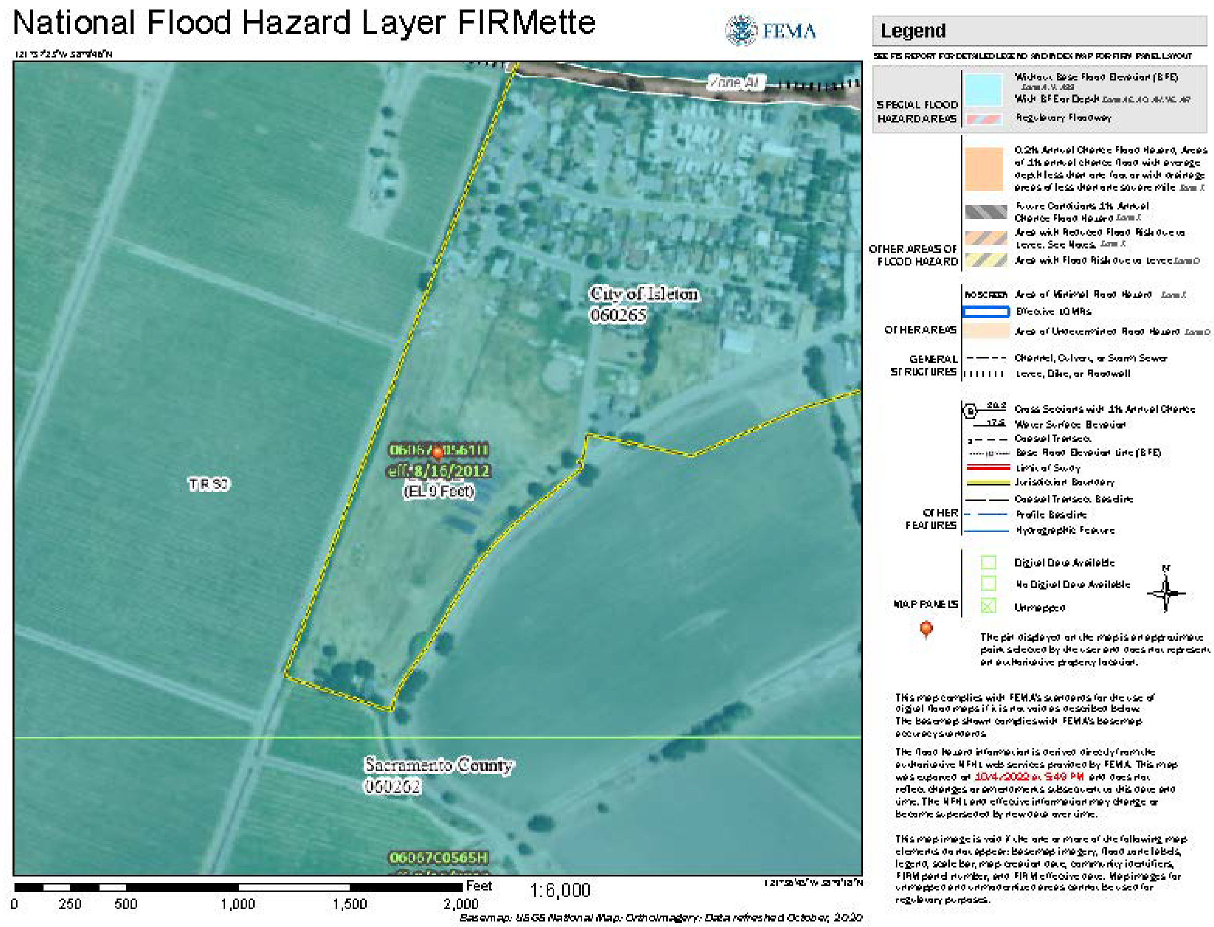


Figure 11: FEMA Flood Hazard Map

LAND USE AND PLANNING

Would the project:

Question	CEQA Determination
a) Physically divide an established community?	No Impact
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	Less Than Significant Impact

Environmental Setting and Reference

The General Plan designates the properties as Medium Density/Mobile Home (southern portion of 301 Jackson, 401 and 501 Jackson) and Low Density (the northern portion of 301 Jackson- see General Plan Table and Figure 12 General Plan Boundary Map). The Zoning for these properties is R-MH (Multi-family residential, Mobile Home) and R-1-7 (Single-family residential) respectively (see Zoning Table and Figure 13 Zoning Boundary Map). The Zoning Code does not reference Recreational Vehicle Parks as a particular use in either RM-Medium Density/Mobile Home or R-1-7, One Family (maximum one dwelling per 7,000 square foot lot area) zone districts as allowed or conditionally allowed. However, in accordance with Section 1603 of the Zoning Code, the City Council, on receiving recommendation from the Planning Commission, on November 6, 2019, interpreted, that certain uses, such as recreational vehicle parks and camp sites would be considered as a use that would be allowed with a conditional use permit in these zoning districts, and specifically this project site. Therefore, this project requires discretionary approval by the Planning Commission (recommendation) and approval by the City Council of a conditional use permit. The applicant has submitted for a Conditional Use Permit to the City for this project.

General Plan Land Use Designations by Assessor Parcel Number:

Situs-APN/Situs	*Acres*	*Land Use Designations*
501 Jackson-157-0100-070	3.74 acres	Medium Density Residential/Mobile Home
401 Jackson-57-0100-071	0.76 acres	Medium Density Residential/Mobile Home
301 Jackson-157-0100-069 (Partial)	5.23 acres	Medium Density Residential/ Mobile Home
301 Jackson-157-0100-069 (Partial)	4 acres	Low Density Residential
Total	**13.73 acres**	

Zoning by Assessor Parcel Number:

Situs/APN	*Acres*	*Zoning*
501 Jackson-157-0100-070	3.74 acres	Residential Multi-Family Residential Mobile Home (R-MH)
401 Jackson-57-0100-071	0.76 acres	Residential Multi-Family Residential Mobile Home (R-MH)
301 Jackson-157-0100-069 (Partial)	5.23 acres	Residential Multi-Family Residential Mobile Home (R-MH)
301 Jackson-157-0100-069 (Partial)	4 acres	Single Family Residential (R-1-7)/Multi-Family Residential Mobile Home (R-M)
Total	**13.73 acres**	

In addition, this project will be subject to a permit from Housing and Community Development (HCD). Compliance standards associated with permit can be found at: https://www.hcd.ca.gov/mobilehome-parks

Evaluation of Potential Land Use and Planning Impacts

a) No Impact. The site is bounded to the southeast by Jackson Slough Road, to the northeast by vacant lot and single-family residences, to the northwest by farmland, and to the southwest by a single-family residence beyond which is farmland. The site is located adjacent to residential development. Although, not considered "infill development per the CEQA Guidelines, the project is surrounded by existing development and will not physically divide an established community.

b) Less Than Significant. The applicable local land use plan is the City General Plan. The proposed Project is consistent with the City's General Plan policies based on interpretation by the City Council. This project application involves a Conditional Use Permit (CUP) for the proposed project as well as Architecture, Site, and Grading Approvals.

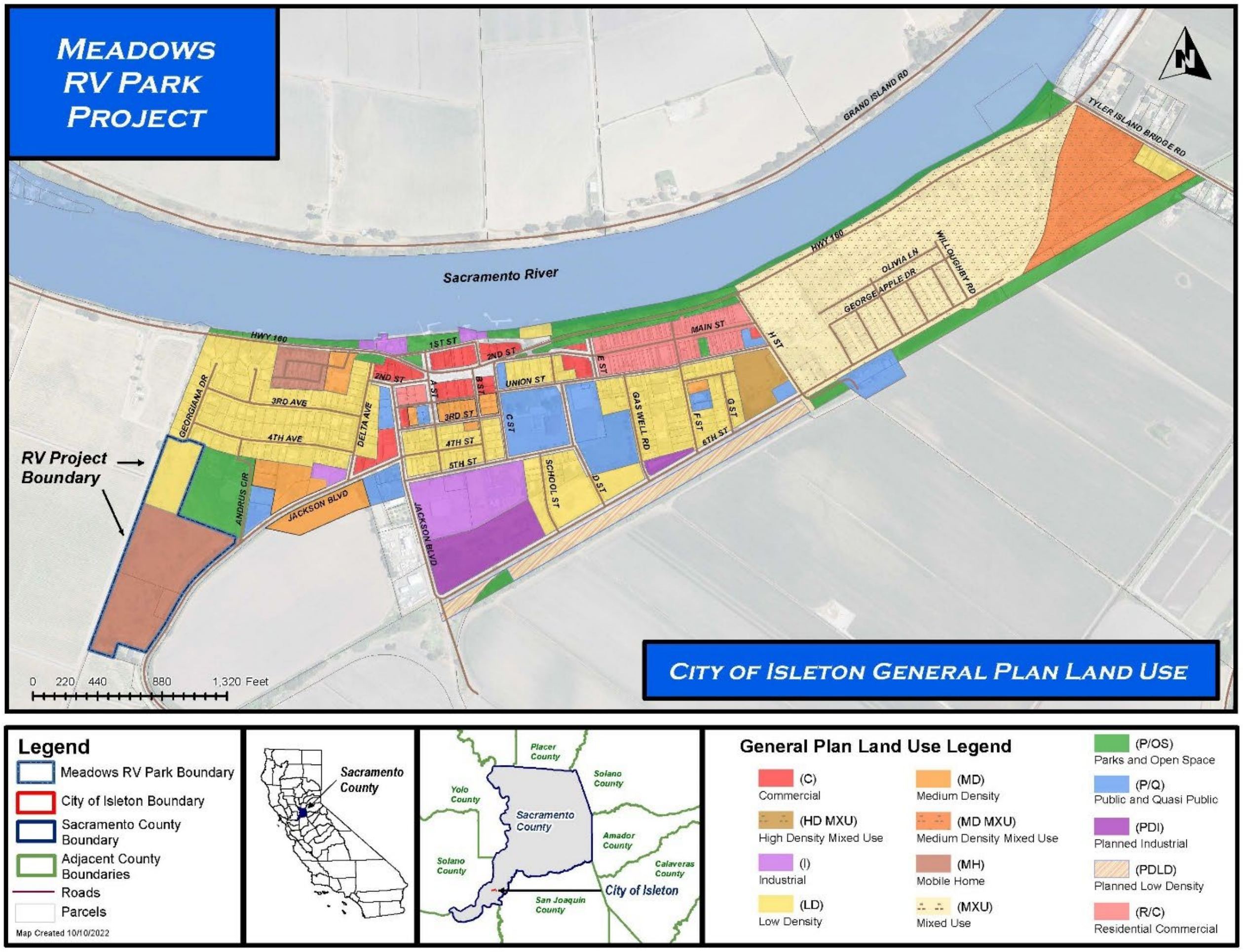


Figure 12: Land Use Map

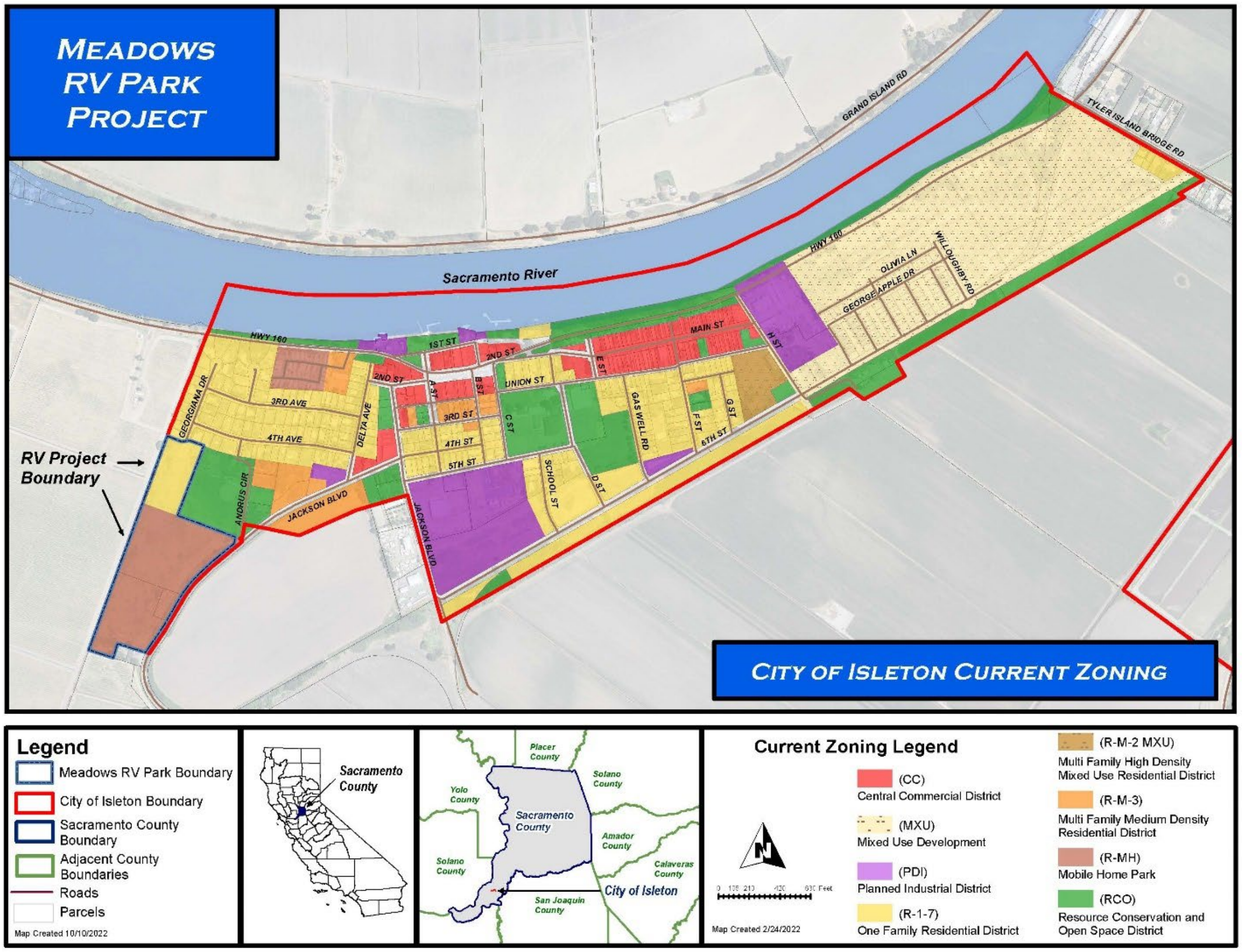


Figure 13: Zoning Boundary Map

MINERAL RESOURCES

Would the project:

Question	CEQA Determination
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 Impact
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	No Impact

Environmental Setting or Reference

The State Mining and Geology Board (SMGB) prioritizes areas to be classified as containing significantmineral resources and areas to be designated as containing mineral deposits of regional or statewide significance. Mineral Resource Zone (MRZ) categories are used to identify areas of identified, undetermined, and unknown mineral resource significance.

Evaluation of Potential Mineral Resource Impacts

a) No Impact. The State Mining and Geology Board (SMGB) prioritizes areas to be classified as containing significant mineral resources and areas to be designated as containing mineral deposits of regional or statewide significance. Mineral Resource Zone (MRZ) categories are used to identify areas of identified, undetermined, and unknown mineral resource significance. No MRZ designations have been applied to the City of Isleton.

b) No Impact. See response to item a) above.

NOISE

Would the project result in:

Question	CEQA Determination
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Less Than Significant Impact
b) Generation of excessive groundborne vibration or groundborne noise levels?	Less Than Significant Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	No Impact

<u>Environmental Setting or Reference</u>

This section evaluates short-term and long-term potential noise impacts of the proposed Project on sensitive uses adjacent to the proposed Project site.

The need to mitigate noise impacts under State of California requirements is triggered by one of the following:

- New development proposed adjacent to a roadway that will be negatively impacted by the existing or future traffic noise.
- A new roadway proposed to cross through or along an existing development, where future traffic noise will negatively impact the development.
- Expansion of an existing roadway where projected traffic noise will negatively impact adjoining land uses.
- Establishment of a new land use that will negatively impact on existing use; or
- Establishment of a new land use the will be negatively impacted by the proximity of an existing noise producing use.

A *Noise Impact analysis* was prepared by *Ganddini dated September 9, 2022.* This report is included as **Appendix A.** The purpose of the analysis is to quantify the existing noise and vibration environments, identify potential noise and vibration impacts resulting from the project, identify appropriate mitigation measures, and provide a quantitative and qualitative analysis of impacts associated with the project. Specifically, impacts are identified if project related activities would cause a substantial increase in ambient noise or vibration levels at existing noise-sensitive uses in the project vicinity. An impact would also be identified if project-generated noise or vibration levels would exceed appliable City of Isleton standards at existing noise-sensitive uses in the project vicinity.

Noise associated with the RV park will be consistent with other residential land uses and the noise associated with the proposed recreation areas will be consistent with noise associated with community parks. To estimate increases in the ambient noise levels associated with operation of the RV park, the average operational noise level (Leq) was modeled. Modeled noise sources include small HVAC units and the proposed recreation/common area. Both noise sources were modeled to be in full operation during daytime and evening hours. Electricity will be provided at each RV/Tiny Home site and generator use is not anticipated; therefore, no impact would occur as a result of generator use.

Evaluation of Potential Noise and Vibration Impacts

a) Less than Significant with Mitigation Incorporated. Short-term noise impacts would occur during construction of the proposed Project. Construction-related, short-term noise levels would be higher than existing ambient noise levels in the vicinity of the project site but would cease once project construction is completed.

Construction and Noise Generation from Project: Two types of short-term noise impacts could occur during project construction. First, construction crew commutes and the transport of construction equipment and materials to the project site would incrementally increase noise levels on roads accessing the project site. The second type of short-term noise impact is related to noise generated during project construction. Construction is conducted in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics that change the character of the noise generated on site. Therefore, the noise levels will vary as construction progresses. Despite the variety in the types and sizes of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase.

Modeled unmitigated construction noise levels reached 66.1 dBA Leq at the nearest residential property line to the south, 64.4 dBA Leq at the nearest residential property line to the north, 73.1 dBA Leq at the nearest baseball field/park property line to the northeast, and 67.1 dBA Leq at the nearest church property line to the northeast of the project site.

The City's Municipal Code Section 6.44.010 permits construction related activities between the hours of 7:00 AM to 6:00 PM. Project construction will not occur outside of the hours outlined as "exempt" in the City of Isleton Municipal Code Section 6.44.010 (as follows) and therefore, will not result in or generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance.

Based upon the equipment noise levels, worst-case on-site project construction equipment noise levels at the nearest property lines are expected to range from 64.4 to 73.1 dBA. Considering the type of equipment used for the project, it is anticipated that construction noise will intermittently exceed+_ dBA, during the working hours from 7:00 a.m. to 6:00 p.m. However, based upon the temporary and fluctuating nature of construction noise and the following mitigation measures, construction noise would be reduced to a less than significant level.

Mitigation Measures

NOI-1: All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers, consistent with manufacturer standards.

NOI-2: All stationary construction equipment shall be placed so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

NOI-3: As applicable, all equipment shall be shut off when not in use.

NOI-4: To the degree possible, equipment staging shall be located in areas that create the greatest distance between construction-related noise and vibration sources and sensitive receptors surrounding the project site.

NOI-5: Jackhammers, pneumatic equipment, and all other portable stationary noise sources shall be directed away from existing residences east of the project site. Either one-inch plywood or sound blankets can be utilized for this purpose. They shall reach up from the ground and block the line of sight between equipment and the nearest off-site residences. The shielding shall be without holes and cracks.

NOI-6: No amplified music and/or voice shall be allowed on the project site.

NOI-7: Haul truck deliveries shall not occur outside of the hours presented as exempt for construction per City's Municipal Code Section 6.44.010.

Offsite-Construction

Construction truck trips would occur throughout the construction period. Given the project site's proximity to the Highway 12, it is anticipated that worker, vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps traveling south on Jackson Slough Road.

According to the Federal Highway Administration (FHWA), the traffic volumes need to be doubled in order to increase noise levels by 3 dBA CNEL. The estimated existing average daily trips along Jackson Slough Road in the vicinity of the project site is approximately 1,250 average daily vehicle trips.[1] As shown in the CalEEMod output files provided in the Air Quality, Global Climate Change, and Energy Impact Analysis prepared for the proposed project (Ganddini Group, 2022) the greatest number of construction-related vehicle trips per day would be during grading at up to 20 worker vehicle trips per day. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes.

Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

Traffic Impacts to the Proposed Project

[1] Existing average daily traffic volumes for Jackson Slough Road provided in the Meadows of Isleton RV Resort Traffic and Vehicle Miles Traveled Assessment (Ganddini Group, Inc., August 2022).

The City of Isleton has identified noise levels of up to 65 dBA CNEL as “normally acceptable” and of up to 70 dBA CNEL as “conditionally acceptable” for multi-family land uses and/or transient lodging land uses.

Future noise levels are expected to reach 67 dBA CNEL at the RV/Tiny home lot closest to the road-right-of way and will fall into the “conditionally acceptable” category. According to the footnotes in the City’s Community Noise Threshold Table, proposed land uses that fall into the “conditionally acceptable” category should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice. No mitigation is required.

Project Operational Noise

To determine if project traffic would result in a substantial increase in ambient noise levels, noise associated with project generated vehicle trips were modeled for the existing and existing plus project conditions utilizing FHWA Traffic Noise Prediction Model FHWA-RD-77-108 methodology. Project generated vehicle trips are anticipated to increase roadway noise by less than one (1) dBA CNEL. Therefore, a change in noise level would not be noticeable and would be considered less than significant.

Project operational noise is expected to range between 40 and 42 dBA Leq at existing single-family homes and up to 47 dBA Leq at the Isleton Community Baseball Field. The applicable daytime noise level that project operation is not to exceed is a 30-minute daytime Leq of 55 dBA (between the hours of 7:00 AM and 10:00 PM). In addition, at residential receptors, the applicable nighttime noise level that project operation is not to exceed is a Leq of 45 dBA during nighttime hours (10:00 PM to 7:00 AM). Project operational noise is not expected to exceed City of Isleton noise standards. This impact would be less than significant, and no mitigation is required.

Furthermore, existing ambient noise levels in the project vicinity range between 43.1 and 48.3 dBA Leq. Project operations would reach up to 42 dBA Leq at existing single-family homes and up to 47 dBA Leq at the Isleton Community Baseball Field. Therefore, considering noise levels add logarithmically, the proposed project would result in increases of ambient noise levels between 0.7 to 1.7 dBA Leq at adjacent residential properties and up to 4.6 dBA Leq at the Isleton Community Baseball Field during operation. Project operation would not result in substantial increases in ambient noise levels at the nearest sensitive receptors. Given that the project would not result in a violation of City standards at a sensitive receptor, increases in the ambient noise levels due to project operation would be less than significant. No mitigation is required.

b) Less than Significant Impact with Mitigation Incorporated. A peak particle velocity (PPV) level of 0.3 in/sec is generally accepted as the threshold at which there is a risk to “architectural” damage to older residential structures and a PPV level of 0.5 in/sec as the threshold at which there is a risk to “architectural” damage to modern industrial/commercial buildings (California Department of Transportation, 2020). The closest residential structures are located approximately 9 feet to the north and 10 feet to the south of the project site boundaries. If a vibratory roller is used within 20 feet of an existing residential structure or if a large bulldozer is used within 12 feet of an existing residential structure, there will be some potential for this equipment to result in architectural damage and significant impacts. Therefore, construction related groundborne vibration has the potential to exceed the residential threshold of 0.3 PPV in/sec at residential structures to the north and south of the project site boundaries. However, incorporation of mitigation measure that limits the use of a vibratory roller within 20 feet or large bulldozer within 12 feet of the existing residential structures to the north and south of the project site will reduce this impact to less than significant. In addition, commercial structures are located as close as approximately 208 feet to the east and 226 feet to the northeast of the project site boundaries. The commercial threshold of 0.5 in/sec PPV would not be exceeded at off-site commercial structures. With implementation of implementation of the following mitigation measure, temporary vibration levels associated with project construction would be less than significant.

Annoyance - Groundborne vibration becomes strongly perceptible to sensitive receptors at a level of 0.1 in/sec PPV. Operation of a vibratory roller may result in groundborne vibration levels of up to 0.1 at a distance of 41 feet and a large bulldozer at a distance of 23 feet. The threshold could theoretically be exceeded at existing residential receptors to the north and south of the project site, and residents may be temporarily annoyed. However, perceptibility of construction vibration would be temporary and would only occur while vibratory equipment is utilized within 41 feet of the existing structures. The mitigation measure discussed above for potential architectural damage impacts would lessen potential annoyance related impacts. Furthermore, this imp act would only occur during daytime hours and will be temporary. This impact would be less than significant.

Mitigation Measures

NOI- 8: The use of a vibratory roller within 20 feet and large bulldozer within 12 feet of the existing residential structures to the north and south of the project site shall be limited to avoid significant impacts.

c) No Impact. The project site is not located with within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport.

POPULATION AND HOUSING

Would the project:

Question	CEQA Determination
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	Less Than Significant Impact
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	Less Than Significant Impact

<u>Environmental Setting and Reference</u>

The General Plan designates the properties as Medium Density/Mobile Home (southern portion of 301 Jackson, 401 and 501 Jackson) and Low Density (the northern portion of 301 Jackson- see General Plan Table and General Plan Boundary Map). The Zoning for these properties is R-MH (Multi-family residential, Mobile Home) and R-1-7 (Single-family residential) respectively (see Zoning Table and Zoning Boundary Map). The Zoning Code does not reference Recreational Vehicle Parks as a particular use in either RM-Medium Density/Mobile Home or R-1-7, One Family (maximum one dwelling per 7,000 square foot lot area) zone districts as allowed or conditionally allowed. However, in accordance with Section 1603 of the Zoning Code, the City Council, on receiving recommendation from the Planning Commission, on November 6, 2019, interpreted, that certain uses, such as Recreational Vehicle Pards and camp sites would be considered as a use that would be allowed with a conditional use permit in these zoning districts, and specifically this project site. Therefore, this project requires discretionary approval by the Planning Commission (recommendation) and approval by the City Council of a conditional use permit. The applicant has submitted for a Conditional Use Permit to the City for this project.

The City has capacity to serve the project by existing utilities including sewer, water, electric, gas and storm drainage.

<u>Evaluation of Potential Population and Housing Impacts</u>

a) Less Than Significant Impact. The project may or may not connect to the City's wastewater system depending on further evaluation. The site is suitable for development of a septic system. If connected the City's wastewater system no relocation or expanded facilities would occur, only a tie-in via Georgiana Drive which dead ends into the project.

The RV park project with its transient occupancies of less than 30 days is not anticipated to cause unplanned population growth in the area, either directly or indirectly.

b) Less Than Significant Impact. The Project will not displace substantial numbers of existing housing, necessitation the construction of replacement housing or people elsewhere.

PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

Question	**CEQA Determination**
a) Fire protection?	Less Than Significant Impact
b) Police protection?	Less Than Significant Impact
c) Schools?	Less Than Significant Impact
d) Parks?	Less Than Significant Impact
e) Other public facilities?	Less Than Significant Impact

Environmental Setting and Reference

The City of Isleton cooperates with Sacramento County Sherrif for police services and has its own Fire Department. The City Public Works Department manages the parks system.

Evaluation of Potential Public Service Impacts

a - e) Less Than Significant Impact. The proposed project does not propose any new fire protection facilities. In accordance with Chapter 3.56 of the Municipal Code, payment of development impact fees for development will off-set the impacts the project would have on these City services.

School impact fees will be collected at the time of building permit issuance for the project to off-set the impacts from this project on school services and facilities.

There would be a minimal increase in the use of existing park facilities for this project. The project is not anticipated to increase the use of existing neighborhood and regional parks, recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment. The RV park resort provides on-site recreational amenities for the tenants. The RV Park resort will not generate the need for additional park facilities. These impacts are considered less than significant

Police protection services within the City of Isleton are provided through a contract with the Sacramento County Sheriff Department. Development of the proposed RV park resort may incrementally increase the demand for police protection services due to the increased transient population of the site.

The applicant will be required to pay the City’s Development Impact Fees, including fees for municipal facilities, fire, and transportation/streets. The fees collected by the City are used to augment fire, police, parks, and other public facilities. Accordingly, impacts to fire protection, police protection, schools, parks, or other public facilities are considered less than significant.

RECREATION

Would the project:

Question	CEQA Determination
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	Less Than Significant Impact
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	Less Than Significant Impact

Environmental Setting and Reference

The City Public Works Department oversees park maintenance and maintains six parks throughout within the city. Park facilities accommodate a wide range of activities, including softball,soccer, volleyball, and basketball. The proposed Project is not adjacent any parks or other recreational facilities, except for an abandoned ballpark to the North of the project site.

Evaluation of Potential Recreation Impacts

a, b) Less Than Significant Impact. The RV Park Resort will provide additional recreational facilities including a walking path throughout, a dog-friendly area, restrooms with showers, game room, electric bike and scooter rentals, an outdoor pool & hot tub, and BBQ/picnic areas and pond. Thereby contributing to existing facilities in the City of Isleton.

The project is not anticipated to increase the use of existing neighborhood and regional parks, recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment. On-site recreational amenities are provided for the tenants of the RV Park resort. The RV Park resort will not generate the need for additional park facilities. These impacts are considered less than significant.

TRANSPORTATION

Would the project:

Question	CEQA Determination
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	Less Than Significant Impact
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	Less Than Significant Impact
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	Less Than Significant Impact
d) Result in inadequate emergency access?	Less Than Significant Impact

Environmental Setting

As of July 1, 2020, Senate Bill 743 went into effect. SB 743 is now the appropriate metric for assessing transportation impact in accordance with CEQA. SB743 was codified in *Public Resources Code Section 21099* and required changes to the CEQA Guidelines. Pursuant to Section 21099, the criteria for determining the significance of transportation impacts must promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. To that end, the *Office of Planning and Research (OPR)* proposed, and the *California Natural Resource Agency* certified and adopted, changes in the CEQA Guidelines that identify Vehicle Miles Traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts.

Consequently, the past practice of automobile delay, as measured by "Level of Service" or "LOS" and other similar metrics, generally no longer constitutes a significant environmental effect under CEQA.

The Meadows of Isleton RV Park provides space and supporting amenities for visitors to Isleton who travel using recreational vehicles. The project will be accessed via a main gated access on along Jackson Slough Boulevard. As presented the project proposes 121 space Recreational Vehicle (RV) park, 96 back-in RV sites, 25 pull through for short term camping on +14 acres. In addition to the RV camping spaces, 14 tiny home cabins would be constructed together with supporting facilities for guests such as restrooms, showers, club house, and recreation.

A Traffic Impact Analysis was prepared by Ganddinni Group, Inc. dated August 31, 2022, for the RV Park. This is study is included as **Appendix F.** in this ISMND. The purpose of this analysis is to assess the level of potential transportation impacts associated with the proposed Project both in the context of vehicle miles traveled (VMT) for California Environmental Quality Act (CEQA) requirements and forecast traffic conditions for non-CEQA purposes.

Evaluation of Potential Transportation Impacts

a) Less Than Significant. Since the proposed project is consistent with the General Plan traffic analysis, which did not identify any LOS deficiencies, the proposed project is forecast to cause no substantial adverse effects on roadway capacity, or conflict with circulation system, including transit, roadway, bicycle, and pedestrian facilities.

b) Less Than Significant. The City of Isleton is the Lead Agency responsible for identifying potential impacts associated with development of the proposed project in accordance with CEQA requirements. In the absence of formal VMT analysis guidelines established by the City of Isleton, this VMT analysis was prepared in accordance with available guidance from the OPR Technical Advisory and County TIA Guidelines.

To calculate net change in total regional VMT, the County TIA Guidelines recommend use of the Sacramento Council of Governments (SACOG) regional travel forecasting model known as the Sacramento Activity-Based Travel Simulation Model (SACSIM); however, SACSIM is not conducive to modeling recreational uses since land use / socio-economic data is primarily related to households and employees. Therefore, it is necessary to use an alternative method for assessing the project's VMT impact.

To assess whether the project is likely to increase or decrease regional VMT, a qualitative review of the project location relative to competing facilities and destination centers in the region was performed.

According to the Transportation Study prepared by Ganddinni Group, Inc. dated August 31, 2022, the proposed project is not anticipated to be the primary reason for visitors traveling to the region. Visitors, particularly RV owners interested in outdoor activities, are primarily drawn to the region for its existing water recreation, fishing, and hiking spots. Therefore, the addition of the proposed project is not anticipated to induce latent demand for travel to the region that would not otherwise occur without addition of the proposed project. Trips associated with the project site will likely have similar or shorter trip lengths compared to visitors that would have to find accommodations elsewhere if the project is not constructed. For the reasons, the proposed project can reasonably be anticipated to result in either a net decrease or negligible effect on total VMT for the region and would have a less than significant VMT impact.

c) Less Than Significant. According to the Transportation Study was prepared by Ganddinni Group, Inc. dated August 31, 2022, the project has been determined to have adequate stopping sight distance to avoid collisions and the available intersection sight distance is provided for vehicles departing the project site driveway and is not anticipated to result in substantial disruptions to flow along Jackson Slough Road.

d) No Impact. The project has been reviewed by the City of Isleton Fire Department for emergency response. The project has been determined by the City of Isleton Fire Department to be in compliance with the City of Isleton fire standards and City Development Code. Therefore, potential impacts relating to emergency access are considered less than significant.

TRIBAL CULTURAL RESOURCES

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

Question	CEQA Determination
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	Less Than Significant with Mitigation Incorporated
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	Less Than Significant with Mitigation Incorporated

Environmental Setting

Chapter 532, Statutes of 2014 (i.e., AB 52), requires Lead Agencies evaluate a project's potential to impact "tribal cultural resources." Such resources include "[s]ites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources." AB 52 also gives Lead Agencies the discretion to determine, supported by substantial evidence, whether a resource qualifies as a "tribal cultural resource."

CEQA defines a "historical resource" as a resource that meets one or more of the following criteria: (1) is listed in, or determined eligible for listing in, the California Register of Historical Resources (California Register); (2) is listed in a local register of historical resources as defined in PRC §5020.1(k); (3) is identified as significant in a historical resource survey meeting the requirements of PRC §5024.1(g); or (4) is determined to be a historical resource by a project's Lead Agency (PRC §21084.1 and *State CEQA Guidelines* §15064.5[a]). A resource may be listed as a historical resource in the California Register if it meets any of the following National Register of Historic Places criteria as defined in PRC §5024.1(C):

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

A “substantial adverse change” to a historical resource, according to PRC §5020.1(q), “means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired.” As detailed in response to Checklist Question 3.5a, a Project-specific cultural resources assessment was conducted for the project site and included archaeological and historical records search, and an intensive pedestrian survey of the Project site. A historic resource was identified 600 feet southeast of the project site consisting of railroad berms connected by a railroad bridge across Georgiana Slough. The site is not located within a railroad route. No evidence of historic deposits was found within the project site during the cultural resource survey, The Project site has not been subject to a previous cultural resources assessment and no cultural resources have been previously identified within its boundaries. The intensive pedestrian survey of the Project site failed to identify any prehistoric archaeological remains and the results of the survey indicate that the surface of entire Project site has been disturbed by existing uses occupying the site.

The Cultural Resources Survey by Tremaine & Associates October 2022 **(Appendix D.)** indicates that the project site falls within a Tribal Cultural Landscape identified by the Nisenan as Hoyo Sayo/Tah Sayo and by the Plains Miwok as Waka-ce/Waka-Ly. However, the study conducted by Tremain and Associates indicate that the project site does not contain any of the primary characteristics that make up this landscape (e.g., waterways, tule habitat, fisheries, and other wildlife). Therefore, the project should not result in a significant impact to tribal resources.

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information submitted for the project. The results were positive. As part of future consultation, the city will contact the Wilton Rancheria for more information including exact location of this sacred land compared to project location.

As noted in the Cultural Resource Impact section of this report, the project site does have a moderate to high possibility of subsurface resources that could be discovered during construction. In the City’s discretion the site has no evidence of significance pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. Therefore, cultural, and tribal resource sensitivity training will need to be conducted prior to soil disturbance and proper treatment of any discovered findings shall be made (see CUL 1 through CUL 4 Mitigation Measures).

<u>Evaluation of Potential Tribal and Cultural Impacts</u>

a) Less Than Significant with Mitigation Incorporated. Chapter 532, Statutes of 2014 (i.e., AB 52), requires Lead Agencies evaluate a project’s potential to impact “tribal cultural resources.” Such resources include “[s]ites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources.” AB 52 also gives Lead Agencies the discretion to determine, supported by substantial evidence, whether a resource qualifies as a “tribal cultural resource.”

b) Less Than Significant with Mitigation Incorporated. CEQA defines a “historical resource” as a resource that meets one or more of the following criteria: (1) is listed in, or determined eligible for listing in, the California Register of Historical Resources (California Register); (2) is listed in a local register of historical resources as defined in PRC §5020.1(k); (3) is identified as significant in a historical resource survey meeting the requirements of PRC §5024.1(g); or (4) is determined to be a historical resource by a project’s Lead Agency (PRC §21084.1 and *State CEQA Guidelines* §15064.5[a]). In accordance with California Government Code Section 65092, on or after March 1, 2005, local governments must consult with tribes before designating open space, if the affected land contains a cultural place and if the affected tribe has requested public notice. In this case, no tribe has requested consultation from the City of Isleton under this Code, so the City is not obligated to request further consultation from tribes. Based on the absence of significant historical resources/unique archaeological resources within the project site, archaeological clearance is recommended for the project/undertaking as presently proposed, although the following Mitigation Measure are considered appropriate:

Mitigation Measures

See Cultural Resource section of this ISMND. **CUL 1 and CUL 2** mitigation measures apply to this Tribal Cultural Resource section.

UTILITIES AND SERVICE SYSTEMS

Would the project:

Question	CEQA Determination
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	Less Than Significant Impact
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	Less Than Significant Impact
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	Less Than Significant Impact
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	Less Than Significant Impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	Less Than Significant Impact

Environmental Setting

The Project will connect to existing water, sewer (or septic), gas, and electric stub outs in the adjacent street rights-of-way. Runoff from the park would be collected in a series swales, catch basins, and located on the property (including water quality BMPs). The collected site runoff would beconveyed and discharged to the existing via a new drainage ditch or pipe.

Evaluation of Potential Utility and Service Systems Impacts

a) Less Than Significant Impact. The project will connect to Cal American Water Company's municipal water systems and not require relocation or new expanded facilities as a result of this project. Attached is a letter from Cal American indicating there is sufficient capacity to serve the project.

Wastewater Treatment: The project may or may not connect to the City's wastewater system depending on further evaluation. The project site is suitable for development of a septic system. If connected to the City's wastewater system no relocation or expanded facilities will be required.

Storm Water Drainage: The project will be need to be designed to comply with the City's Flood Damage regulations and meeting FEMA standards-See Hydrology Section of this report. The project shall also be designed to meet storm water drainage needs of the City's and regional systems.

Electric Power: The project will be supplied power by Pacific Gas and Electric who has adequate capacity to service project needs without relocation or expanded facilities.

b) Less Than Significant Impact. The project will connect to Cal American Water Company's municipal water systems and there is sufficient supplied available to serve the project and in the reasonably foreseeable future. Attached is a letter from Cal American indicating there is sufficient capacity to serve the project.

c) Less Than Significant Impact. The project may or may not connect to the City's wastewater system depending on further evaluation. The project site is suitable for development of a septic system. If connected to the City's wastewater system has sufficient capacity to serve the project. Project could tie into the City's sewer system at Georgiana Drive/4th Ave, Andrus Court south of 4th Avenue, and Jackson Boulevard at Delta Avenue.

The project is expected to increase wastewater loads by about 7,500 gallons per day peak load. The City's wastewater system currently serves approximately 400 connections with the ability to provide additional capacity of about 1,000 more connections or 200,000 more gallons of sewerage. It is noted that the Regional Water Control Board issued a cease and desist order for water quality issues for the City's wastewater system. However, the City is working with the Board to resolve this quality issue. According to the City Engineer/City Manager, the plant has excess capacity to service this project.

d, e) Less Than Significant Impact. The project would be required to coordinate with the waste hauler, Cal Waste Recovery, to develop collection of recyclable materials from the project site on a common schedule as set forth in applicable local, regional, and state programs. Solid waste is transported to the Delta transfer station near Isleton from where it is trucked to the County's 656-acre sanitary landfill at Kiefer Blvd. and Grantline Road southeast of Sacramento. The County's landfill site has an expected useful life to the year 2040. Materials that would be recycled by the project include paper products, glass, aluminum, and plastic. Additionally, the project would berequired to comply with applicable elements of AB 1327, Chapter 18 (California Solid Waste Reuse and Recycling Access Act of 1991) and other applicable local, state, and federal solid wastedisposal standards.

WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

Question	CEQA Determination
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	No Impact
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	Less Than Significant Impact
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	No Impact
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	No Impact

Environmental Setting

In California wildfire protection jurisdictions are separated and overseen by local, state, or federal governments. The majority of Sacramento County is considered to be Local Responsibility Areas. CalFire is the state agency responsible for providing fire protection on all State Responsibility Area lands. The State Responsibility Area closes to the Proposed project is in the eastern part of the county and is categorized as moderate for fire hazard severity (CalFire 2007). This area is more than 30 miles from the Proposed project site. In 2008 CalFire also provided hazard severity zone for Local Responsibility Areas. There are no “Very High Fire Hazard Severity Zones” in or near the Proposed Project site (CalFire 2008).

Evaluation of Potential Wildfire Impacts

a) No Impact. The project as designed will provide sufficient emergency only access via Georgiana Avenue.

b) Less than Significant Impact. The site is virtually flat and with minimal slope and therefore will not exacerbate wildfire risks exposing project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

c) No Impact. The Project is located in an area that has capacity to be served by existing water and roadway infrastructure and does not require the installation or maintenance of wildland protection features such as fire roads, fuel breaks, or emergency water sources. In the absence of any need for such features, no impact (temporary or ongoing) would result from development of the proposed uses.

d) No Impact. Similar to adjacent properties, the Project site is flat. No hillside areas or natural areas prone to wildfire fire are located in the immediate Project vicinity. As the Project would not expose persons or structures to post-fire slope instability or post-fire drainage, no impact would occur.

MANDATORY FINDINGS OF SIGNIFICANCE

Question	CEQA Determination
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	Less Than Significant Impact
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)?	Less Than Significant Impact
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	Less Than Significant Impact

a)-c) Less than Significant Impact. This environmental analysis provides evaluation of the potential environmental effects of the proposed project, including project effects on the quality of the environment, fish and wildlife habitat (including special status species), and cultural resources. These potential impacts are considered less than significant with the incorporation of respective resource mitigation measures.

References

Bumgardner Biological Consulting. 2022. Biological Resource Evaluation, Meadows of Isleton RV Park Project, Isleton, Sacramento County, California.

KingFisher Bio Inc. 2022. Wetland Reconnaissance, Meadows of Isleton RV Park Project, Isleton, Sacramento County, California.

Ganddini Group Inc. 2022. Air Quality, Global Climate Change, and Energy Impact Analysis, Meadows of Isleton RV Park Project, Isleton, Sacramento County, California.

Mid Pacific Engineering, Inc. 2022. Geotechnical Engineering Report, Meadows of Isleton RV Park Project, Isleton, Sacramento County, California

Tremaine & Associates. 2022. Cultural Resource Survey, Meadows of Isleton RV Park Project, Isleton, Sacramento County, California.

Ganddini Group Inc. 2022. Noise Impact Analysis, Meadows of Isleton RV Park Project, Isleton, Sacramento County, California.

Ganddini Group Inc. 2022. Technical Memorandum, Focused Transportation Study, Meadows of Isleton RV Park Project, Isleton, Sacramento County, California.

RMM

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Meadows of Isleton RV Park Project

Draft Biological Resource Evaluation

Prepared For: RMM Environmental Planning Inc.

Prepared By: Bumgardner Biological Consulting

April 2022

Introduction

This Biological Resource Evaluation has been prepared for the proposed Meadows of Isleton RV Park Project in the City of Isleton, California (Figure 1, Project Location). The purpose of the evaluation is to document the review of existing data as well as survey methods, results, and conclusions of a field survey conducted for the proposed project.

The proposed project would include the construction of a 135-site recreational vehicle (RV) park, 121 RV sites and 14 small home cabins with an approximately 3,250-square foot one-story lodge on a 14-acre site. (Figure 2, Site Plan). The lodge would consist of a great room, conference room, fitness center, laundry area, showers, and small storage area. Other on-site amenities would include a patio, luxury heated pool, splash pad, dog park, children playground, bocce ball court(s), shuffleboard, pickle ball courts, fire pit, and grilling area. Each RV site would have utility hook-ups for water, electricity, and wastewater disposal. The proposed project would include trees and shrubs along the perimeter of the site and lodge area, as well as along the RV parking areas. As shown on Figure 2, the site would be accessed via a main gated entrance on Jackson Slough Road and gated emergency-only access at Georgiana Avenue.

Based on the city's General Plan (City of Isleton 2001), RV Parks are allowed under the City's existing zoning. The project applicant is requesting approval from the City for a Conditional Use Permit (CUP) for the proposed project as well as Architecture, Site, and Grading Approvals. This development is consistent with the current general plan and an environmental impact report (EIR) certified by the City of Isleton (2000). This project is exempt from further California Environmental Quality Act (CEQA) review. However, it must comply with all conditions of approval associated with issuance of the CUP and other associated approvals.

Existing Data Review

A California Natural Diversity Data Base (CNDDB) Rarefind 5 report was generated for the project site and vicinity (query of all lands within five miles of the proposed project). The CNDDB contains records for special-status species as well as sensitive natural communities which have been reported to the California Department of Fish and Wildlife (CDFW). Each of the species identified in the Rarefind 5 report were then evaluated in terms of their likelihood of occurrence within and immediately adjacent to the project site. This draft analysis considered the known distribution and habitat requirements of the species such that one of the following findings was prepared:

- Known to Occur – species has previously been documented within or immediately adjacent to the project site.
- High Potential – species has not been documented within or immediately adjacent to the project site but should be expected on more than 50% of visits to suitable habitat in the project site during the appropriate season and time of day.

- Moderate Potential – species has not been documented within or immediately adjacent to the project site but should be expected on less than 50% of visits to suitable habitat in the project site during the appropriate season and time of day.
- Low Potential – species has not been documented within or immediately adjacent to the project site nor is it likely to occur on the project site, but its presence cannot be completely discounted due to incomplete information on the taxon's distribution or habitat requirements.
- No Potential – species does not occur within the project site due to the lack of required habitat features for the species or the known range of the species is well defined and does not include the project site.

Other sources of information on special-status species in California were also reviewed because the CNDDB is not inclusive of all special-status species that may occur in an area. This review was based on the professional experience of the author within the region and elsewhere in California, but also included review of other published sources of information on special-status species in California including:

- The Jepson Manual: Vascular Plants of California (Baldwin and Goldman 2012).
- California Native Plant Society (CNPS), Rare Plant Program 2022. Inventory of Rare and Endangered Plants of California (online edition, v9-01 1.5). website http://www.rareplants.cnps.org (Accessed: April 1, 2021).
- Amphibian and Reptile Species of Special Concern in California (Jennings and Hayes 1994).
- California Herps - A Guide to the Amphibians and Reptiles of California. (Nafis 2021) available at: http://www.californiaherps.com/ (Accessed November 8, 2021).
- Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*) (U.S. Fish and Wildlife Service 2017).
- California Bird Species of Special Concern. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California and California Department of Fish and Game (Shuford and Gardali 2008).
- The Distribution of the Birds of California (Grinnell and Miller 1944).
- California Birds: Their Status and Distribution (Small 1994).
- California's Wildlife Volume II Birds (Zeiner et al. 1990).
- eBird. 2022. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: http://www.ebird.org. (Accessed: April 1, 2022).
- Mammalian Species of Special Concern in California (Williams 1986).

- Terrestrial Mammal Species of Special Concern in California (unfinished 1998 update) (Bolster 1998).
- Mammals of the Pacific States: California, Oregon, and Washington (Ingles 1978).
- Western Bat Working Group website (http://wbwg.org/western-bat-species/).
- Recovery Plan for Upland Species of the San Joaquin Valley, California (USFWS 1998).

The draft likelihood of occurrence analysis was used to develop a "focus list" of species that should be searched for during any subsequent surveys of the project site. The final likelihood of occurrence analysis was then prepared to include any additional species not addressed by the Rarefind 5 report, but that were recorded during the subsequent reconnaissance level survey of the project site and review of other sources of information on special-status species that occur in the project vicinity. Species that are known or expected to occur in the vicinity of the project site were then further evaluated in this technical memorandum.

Survey Methods

I (Michael Bumgardner - Bumgardner Biological Consulting) conducted a reconnaissance-level survey within and adjacent to the proposed project on April 1, 2022. The weather during the site survey was partly cloudy with no constraints (e.g., extreme high or low temperatures, high winds, or precipitation). The potential area of effect associated with the proposed project was systematically evaluated on foot at and near the proposed project site (out to 500+ feet from the proposed project) and focused on identifying and characterizing all sensitive biological resources such as important habitats, vegetation communities, and species that could be adversely affected by the proposed project.

I conducted linear transects on 80- to 120-foot centers out to 500 feet from the boundaries of the proposed project where there was public access. Vegetation on the southern portion of the survey area consists almost entirely of short to moderately high non-native annual grassland/ruderal vegetation. This facilitates easy observation of wildlife and wildlife habitat at these distances particularly for larger mammal burrows such as California ground squirrel [*Otospermophilus beecheyi*]. No surveys were conducted in graded/disked agricultural lands or vineyard within the 500-foot survey threshold. No special-status plant or wildlife species would occupy these habitats. Other lands within the project site were surveyed via random meander transects. The northern portion of the project site show evidence of regular mowing and management. This vegetative cover is under six inches in height and facilitates easy observation of biological resources from greater distances.

Survey Results

Vegetation within the southernmost 9.6 acres of the project site consists mostly of non-native annual grassland with an extensive mix of ruderal (weedy) species (Figure 3, Land Cover Types). Vegetative cover in this portion of the proposed project is dominated by non-native annual grasses but also includes an extensive mix of wild mustard [*Brassica* sp.], wild radish [*Raphanus raphanistrum*], cheeseweed [*Malva parviflora*], common stork's-bill [*Erodium cicutarium*], and poison hemlock [*Conium maculatum*]. Evidence in the form of cut and matted dry grasses was found throughout the vegetation in this portion of the project site, suggesting that this part of the project site is mowed on an annual or bi-annual basis. It should be noted that there is 0.8-acres within the southernmost portion of the project site that has been used in a manner like a community garden (Figure 3, Land Cover Types). The Facebook site for the Meadows of Isleton (https://www.facebook.com/The-Meadows-of-Isleton-108952914104891/) shows this portion of the project site was previously used to grow lavender [*Lavandula* sp.] for flower harvesting. It currently remains partially covered in geotextile fabric with grow zones between the fabric. The grow zones have not been maintained. These areas currently support some lavender but are in the process of being overgrown by the weedy species described above for the southernmost portion of the project site.

Most of the remaining cover type within the project site consists of managed turf. As described above, the latter vegetation is six inches or less in height, dominated by annual grasses typically used for turf (e.g., fescue [*Festuca* sp.]), and shows evidence of mowing. Much of the northern 4.4 acres of the project site also shows evidence of partitioning (fencing) for individual use by recreational vehicles and campers. In addition, there is electrical infrastructure and lighting associated with some of the partitioned areas. It is apparent that this area supported recreational uses in the recent past. The northernmost portion of the project site supports working farm infrastructure including dwelling units and holding pens. Land cover types located offsite but immediately adjacent to this area include an abandoned ballpark, other park infrastructure, and single-family homes.

All other vegetative cover types associated with the project site occur on the boundaries of the site. The eastern boundary of the project site which is bounded by Jackson Slough Road supports a small number of scattered large valley oaks [*Quercus lobata*] (Figure 3, Land Cover Types). This boundary also supports a single small linear stand of bamboo [*Phyllostachys* sp. ?] (Figure 3, Land Cover Types).

The southern boundary of the project site abuts a single-family home surrounded by several large valley oaks. At least two of these oaks are on the project site.

The western boundary of the project site is located next to a drainage canal on the adjacent property. This is a source of regular water during the growing season that supports more water dependent species. Species that were observed in the narrow linear vegetation stand near the canal include Himalayan blackberry [*Rubus armeniacus*], stinging nettle [*Urtica dioica*], and fennel [*Foeniculum vulgare*]. It should also be noted that the southernmost portion of the above linear vegetation stand supports interior live oak [*Quercus wislizeni*] and willows [*Salix* spp.]. The northernmost portion of the linear stand supports a single large weeping willow [*Salix babylonica*].

Wildlife or their sign observed within the survey area were consistent with species found in and near agricultural lands and edges in Sacramento County. Avian species that were observed or heard on the project site included the following: Anna's hummingbird [*Calypte anna*], northern flicker [*Colaptes auratus*], western kingbird [*Tyrannus verticalis*], California scrub jay [*Aphelocoma californica*], American robin [*Turdus migratorius*], northern mockingbird [*Mimus polyglottos*], red-winged blackbird [*Agelaius phoeniceus*], Brewer's blackbird [*Euphagus cyanocephalus*], spotted towhee [*Pipilo maculatus*], white-crowned sparrow [*Zonotrichia leucophrys*], savannah sparrow [*Passerculus sandwichensis*], and American goldfinch [*Spinus tristis*]. Additional avian species seen or heard immediately offsite included Eurasian collared dove [*Streptopelia decaocto*], American crow [*Corvus brachyrhynchos*], and yellow-rumped warbler [*Setophaga coronata*].

The only other evidence of wildlife species that was observed on the project site was a western fence lizard [*Sceloporus occidentalis*] and a small number of California ground squirrel [*Otospermophilus beecheyi*] burrows. The burrows were all located along the western border of the project site where the vegetative cover is low. This part of the project site is close to a large number of California ground squirrel burrows located immediately offsite along the upper slope of the drainage canal.

Special-Status Species Assessment

No special-status plants or vegetation communities were observed on the project site. Nor, would any special-status plants or vegetation communities known to occur in the project vicinity be expected to occur on the project site given its history and that it is surrounded on all sides by active agriculture and residential development. In addition, it should be noted that the project site once was once an asparagus farm but the prior farming operation was abandoned for more than 25 years before conversion to the more recent lavender farming and recreational uses (https://www.themeadowsofisleton.com/).

Table 1 provides a list of special-status plant species that have been documented within the four closest U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles by the California Natural Diversity Data Base (CNDDB) and California Native Plant Society (CNPS). Table 1 addresses each species' regulatory and rarity status, suitable habitats and seasonal distribution in California, and likelihood of occurrence within the project site. None of the species addressed in Table 1 are considered to have any likelihood of occurring on the project site given the information provided for each species and the land cover types that currently occur on the project site.

In addition, no special-status wildlife species were observed on the project site. However, a small number of special-status wildlife species, which can be categorized into four groups of avian species, are considered to have a low potential to occur on the project site or offsite but within the potential area of effect associated with the project. These species are addressed in Table 1 but are also summarized below.

The long linear stand of vegetation dominated by Himalayan blackberry brambles along the western boundary of the project site is potential nesting habitat for loggerhead shrike, song sparrow, and tricolored blackbird (Table 1). Each of these species, apart from tricolored blackbird, also have suitable foraging habitat at or immediately adjacent to the blackberry brambles. Tricolored blackbird is an exception since there is little to no suitable foraging habitat for the species (annual grassland, alfalfa, and other suitable crops) onsite or within a few miles of the project site. Nonetheless, tricolored blackbird cannot be excluded from the list of species having some potential to nest on the project site or otherwise be adversely affected by the proposed project.

Another group of special-status avian species that has some potential to nest on or near the project site is tree-nesting raptors. This group includes Swainson's hawk, white-tailed kite, and other raptors afforded protection under California Fish and Game Code § 3503.5. Each of these species has at least a low potential to nest in the large valley oaks that occur onsite or nearby, within 500 feet or less of the project site. Though no evidence of prior nesting by species in this group was found during the recent reconnaissance-level survey, this does not preclude future nesting attempts by these species, including prior to the proposed project breaking ground.

Burrowing owl has at least a low potential to occupy the California ground squirrel burrows that occur immediately offsite to the west along the existing drainage canal (within 250 or less of the project site). The presence of the large Himalayan blackberry bramble so close to the California ground squirrel burrows may preclude burrowing owls from utilizing these burrows given the species preference for long line-of-site views from the burrows to detect potential avian or mammalian predators. The species cannot be excluded from the list of species having some potential to be adversely affected by the proposed project.

The last group of special-status avian species that has some potential to nest on or near the project site is species that are not addressed by the CDFW's Special Animals List (2022) but are nonetheless afforded protection when nesting by virtue of compliance with California Fish and Game Code § 3503.

Conclusions and Recommendations

Based on the results of the April 1, 2022 survey at and near the proposed project, as well as information from other available sources, there is evidence to suggest that several special-status wildlife species could occur at or be adversely affected by the proposed project. These species are loggerhead shrike, song sparrow, tricolored blackbird, burrowing owl, Swainson's hawk, white-tailed kite, other nesting raptors afforded protection under California Fish and Game Code § 3503.5, and other nesting birds afforded protection under California Fish and Game Code § 3503. The following avoidance and minimization measures are recommended for these latter species:

Tricolored Blackbird

The following measures shall be implemented to avoid or minimize adverse effects to nesting tricolored blackbird:

- Grubbing, grading, or other soil/vegetation disturbance within 250 feet of the Himalayan blackberry brambles will not occur during the tricolored blackbird nesting season (March 15 through July 30). All project soil/vegetation disturbance will occur between August 1 and March 14 to the extent feasible.
- Alternatively, if project-related soil/vegetation disturbance is scheduled to occur between March 15 and July 30, surveys will be conducted for prospecting or nesting tricolored blackbird colonies in all potentially suitable nesting habitats that are within and out to 250 feet from the project boundaries. The surveys will be conducted by a qualified biologist during the season immediately preceding initiation of the proposed project. The surveys will be conducted according to the following schedule: a total of two visits during March 15 to July 30 with at least one month between survey visits.
- If nesting colonies are found prior to initiation of project soil/vegetation disturbance in the year of the survey, a no work exclusion zone will be established within 250 feet of each active nesting colony until a qualified biologist determines that the young-of-the-year are no longer reliant upon the nest site.
- Alternatively, the project applicant may retain a qualified biologist to conduct daily monitoring of any active nesting colonies that are within 250 feet or less from project soil/vegetation disturbance to determine if the individuals are exhibiting any behaviors that would suggest that nest failure could occur. If the qualified biologist determines that disturbance is sufficient to cause nest failure, all activities within 250 feet of the nesting colony will be terminated until the young-of-the-year are no longer reliant upon the nest.
- To compensate for the loss of known nesting habitat for tricolored blackbird on the project site, the project applicant will plant Himalayan blackberry at a minimum 2:1 compensation ratio. The compensation stands of Himalayan blackberry will be sited on the nearest suitable land to which the project applicant has access or on nearby alternative land on which the project applicant has acquired a conservation easement acceptable to the CDFW. Compensation sites will be chosen to avoid any loss of existing natural wetland communities. Annual monitoring of the compensation stands will be conducted to determine if tricolored blackbirds are utilizing the compensation habitat. If no evidence of utilization has been found after five years of monitoring, the project applicant will be required to plant additional Himalayan blackberry at a minimum 1:1 compensation ratio on other lands where there is no active episodic human disturbance that would preclude tricolored blackbirds from settling and nesting in the compensation habitat.

Loggerhead Shrike, Song Sparrow, and Other Nesting Birds (Non-Raptors)

The following measures will be implemented to avoid or minimize adverse effects to nesting birds (not including Swainson's hawk, white-tailed kite, and other nesting raptors which are addressed under separate mitigation but including the special-status loggerhead shrike and song sparrow) that nest within or immediately adjacent to the project site (i.e., within 200 feet of the proposed project).

- If construction activities occur during the bird nesting season (February 1 – August 31), preconstruction nesting bird surveys (2 visits at least 1 week apart) will be conducted by a qualified biologist within the 14 days prior to construction to detect the presence of any nesting birds within or adjacent to the proposed project (within 200 feet of the project site). If construction/maintenance activities occur during the non-breeding season for birds (September 1 – January 31), preconstruction surveys will not be required.
- If the preconstruction nesting bird surveys detect actively nesting birds, the results of the surveys shall be submitted to the CDFW within three days of completing the surveys. If any active nests of loggerhead shrike, song sparrow, or other nesting birds afforded protection under California Fish and Game Code § 3503 are found onsite, the applicant will avoid initiating any construction activities within less than 200 feet from each nest until nesting has been completed and the young are no longer reliant upon the nest as determined by a qualified biologist.

Swainson's Hawk, White-tailed Kite, and Other Nesting Raptors

Adverse effects to nesting Swainson's hawk, white-tailed kite, and other raptors given protection under California Fish and Game Code § 3503.5 will be mitigated as follows:

- Preconstruction surveys for nesting Swainson's hawk, white-tailed kite, and other raptors will be conducted consistent with the *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (Buteo swainsoni) in the Central Valley of California* (CDFG 1994) if construction is initiated between March 1 and September 15.
- If an active Swainson's hawk, white-tailed kite, or other raptor nest is detected during preconstruction surveys, a no-disturbance buffer zone of 500 feet will be implemented during the nesting season (March 1 to September 15) or until August 15 if Management Authorization is provided by the CDFW (2000). Furthermore, a nest monitoring plan will be developed and implemented for all active nests within 500 feet. If monitoring demonstrates that nesting individuals are being adversely affected, the no-disturbance zone will be increased in 100-foot increments until all adverse effects are eliminated. No mitigation is required if the proposed project is constructed/initiated during the non-nesting season for Swainson's hawk, white-tailed kite, or other raptors (i.e., September 16 to February 28)

Should additional information regarding special-status wildlife species that occur in the vicinity of the proposed project be needed or potential species are unexpectedly encountered, please do not hesitate to contact me (916-638-7368 or 916-812-2540).

Figure 1: Project Location Map

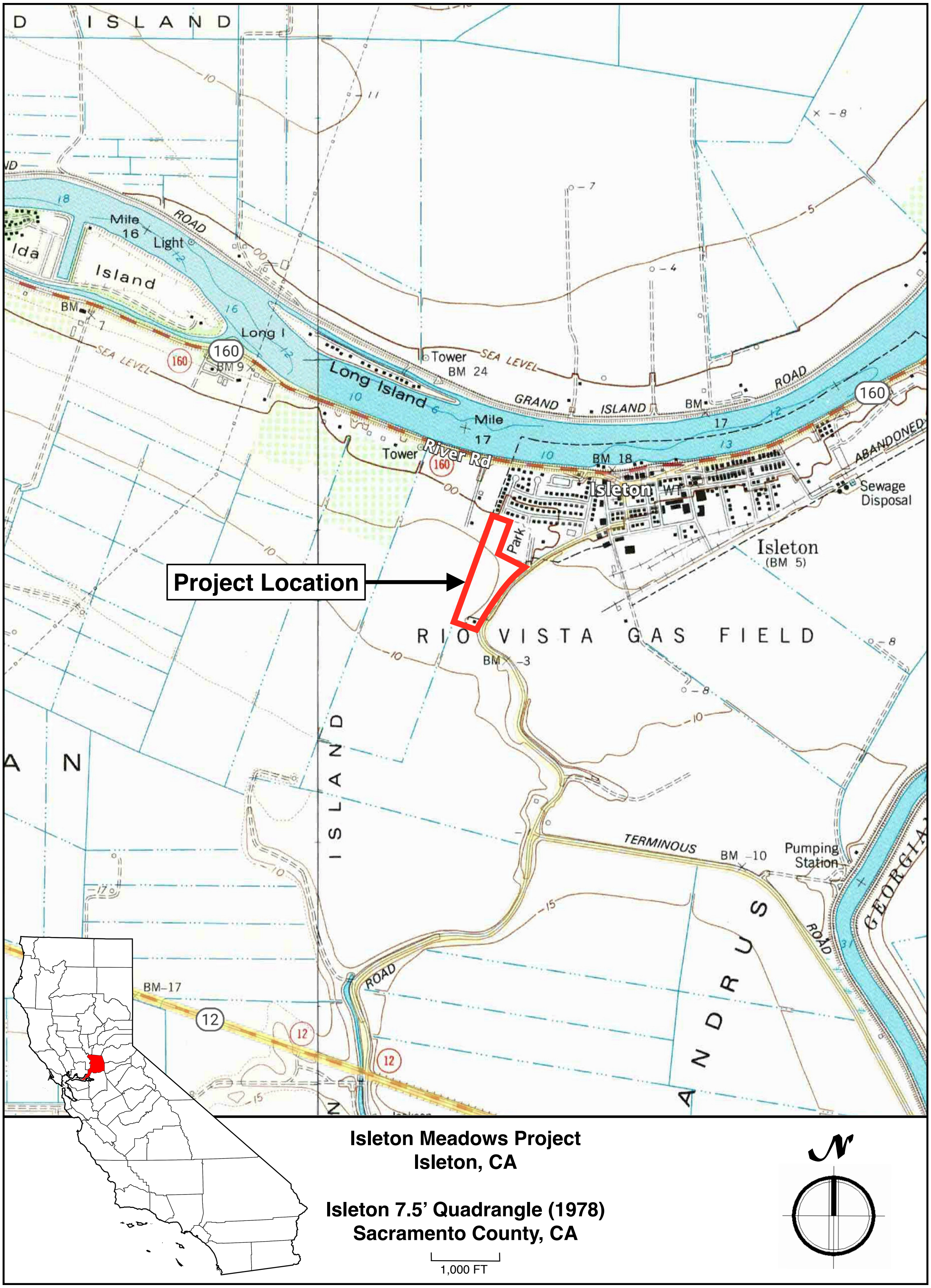

Figure 2: Proposed Site Plan

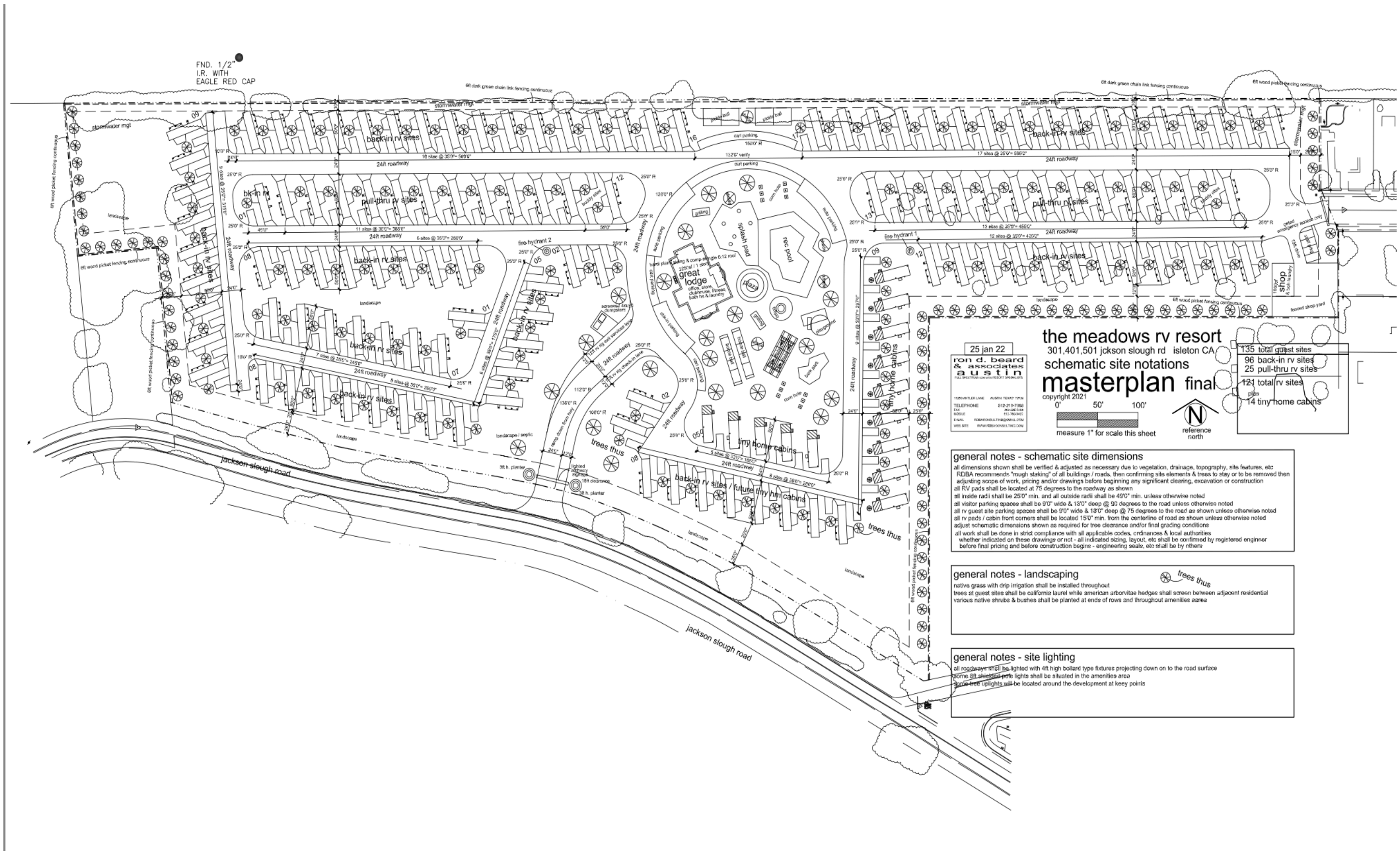

Figure 3: Land Cover Types

TABLE 1

SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Project Site
		PLANTS		
Brasenia schreberi	watershield	none/none/CNPS list 2B.3	This perennial rhizomatous herb blooms from June to September and occurs in freshwater marshes and swamps. It has been found in Butte, El Dorado, Fresno, Kern, Lake, Lassen, Mendocino, Nevada, Plumas, Sacramento, Shasta, Siskiyou, San Joaquin, Sutter, Tehama, Tulare, and Tuolumne counties.	**No Potential**. No individuals of this species were observed within or near the project site. In addition, suitable habitat (i.e., freshwater marsh or swamp) does not occur at the project site. Therefore, the species has no potential to occur within the project site.
Carex comosa	bristly sedge	none/none/CNPS list 2B.1	This perennial rhizomatous herb blooms from May to September. It has been found in Contra Costa, Lake, Mendocino, Sacramento, San Bernardino, Santa Cruz, San Francisco, Shasta, San Joaquin, and Sonoma counties in coastal prairie, marshes and swamps (lake margins), and valley and foothill grassland.	**No Potential**. No individuals of this species were observed within or near the project site. In addition, suitable habitat (i.e., coastal prairie, marsh or swamp (lake margins), or valley and foothill grassland) does not occur at the project site. Therefore, the species has no potential to occur within the project site.
Chloropyron molle ssp. *molle*	soft salty bird's-beak	FE/SR/CNPS list 1B.2	This annual blooms from July to November. It occurs in coastal salt marsh in Contra Costa, Marin, Napa,	**No Potential**. No individuals of this subspecies were observed within or near the project site. In addition, suitable habitat

TABLE 1

SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Project Site
			Sacramento, Solano, and Sonoma counties. It is known from fewer than 20 extant occurrences.	(i.e., coastal salt marsh) does not occur at the project site. Therefore, the subspecies has no potential to occur within the project site.
Cicuta maculata var. *bolanderi*	Bolander's water-hemlock	none/none/CNPS list 2B.1	Known to occur in freshwater or brackish coastal marshes and swamps in Contra Costa, Los Angeles, Marin, Sacramento, Santa Barbara, San Luis Obispo, and Solano counties. It blooms from July to September.	**No Potential**. No individuals of this taxon were observed within or near the project site. In addition, suitable habitat (i.e., freshwater or brackish coastal marsh or swamps) does not occur at the project site. Therefore, the taxon has no potential to occur within the project site.
Extriplex joaquinana	San Joaquin spearscale	none/none/CNPS list 1B.2	This annual saltbush occurs in chenopod scrub, valley and foothill grasslands, and alkali meadows (typically in seasonal alkali wetlands or alkali sink scrub). It is known from the Sacramento Valley, northern San Joaquin Valley, San Francisco Bay-Delta, and a few locations in the central Coast Ranges in Alameda, Contra Costa, Colusa, Glenn, Merced, Monterey, Napa, Sacramento, San Benito, Santa Clara, San Joaquin, Solano, Tulare, and Yolo counties. It blooms from April to October.	**No Potential**. No individuals of this species were observed within or near the project site. In addition, suitable habitat (i.e., chenopod scrub, valley and foothill grassland, or alkali meadows) does not occur at the project site. Therefore, the species has no potential to occur within the project site.

TABLE 1

SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Project Site
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	none/none/CNPS list 1B.2	The taxon is associated with freshwater marshes and swamps in Butte, Contra Costa, Colusa, Glenn, Sacramento, San Joaquin, Solano, Sutter, and Yolo counties (typically on mucky soils). It blooms during June to September.	**No Potential**. No individuals of this taxon were observed within or near the project site. In addition, suitable habitat (i.e., freshwater marsh or swamp) does not occur at the project site. Therefore, the taxon has no potential to occur within the project site.
Lathyrus jepsonii var. *jepsonii*	delta tule pea	none/none/CNPS list 1B.2	This perennial herb occurs in freshwater and brackish marshes in Alameda, Contra Costa, Napa, Sacramento, Santa Clara, San Joaquin, and Solano counties. It blooms from May to September.	**No Potential**. No individuals of this taxon were observed within or near the project site. In addition, suitable habitat (i.e., freshwater or brackish marsh) does not occur at the project site. Therefore, the taxon has no potential to occur within the project site.
Lilaeopsis masonii	Mason's lilaeopsis	none/SR/CNPS list 1B.1	A perennial rhizomatous herb that blooms from April to November and grows in brackish or freshwater marsh, swamp, or riparian scrub. It has been found in Alameda, Contra Costa, Napa, Sacramento, San Joaquin, and Solano counties.	**No Potential**. No individuals of this species were observed within or near the project site. In addition, suitable habitat (i.e., brackish or freshwater marsh, swamp, or riparian scrub) does not occur at the project site. Therefore, the species has no potential to occur within the project site.
Limosella australis	delta mudwort	none/none/CNPS list 2B.1	A perennial stoloniferous herb that is found in freshwater or brackish	**No Potential**. No individuals of this species were observed within or near the

TABLE 1 SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY				
Genus/Species	**Common Name**	**Status Federal/CA/Other**	**Habitats and Seasonal Distribution in California**	**Likelihood of Occurrence on Project Site**
			marshes, swamps, and riparian scrub (usually on muddy banks). It has been found in Contra Costa, Sacramento, San Joaquin, and Solano counties where it blooms from May to August.	project site. In addition, suitable habitat (i.e., freshwater or brackish marshes, swamp, or riparian scrub) does not occur at the project site. Therefore, the species has no potential to occur within the project site.
Oenothera deltoides ssp. *howellii*	Antioch Dunes evening-primrose	FE/SE/CNPS list 1B.1	This perennial herb occurs on inland dunes and has only been found in Contra Costa and Sacramento counties (only seven known occurrences). It blooms from March to September.	**No Potential**. No individuals of this subspecies were observed within or near the project site. In addition, suitable habitat (i.e., inland dunes) does not occur at the project site. Therefore, the subspecies has no potential to occur within the project site.
Pomatogeton zosteriformis	eel-grass pondweed	none/none/CNPS list 2B.2	An annual herb that occurs in marshes and swamps. It has been recorded in Contra Costa, Lake, Lassen, Modoc, and Shasta counties. It blooms from June to July.	**No Potential**. No individuals of this species were observed within or near the project site. In addition, suitable habitat (i.e., marsh or swamp) does not occur at the project site. Therefore, the species has no potential to occur within the project site.
Sagittaria sanfordii	Sanford's arrowhead	none/none/CNPS list 1B.2	This perennial species occurs in shallow, standing, fresh water and slow-moving waterways (e.g., marshes, ponds, vernal pools, lakes, reservoirs, sloughs, ditches, unlined canals, streams, and rivers) at elevations below	**No Potential**. No individuals of this species were observed within or near the project site. In addition, suitable habitat (i.e., shallow, standing, fresh water and slow-moving waterways) does not occur at the project site. Therefore, the species has

TABLE 1 SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY				
Genus/Species	**Common Name**	**Status Federal/CA/Other**	**Habitats and Seasonal Distribution in California**	**Likelihood of Occurrence on Project Site**
			2000 feet. It blooms from late May to August.	no potential to occur within the project site.
Scutellaria galericulata	marsh skullcap	none/none/CNPS list 2B.2	This rhizomatous perennial herb blooms from June to September in El Dorado, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, San Joaquin, and possibly Siskiyou counties. It grows in meadows, seeps, marshes, and swamps and in lower montane coniferous forest below 6,900 feet in elevation.	**No Potential**. No individuals of this species were observed within or near the project site. In addition, suitable habitat (i.e., meadow, seep, marsh, or swamp) does not occur at the project site. Therefore, the species has no potential to occur within the project site.
Scutellaria lateriflora	side-flowering skullcap	none/none/CNPS list 2B.2	This rhizomatous perennial herb blooms from July to September in Inyo, Sacramento, and San Joaquin counties. It grows in meadows, seeps, marshes, and swamps.	**No Potential**. No individuals of this species were observed within or near the project site. In addition, suitable habitat (i.e., meadow, seep, marsh, or swamp) does not occur at the project site. Therefore, the species has no potential to occur within the project site.
Symphyotrichum lentum	Suisun Marsh aster	none/none/CNPS list 1B.2	This perennial herb blooms from May to November. It has been found in Contra Costa, Napa, Sacramento, San Joaquin, Solano, and Yolo counties. It occurs in brackish or freshwater	**No Potential**. No individuals of this species were observed within or near the project site. In addition, suitable habitat (i.e., brackish or freshwater marsh or swamp) does not occur at the project site.

TABLE 1 SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY				
Genus/Species	**Common Name**	**Status Federal/CA/Other**	**Habitats and Seasonal Distribution in California**	**Likelihood of Occurrence on Project Site**
			marshes and swamps.	Therefore, the species has no potential to occur within the project site.
INVERTEBRATES				
Linderiella occidentalis	California fairy shrimp	none/SA/none	The species occurs primarily in vernal pools and other seasonal wetlands in grassland and oak savannah of the Central Valley. However, it has also been recorded at scattered locations in the Coast Ranges from Mendocino County south to Ventura County.	**No Potential.** No individuals of this species were observed within or near the project site. In addition, suitable habitat (i.e., vernal pools) does not occur at the project site. Therefore, the species has no potential to occur within the project site.
Anthicus antiochensis	Antioch Dunes anthicid beetle	none/SA/none	The species formerly inhabited sand dunes at the Antioch Dunes in Contra Costa County. It was last seen at this location in the early 1950's before industrialization of the surrounding area. New populations have recently been found on the Sacramento and Feather rivers.	**No Potential.** There is no sand dune or similar habitat within or adjacent to the project site for this species. Therefore, there is no potential for the species to be affected by the project.

TABLE 1 SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY				
Genus/Species	**Common Name**	**Status Federal/CA/Other**	**Habitats and Seasonal Distribution in California**	**Likelihood of Occurrence on Project Site**
Anthicus sacramento	Sacramento anthicid beetle	none/SA/none	This species has been found on sparsely vegetated fine-grained riverine sand deposits such as sand dunes, sand bars, riverine shorelines, and sandy dredge spoils. It is known from only a few sites in Butte, Glenn, Tehama, San Joaquin, Sacramento, Solano, and Yolo counties.	**No Potential.** There is no sand dune or similar habitat within or adjacent to the project site for this species. Therefore, there is no potential for the species to be affected by the project.
Hygrotus curvipes	curved-foot hygrotus diving beetle	none/SA/none	The species inhabits alkali vernal pools, other seasonal wetlands, and slow-moving streams where the pools are fringed with alkali vegetation. It has been found between the Outer Coast Range and Sacramento-San Joaquin River Delta.	**No Potential.** There is no suitable habitat (i.e., alkali vernal pools, other seasonal wetlands, or slow-moving streams) within or immediately adjacent to the project site for this species. Therefore, there is no potential for the species to be affected by the project.
Eucerceris ruficeps	redheaded sphecid wasp	none/SA/none	This occurs on sandy substrates in the Sacramento-San Joaquin Delta and foothills of the Central Valley. It is believed to be extirpated from the Antioch Dunes in Contra Costa County.	**No Potential.** There is no sand dune or similar habitat within or adjacent to the project site for this species. Therefore, there is no potential for the species to be affected by the project.

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Genus/Species	**Common Name**	**Status Federal/CA/Other**	**Habitats and Seasonal Distribution in California**	**Likelihood of Occurrence on Project Site**
Perdita scitula antiochensis	Antioch andrenid bee	none/SA/none	This species is narrowly oligolectic, collecting pollen from a few species of plants (e.g., *Eriogonum* spp., *Gutierrezia californica*, *Heterotheca grandiflorum*, and *Lessingia gladulifera*). It inhabits sand dunes or other loose, sandy deposits with late summer and fall-flowering plants such as those identified above. It has only been recorded at Oakley and the Antioch Dunes in Contra Costa County.	**No Potential.** There is no sand dune or similar habitat within or adjacent to the project site for this species. In addition, none of the plant species from which the species collects pollen were found at the project site. Therefore, there is no potential for the species to be affected by the project.
Bombus occidentalis	western bumble bee	none/SA/none	This species is broadly distributed in California (at least historically). Populations north of central California and west of the Sierra Nevada-Cascade crest have declined sharply since the late 1990s. Colonies are annual and only the new, mated queens overwinter. Nests are typically found in underground cavities or animal nests that open to west to southwest slopes bordered by trees. A few nests have been reported from above-ground locations such as in logs.	**No Potential.** No individuals of this species were observed within or near the project site. Therefore, there is no evidence to suggest that the species has any potential to occur within the project site.

TABLE 1

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Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Project Site
		FISHES		
Oncorhynchus mykiss irideus	Steelhead - Central Valley DPS	FT/none/none	This distinct population segment (DPS) of steelhead includes all naturally spawned populations of steelhead (and their progeny) in the Sacramento and San Joaquin Rivers and their tributaries, excluding steelhead from San Francisco Bay and San Pablo Bays and their tributaries. In California, peak spawning occurs from December through April in small streams and tributaries with cool, well-oxygenated water. Fry usually emerge from the gravel 4 to 6 weeks after hatching, but factors such as redd depth, gravel size, siltation, and temperature can speed or retard this time. The newly-emerged fry move to the shallow, protected areas associated with the stream margin (mainly in riffles), but they can use a variety of other habitat types.	**No Potential.** There is no riverine habitat within or adjacent to the project site for this species. Therefore, there is no potential for the species to be affected by the project.
Spirinchus thaleichthys	longfin smelt	FC/ST/none	The species is an anadromous smelt found in California's bay, estuary, and nearshore coastal environments from	**No Potential.** There is no riverine habitat within or adjacent to the project site for this species. Therefore, there is no potential

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Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Project Site
			San Francisco Bay north to Lake Earl, near the Oregon border. Adult longfin smelt migrate into low salinity or freshwater reaches of coastal rivers and tributary streams to spawn. Newly hatched larvae are buoyant and are quickly swept downstream into brackish water. Larvae are able to swim up and down in the water column, and use river and tidal currents to stay in areas where fresh and saltwater mix.	for the species to be affected by the project.
Hypomesus transpacificus	delta smelt	FT/SE/none	The species is endemic to the upper Sacramento-San Joaquin River Estuary, where it mainly inhabits the freshwater-saltwater mixing zone of the estuary, except during its spawning season, when it migrates upstream to freshwater following winter "first flush" flow events (around March to May). It is a pelagic (lives in the open water column away from the bottom) and euryhaline species (tolerant of a wide salinity range). It has been collected from estuarine waters with salinities up to 14 parts per thousand.	**No Potential.** There is no riverine habitat within or adjacent to the project site for this species. Therefore, there is no potential for the species to be affected by the project.

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Genus/Species	**Common Name**	**Status Federal/CA/Other**	**Habitats and Seasonal Distribution in California**	**Likelihood of Occurrence on Project Site**
REPTILES				
Emys marmorata	western pond turtle	none/CSC/none	The species historically occurred throughout most of the Pacific-slope drainages in California (below 4,000 feet). It now occurs at scattered locations throughout its former range (primarily in the central Sierra Nevada foothills, Central Valley, San Francisco Bay area, and north-central coast and Coast Ranges. It occurs in and adjacent to ponds, reservoirs, or other slow-moving perennial aquatic habitats (e.g., rivers, sloughs, and streams).	**No Potential.** There is no riverine or other suitable aquatic habitats within or adjacent to the project site for this species. Therefore, there is no potential for the species to be affected by the project.
Anniella pulchra	Northern California legless lizard	none/CSC/none	This species occurs as a fossorial species in sand, loam, or leaf-mold substrates in the San Joaquin Valley and coastal California from Contra Costa County south to San Diego County. It can be found in a variety of habitats that include coastal beach, chaparral, pine-oak woodland, and riparian habitats.	**No Potential.** No suitable habitat for the species occurs on the project site given that it has a known history of regular agricultural activities (i.e., disking and mowing) and is surrounded by lands with similar treatment. Furthermore, the nearest known occurrence of the species is more than 12 miles southwest of the project site. Therefore, the species is considered to have no potential to be affected by the project.

TABLE 1 SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY				
Genus/Species	**Common Name**	**Status Federal/CA/Other**	**Habitats and Seasonal Distribution in California**	**Likelihood of Occurrence on Project Site**
Thamnophis gigas	giant garter snake	FT/ST/none	This species is found in and along low gradient streams, marshes, and adjacent ricelands supported by perennial fresh water on the floor of the Central Valley.	**No Potential.** There is no suitable habitat (e.g., low gradient streams, marshes, or ricelands) within or adjacent to the project site for this species. Therefore, there is no potential for the species to be affected by the project.
BIRDS				
Ardea herodias	great blue heron (rookery)	none/SA/none	This species is fairly common throughout most of California where there are shallow estuaries, or freshwater or saltwater emergent wetlands. However, it is less common along riverine and rocky coastal shores and above the foothills in the mountains. Rookeries are typically active from February to as late as July and occur in the tops of secluded large snags or live trees. Rookeries are sometime shared with great egret or other large wading birds.	**No Potential.** No suitable nesting habitat for the species was observed on or adjacent to the project site. Therefore, there is no potential for the species to be affected by the project.
Laterallus jamaicensis	California black rail (nesting)	none/CFP/none	The subspecies is a resident of saline, brackish, and fresh emergent wetlands	**No Potential.** There is no suitable habitat (i.e., tidal emergent wetlands, brackish

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Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Project Site
coturniculus			associated with the San Francisco Bay-Delta, coastal southern California (e.g., Morro Bay), Salton Sea, lower Colorado River area, and a small number of locations in the Sierra Nevada foothills. It occurs most commonly in tidal emergent wetlands dominated by pickleweed or in brackish marshes supporting bulrushes in association with pickleweed. In freshwater, it is usually found in bulrushes, cattails, or saltgrass. It typically occurs in the high wetland zones near the upper limit of tidal flooding.	marshes supporting bulrushes, or appropriate freshwater wetlands) within or immediately adjacent to the project site for this species. Therefore, there is no potential for the species to be affected by the project.
Buteo swainsoni	Swainson's hawk (nesting)	none/ST/BCC	Occurs in California as a breeding resident in the Central Valley (primarily in the southern Sacramento and northern San Joaquin valleys), Klamath Basin, and Modoc Plateau. However, nesting pairs are also occasionally found in the Mojave Desert, Lanfair Valley (San Bernardino County), Antelope Valley (Los Angeles County), and eastern San Luis Obispo County. In the Central Valley the species typically nests in riparian	**Low Potential.** Potentially suitable nesting habitat for this species (i.e., large valley oaks) occurs at various locations within and near the project site. Though no evidence of raptor nests was observed on or immediately adjacent to the project site, nests could be constructed prior to development of the project. Furthermore, there are 8 known occurrences of the species within the Isleton USGS 7.5-minute topographic quadrangle. Therefore, there is some potential, albeit low, for the species to

TABLE 1 SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY				
Genus/Species	**Common Name**	**Status Federal/CA/Other**	**Habitats and Seasonal Distribution in California**	**Likelihood of Occurrence on Project Site**
			woodland or forest stands, or oak savannah. Nest territories are located adjacent to suitable foraging habitat (e.g., grassland, suitable grain and row crop fields, alfalfa, and pastures).	nest at or within 500 feet of the project.
Circus cyaneus	northern harrier (nesting)	none/CSC/none	This species is found as a resident and wintering species throughout the lower elevation portions of California in annual grasslands, oak savannah, and valley and coastal marshes. Nesting in the Central Valley typically occurs in emergent wetlands; tall, dense grasslands; or grain fields.	**No Potential.** No suitable nesting habitat for this species (i.e., emergent wetlands; tall, dense grasslands; or grain fields) occurs on or immediately adjacent to the project site. Furthermore, the onsite annual grassland is mowed. Therefore, there is no potential for the species to nest on or within 500 feet of the project site.
Elanus leucurus	white-tailed kite (nesting)	none/CFP/none	Found as a resident species throughout the lower elevation portions of California in low rolling grasslands with scattered oaks and river bottomlands or marshes adjacent to deciduous woodland. Requires grasslands, meadows, or marshes (for foraging) located near dense-topped trees (for nesting and roosting).	**Low Potential.** Potentially suitable nesting habitat for this species (i.e., large valley oaks) occurs at various locations within and near the project site. Though no evidence of raptor nests was observed on or immediately adjacent to the project site, nests could be constructed prior to development of the project. Furthermore, though there are no known occurrences of the species within the nearest four USGS 7.5-minute topographic quadrangles, there are a small number of eBird records from

TABLE 1

SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Project Site
				the nesting season less than 2 miles from the project site. Therefore, there is some potential, albeit low, for the species to nest at or within 500 feet of the project.
Falco peregrinus anatum	American peregrine falcon (nesting)	none/CFP/BCC	This subspecies nests from Alaska to Mexico (generally from early March to late August). Nests are almost always on protected ledges of high cliffs (primarily in woodland, forest, and coastal habitats), but may also be found on bridges and tall buildings. Nest sites usually provide a panoramic view of open country, are near water, and are associated with an abundance of avian prey (shorebirds or waterfowl).	**No Potential.** There is no available data to suggest that this subspecies nests at or near the project site. The nearest known nesting occurrences are all associated with bridges over the Sacramento River. Therefore, the species is considered to have no potential to be adversely affected by the project while nesting.
Athene cunicularia	Burrowing owl (burrow sites)	none/CSC/BCC	The species is found throughout the Central Valley, in the San Francisco Bay Area, at scattered locations along the coast, and in portions of the desert regions. It is a year-round resident in annual and perennial grasslands or other vegetation communities that support sparse or non-existent tree or shrub canopies.	**Low Potential.** No suitable burrow sites for this species (i.e., California ground squirrel burrows in open habitat with no adjacent tree cover) occur on the project site. However, there are suitable ground squirrel burrows on the property immediately west of the project site (i.e., within less than 160 feet). Therefore, there is some potential, albeit low, for the species to be affected by the project.

TABLE 1

SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Project Site
Lanius ludovicianus	loggerhead shrike (nesting)	none/CSC/BCC	The species nests widely throughout the United States except portions of the northwest, northeast, and higher elevations throughout. It occurs throughout much of the low to mid-elevation portions of California in shrublands or open woodlands with a fair amount of grass cover and areas of bare ground. It requires tall shrubs or trees for hunting perches, territorial advertisement, and pair maintenance; open areas of grassland or bare ground for hunting; and large shrubs or trees for nest placement. Nesting typically occurs from March through May, but young are often not independent until July or August. The size of nest territories in California has been found to range between 11 and 40 acres.	**Low Potential.** Potentially suitable nesting habitat for this species (i.e., linear stand of Himalayan blackberry bramble) occurs along the western boundary of the project site. Though no evidence of nesting was observed on or immediately adjacent to the project site, nests could be constructed prior to development of the project since there is suitable nesting and foraging habitat onsite. Furthermore, there are scattered eBird records from the nesting season throughout the Sacramento-San Joaquin River Delta. Therefore, there is some potential, albeit low, for the species to nest within the project site.
Riparia riparia	bank swallow (nesting)	none/ST/none	The species was formerly found as a summer nesting species within a larger distribution within California along the coast and adjacent to larger streams and rivers. Range is now mostly concentrated along Central Valley	**No Potential.** There is no suitable nesting habitat for this species (i.e., vertical sandy banks or cliffs) within or immediately adjacent to the project site. Therefore, there is no potential for the species to be affected by the project.

TABLE 1 SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY				
Genus/Species	**Common Name**	**Status Federal/CA/Other**	**Habitats and Seasonal Distribution in California**	**Likelihood of Occurrence on Project Site**
			streams and rivers. Species nests in vertical banks and cliffs with fine-textured sandy soils.	
Melospiza melodia	Song sparrow ("Modesto" population)	none/CSC/none	This subspecies is endemic to California, residing only in the north-central portion of the Central Valley from Colusa County in the Sacramento Valley south through the Delta (exclusive of Suisun Marsh) to the northern San Joaquin Valley of Stanislaus County. The ecological requirements of the subspecies are largely undescribed, but it has an affinity for emergent freshwater marshes dominated by tules and cattails as well as riparian willow thickets. It has also been found nesting in riparian forests of valley oak with a sufficient understory of blackberry, along vegetated irrigation canals and levees, and in recently planted valley oak restoration sites.	**Low Potential.** Potentially suitable nesting habitat for this species (i.e., linear stand of Himalayan blackberry bramble) occurs along the western boundary of the project site. Though no evidence of nesting was observed on or immediately adjacent to the project site, nests could be constructed prior to development of the project. Furthermore, there are scattered eBird records from the nesting season throughout the Sacramento-San Joaquin River Delta. Therefore, there is some potential, albeit low, for the species to nest within the project site.
Agelaius tricolor	tricolored blackbird (nesting)	none/CSE/BCC	The species is found as a resident species in annual grassland, oak savannah and freshwater marsh within	**Low Potential.** Potentially suitable nesting habitat for this species (i.e., linear stand of Himalayan blackberry bramble) occurs

TABLE 1 SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY				
Genus/Species	**Common Name**	**Status Federal/CA/Other**	**Habitats and Seasonal Distribution in California**	**Likelihood of Occurrence on Project Site**
			the Central Valley and coastal California from Sonoma County to San Diego County. Nesting habitat typically involves emergent freshwater marsh, but may also include tall, dense stands of willow, blackberry, thistle, nettles, or grasses. Grasslands or rangeland providing an abundant source of food (e.g., large numbers of grasshoppers or butterfly larvae) often are within at least three miles of nest colonies.	along the western boundary of the project site. Though no evidence of nesting was observed on or immediately adjacent to the project site, nests could be constructed prior to development of the project. Furthermore, there are scattered eBird records from the nesting season within the Sacramento-San Joaquin River Delta. Therefore, there is some potential, albeit low, for the species to nest within the project site.
MAMMALS				
Lasiurus blossevillii	western red bat	none/CSC/none	The species occurs at scattered locations throughout the lowland portions of California west of the Sierra Nevada crest and desert regions (typically in riparian forest or orchards). It is less abundant at low and middle elevations in coniferous forest. Roosting sites are found in tree or shrub foliage between 2 and 40 ft above ground (often in large willows, cottonwoods, sycamores, and walnuts.	**No Potential.** No suitable day or night roosts for the species occur on or immediately adjacent to the project site. Therefore, there is no potential for the species to be affected by the project.

TABLE 1

SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Project Site
Lasiurus cinereus	hoary bat	none/SA/none	The species occurs in a wide variety of habitats throughout California from sea level to the high mountains. It is typically found in small numbers roosting in the dense foliage of medium to large trees near water in coniferous forest and other woodland habitats.	**No Potential.** No suitable day or night roosts for the species occur on or immediately adjacent to the project site. Therefore, there is no potential for the species to be affected by the project.

TABLE 1

SPECIAL-STATUS SPECIES RECORDED OR POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE ISLETON MEADOWS RV PARK PROJECT, SACRAMENTO COUNTY

Genus/Species	Common Name	Status Federal/CA/Other	Habitats and Seasonal Distribution in California	Likelihood of Occurrence on Project Site

FEDERAL

FE	Federally listed as Endangered
FT	Federally listed as Threatened
FPE	Federally proposed as Endangered
FPT	Federally proposed as Threatened
FC	Federal Candidate Species (former Category 1 candidates)
BCC	U.S. Fish and Wildlife Service designated "Birds of Conservation Concern" 2008

STATE

SE	State listed as Endangered
ST	State listed as Threatened
SR	State listed as Rare
CSE	State Designated as Candidate for Listing as Endangered
CFP	California Department of Fish and Wildlife designated "Fully Protected"
CSC	California Department of Fish and Wildlife designated "Species of Special Concern"
SA	California Department of Fish and Wildlife designated "Special Animal"

OTHER

CNPS List 1A	Plants presumed extinct in California
CNPS List 1B	Plants that are rare, threatened, or endangered in California and elsewhere
CNPS List 2	Plants that are rare, threatened, or endangered in California, but are more common elsewhere
CNPS List 3	Plants about which we need more information – a review list
CNPS List 4	Plants of limited distribution – a watch list
CNPS Threat Rank 0.1	Seriously threatened in California (high degree/immediacy of threat)
CNPS Threat Rank 0.2	Fairly threatened in California (moderate degree/immediacy of threat)
CNPS Threat Rank 0.3	Not very threatened in California (low degree/immediacy of threats or no current threats known)

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Meadows of Isleton RV Park Project

Draft Wetland Reconnaissance Report

Prepared For: RMM Environmental Planning Inc.

Prepared By: Kingfisher Bio, Inc.

April 2022

Wetland Reconnaissance Report
for the
Meadows of Isleton RV Project

City of Isleton, CA

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Appendices

I. SETTING

The Meadow of Isleton RV Project Biological Study Area (BSA) is approximately 14.2 acres. The northern extent of the BSA consists of an existing RV campground, Llama corral, chicken coups, a mobile home, and gravel access roads. An abandoned vegetable garden occurs on the eastern corner near the campground entrance. The southern half of the BSA is an empty field. An agricultural ditch parallels the western edge of the BSA. The BSA is in the heart of the Sacramento Delta at the eastern edge of Brannan Island and the Rio Vista Gas Field. The larger surrounding area consists of residential, vineyards, agricultural fields and the Sacramento River.

The BSA is in the southwest corner of the City of Isleton, CA. The BSA is on the Isleton USGS topographic quad and in the Lower Sacramento River Hydrologic Unit (hydrologic unit code 18020163). The BSA is mostly flat with elevation ranging from approximately -8 to 2 feet above sea level. Elevation decreases from north to south and east to west. There are no trees in the BSA except for the few lining the agricultural ditch and southern BSA perimeter.

Estimated precipitation preceding the survey was 100.2% of normal based on precipitation recorded from October 2021 through March 2022 at the Sacramento Executive Airport gauge (NWS 2022). Hydrologic conditions during delineation fieldwork were normal.

II. STUDY METHODS

The wetland reconnaissance survey was conducted in accordance with the U.S. Army Corps of Engineers Wetland Delineation Manual (Corps 1987) and the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Arid West Supplement; Corps September 2008. Regional supplements are intended to bring the Corps Manual (Corps 1987) up to date with current knowledge and practice in specific regions. The Arid West Supplement is applicable to the BSA because it is located in Arid West sub region (LRR C, Mediterranean California). All wetland and water features were identified and mapped. Hydrophytic classifications of plants were determined from the current National Wetland Plant List (Corps. 2020). Plant nomenclature follows Jepson Flora Project (2022).

The delineation was conducted using the Routine On-Site Determination Method (Corps 1987). Jurisdictional data were recorded using the Wetland Determination Data Form for the Arid West Region (Corps 2008). Soil, vegetation, and hydrology data were recorded at the data points. The Ordinary High Water Mark (OHWM) for the agricultural ditch was determined using the OHWM Guide (Corps 2014). Wetland data sheets are in Appendix A. Photographs are in Appendix B.

Fieldwork for the wetland reconnaissance survey was conducted by Juan Mejia on March 31, 2021. Aquatic features observed in the BSA were recorded manually on an aerial photo with latitude and longitude. The BSA boundary was converted from a GIS file to KML and overlayed on a 2017 aerial photography (Google 2022). Data points and aquatic features were digitized using Google Earth Pro functions.

III. REGULATORY SETTING

A. U.S. Army Corps of Engineers Jurisdiction

The federal government, acting through the Corps and the Environmental Protection Agency (EPA), has jurisdiction over all "Waters of the US" as authorized by §404 of the Clean Water Act (CWA) and §10 of the Rivers and Harbors Act of 1899 (33 CFR Parts 320-330). Properties that cause the discharge of dredged or fill material into Waters of the U.S. require permitting by the Corps. Actions affecting small areas of jurisdictional Waters of the US may qualify for a Nationwide Permit (NWP), provided conditions of the permit are met, such as avoiding impacts to threatened or endangered species or to important cultural sites. Properties that affect larger areas or which do not meet the conditions of an NWP require an Individual Permit. The process for obtaining an Individual Permit requires a detailed alternatives analysis and development of a comprehensive mitigation/monitoring plan.

The EPA and Corps's Navigable Waters Protection Rule became effective on 22 June 2020, but was vacated by the U.S. District Court in Arizona on 30 August 2021. Thus, agencies have halted its implementation nationwide and are currently defining waters of the U.S. using pre-2015 definitions. The lateral limits of jurisdiction in waters of the U.S. may be divided into three categories. The categories are the territorial seas, tidal waters, and non-tidal waters [see 33 CFR 328.4 (a), (b), and (c), respectively].

The term "waters of the U.S." is defined at 33 CFR 328.3(a) as:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
iii. Which are used or could be used for industrial purpose by industries in interstate commerce;

4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;
6. The territorial seas;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section.
8. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

The term "adjacent" is defined at 33 CFR 328.3(c):
The term *adjacent* means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are ''adjacent wetlands.''
The limits of jurisdiction are identified in 33 CFR 328.4 as:

a. Territorial Seas. The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles. (See 33 CFR 329.12)
b. Tidal Waters of the United States. The landward limits of jurisdiction in tidal waters:
   1. Extends to the high tide line, or
   2. When adjacent non-tidal waters of the United States are present, the jurisdiction extends to the limits identified in paragraph (c) of this section.
c. Non-Tidal Waters of the United States. The limits of jurisdiction in non-tidal waters:
   1. In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or
   2. When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.
   3. When the water of the United States consists only of wetlands the jurisdiction extends to the limit of the wetland.

The term "ordinary high water mark" is defined at 33 CFR 328.3(e):
Means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving,

changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Wetlands, as defined by the Corps for regulatory purposes, are identified using a three-parameter test that considers whether hydrophytic vegetation, hydric soils, and hydrology are present (Corps 1987). Wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR 328.3, 40 CFR 230.3). Wetlands also include less conspicuous wetland types such as vernal pools and other seasonal wetlands.

An ephemeral stream has flowing water only during and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow. An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow. A perennial stream has flowing water year-round during a typical year (66 FR 42099).

B. State Water Resources Control Board Jurisdiction

The California State Water Resource Control Board (SWRCB) and each of its nine Regional Boards (RWQCB) regulate the discharge of waste (dredged or fill material) into Waters of the US and Waters of the State. Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (California Water Code 13050[e]).

Section 401 of the CWA requires certification for any federal permit or license authorizing impacts to Waters of the US (i.e., waters that are within federal jurisdiction), such as Section 404 of the CWA and Section 10 of the Safe Rivers and Harbors Act, to ensure that the impacts do not violate state water quality standards. When a project could impact waters outside those under federal jurisdiction, the RWQCB has the authority under the Porter-Cologne Water Quality Control Act to issue Waste Discharge Requirements (WDRs) to ensure that impacts do not violate state water quality standards. Clean Water Act Section 401 Water Quality Certifications, WDRs, and waivers of WDRs are also referred to as orders or permits. In 2000, the SWRCB determined that all Waters of the US are also waters of the state by regulation, prior to any regulatory or judicial limitations on the federal definition of Waters of the US (California Code or Regulations title 23, §3831(w)). Waters of the State include features that have been determined by the EPA or the Corps to be "Waters of the US" in an approved jurisdictional determination; "Waters of the US" identified in an aquatic resource report verified by the Corps upon which a permitting decision was based; and features that are consistent with any current or

historic final judicial interpretation of “Waters of the US” or any current or historic federal regulation defining “Waters of the US” under the federal CWA.
The SWRCB (2019) define an area as wetland as follows:

An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.
The following wetlands are waters of the state:

1. *Natural wetland*
2. *Wetlands created by modification of a surface water of the state; and*
3. *Artificial wetlands that meet any of the following criteria:*
    a. *Approved by an agency as compensatory mitigation for impacts to other waters of the state, except where the approving agency explicitly identifies the mitigation as being of limited duration;*
    b. *Specifically identified in a water quality control plan as a wetland or other water of the state;*
    c. *Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or*
    d. *Greater than or equal to one acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not waters of the state unless they also satisfy the criteria set forth in 2, 3a, or 3b):*
        i. *Industrial or municipal wastewater treatment or disposal,*
        ii. *Settling of sediment,*
        iii. *Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program,*
        iv. *Treatment of surface waters,*
        v. *Agricultural crop irrigation or stock watering,*
        vi. *Fire suppression,*
        vii. *Industrial processing or cooling,*
        viii. *Active surface mining – even if the site is managed for interim wetlands functions and values,*
        ix. *Log storage,*
        x. *Treatment, storage, or distribution of recycled water, or*
        xi. *Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or*
        xii. *Fields flooded for rice growing.*

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c are not Waters of the State. If an aquatic feature meets the wetland definition, the burden is on the applicant to demonstrate that the wetland is not a water of the state.

C. California Department of Fish and Wildlife (CDFW)

California Fish and Game Code (FGC) §§1600-1607 requires that CDFW be notified of any activity that could affect the bank or bed of any stream that has value to fish and wildlife (CDFW 2004). Upon notification, CDFW has the discretion to execute a Streambed Alteration Agreement. CDFW defines streams as follows:

"... *a body of water that flows at least periodically...through a bed or channel having banks and supporting fish and other aquatic life. This includes watercourses having a subsurface flow that supports or has supported riparian vegetation*."

In practice, CDFW authority is extended to any "blue line" stream shown on a USGS topographic map, as well as unmapped channels with a definable bank and bed. Wetlands, as defined by Corps, need not be present for CDFW to exert authority. The FGC defines fish and wildlife to include: all wild animals, birds, plants, fish, amphibians, invertebrates, reptiles, and related ecological communities including the habitat upon which they depend for continued viability (FGC Division 5, Chapter 1, section 45 and Division 2, Chapter 1 section 711.2(a) respectively). Furthermore, Division 2, Chapter 5, Article 6, §1600 et seq. of the FGC does not limit jurisdiction to areas defined by specific flow events, seasonal changes in water flow, or presence/absence of vegetation types or communities.

IV. RESULTS

A. Soils

All the mapping units below are listed in the USDA (2022) national hydric soil list for Sacramento County. The USDA (2022) defines a hydric soil as "a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. This definition includes soils that developed under anaerobic conditions in the upper part but no longer experience these conditions due to hydrologic alteration such as those hydric soils that have been artificially drained or protected (e.g., ditches or levees)." The soil mapping units in the BSA are artificially drained due the expansive system of levees built throughout the Sacramento Delta.

Four different soil mapping units occur in the BSA and are summarized below (NRCS 2022). Reported colors are for moist soil (NRCS 1993). Figure 1 is a Soil Map.

<u>Columbia silt loam, drained, 2 to 5 percent slopes</u>:
The Columbia series consists of very deep, moderately well drained soils formed in alluvium from mixed sources. These soils are on flood plains and natural levees and have slopes of 0 to 8 percent. A typical pedon consists of:

0–23 inches: Brown (10YR 4/3) slightly acidic fine sandy loam.
23–26 inches: Dark brown (10YR 3/3) slightly acidic sand.
26–31 inches: Reddish yellow (7.5YR 6/6) neutral fine sandy loam.
31–34 inches: Brown (10YR 5/3) slightly alkaline silt loam.
34–38 inches: Brown (10YR 5/3) slightly alkaline fine sandy loam.
38–41 inches: Dark brown (10YR 3/3) neutral sand.
41–55 inches: Brown (10YR 5/3) moderately alkaline loam.
55–59 inches: Dark gray (10YR 4/1) moderately alkaline silty clay loam.

<u>Laugenour loam, partially drained, 0 to 2 percent slopes</u>:
The Laugenour series consists of very deep, poorly drained soils formed in material from sedimentry alluvium. Laugenour soils are on alluvial fans and have slopes of 0 to 2 percent. A typical pedon consists of:

0–20 inches: Dark grayish brown (2.5Y 4/2) moderately alkaline very fine sandy loam.
20–30 inches: variegated colored with common medium distinct mottles of dark reddish brown (5YR 3/4) loamy sand.
30–68 inches: Olive (5Y 4/3) moderately alkaline fine sandy loam.
68–82 inches: Variegated colored open sands and gravel.

Figure 1. Soil Map

Biological Study Area (14.2 acres)

Soil Map Unit Boundaries

Major Soil Component Type

Meadows of Isleton RV Park Project

Wetland Reconnaissance Report

Kingfisher Bio, Inc. April 2022

100 ft

Sailboat silt loam, partially drained, 0 to 2 percent slopes:
The Sailboat series consists of very deep, somewhat poorly drained soils which contain a buried soil and that formed in alluvium from mixed sources. Sailboat soils are on natural levees and on low flood plains. A typical pedon consists of:

0–6 inches: Dark yellowish brown (10YR 4/4) slightly acidic silt loam.
6–16 inches: Dark yellowish brown (10YR 4/4) neutral silt loam.
16–28 inches: Yellowish brown (10YR 5/4) slightly alkaline silt loam.
28–34 inches: Dark grayish brown (2.5Y 4/2) moderately alkaline clay loam.
34–62 inches: Dark grayish brown (2.5Y 4/2) moderately alkaline loam with dark yellowish brown mottles (10YR 3/6).

Valpac sandy loam, mucky substratum, partially drained, 0 to 2 percent slopes:
The Valpac series consists of very deep, somewhat poorly drained soils formed in alluvium derived from mixed rocks. Valpac soils are on natural levees of high flood plains. A typical pedon consists of:

0–10 inches: Very dark grayish brown (10YR 43/2) neutral loam.
10–19 inches: Very dark gray (10YR 3/1) and yellowish brown (10YR 5/4) slightly alkaline silt loam.
19–29 inches: Very dark grayish brown (10YR 3/2) slightly alkaline loam.
29–35 inches: Dark grayish brown (10YR 4/2) slightly alkaline sandy loam.
35–41 inches: Dark grayish brown (10YR 4/2) slightly alkaline clay loam.
41–55 inches: Dark grayish brown (2.5Y 4/2) slightly alkaline loam.
55–61 inches: Dark grayish brown (2.5Y 4/2) moderately alkaline silty loam.

B. National Wetlands Inventory Map

The online NWI map (USFWS 2022) identifies the entire BSA as occurring in Palustrine Farmed Wetland (Pf). Farmed wetlands occur where the soil surface has been mechanically or physically altered for production of crops, but where hydrophytes would become reestablished if the farming were discontinued. Farmed wetlands should be classified as Palustrine-Farmed. No other NWI features are shown in the BSA.

C. Waters and Wetlands

Aquatic resources and data points are shown on Figure 2. An evaluation of waters pursuant to the current definition of waters of the U.S. and their potential jurisdiction under Section 404 of the Clean Water Act (33 U.S.C. 1344) is in Section V. There are no wetlands in the BSA. Although some wetland data points met plant and soil criteria, all lacked hydrology indicators needed to meet the Corps 3-parameter test.

The agricultural ditch that parallels the western side of the BSA originates from a drain at the northwest corner of the BSA. The ditch likely passes stormwater from the residential area to the north. Flow is conveyed south and west through miles of agricultural fields.

The OHWM of the ditch was determined by changes in the character of soil. Approximately 1550 linear feet of agricultural ditch occur in the BSA. Acreage of agricultural ditch are unknown as only a margin occurs with the BSA based on GIS shapefile projections. The ditch could be outside of the BSA entirely. Current design plans show a green chain-link fence proposed between the project and the ditch.

Figure 2. Aquatic Resource Map

Meadows of Isleton RV Park Project

Wetland Reconnaissance Report

Biological Study Area (14.2 acres)

Agricultural Ditch (1,550 linear ft)

Data Point (U.S. Army Corps of Engineers - Arid West Version)

Kingfisher Bio, Inc. April 2022

100 ft

V. DISCUSSION

On 2 December 2008, the Corps and EPA issued a memorandum providing guidance on implementation of the Supreme Court's decision in the consolidated cases of *Rapanos v. United States and Carabell v. United States* (2008). These two cases address the scope of the Corps' jurisdiction over waters of the United States under the Clean Water Act. The guidance distinguishes among traditional navigable waters (TNW), relatively permanent waters (RPW), and non-relatively permanent waters (non-RPW). The Corps will routinely exercise jurisdiction over TNWs, RPWs, wetlands abutting these waters, and wetlands adjacent to TNWs. The jurisdictional determination for non-relatively permanent waters, their adjacent wetlands (if any), and wetlands adjacent to RPWs not considered traditionally navigable will be based on whether there exists a significant nexus with a TNW. Factors evaluated by the Corps during the significant nexus evaluation will include ecology, hydrology, and the influence of the water on the "chemical, physical, and biological integrity of downstream traditional navigable waters" (Corps 2008). The Corps may exert jurisdiction if the findings of the significant nexus evaluation indicate that "the tributary and its adjacent wetlands are likely to have an effect [on downstream traditional navigable waters] that is more than speculative or insubstantial" (Corps and EPA 2008). Finally, the guidance provides that the Corps will not generally assert jurisdiction over ditches (including roadside ditches) which are excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water. The guidance recognizes that these features, by their very nature, do not have a significant nexus to downstream traditional navigable waters.

The Rapanos memorandum (Corps and EPA 2008) does not affect the Court's decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, No. 99-1178 (January, 2001; "SWANCC") which involved statutory and constitutional challenges to the assertion of CWA jurisdiction over isolated, non-navigable, intrastate waters used as habitat by migratory birds. Isolated wetlands and waters are not subject to Clean Water Act jurisdiction.

Wetland and/or channel features not subject to the Corps' jurisdiction may come under the jurisdiction of the California Department of Fish and Wildlife (CDFW) and/or the Regional Water Quality Control Board (RWQCB). For example, "isolated" wetlands not subject to Section 404 in accordance with the SWANCC decision are subject to regulation by the RWQCB.

The following is an assessment of Corps jurisdiction over the features identified within the BSA in Section IV, pursuant to the Corps/EPA guidance memorandum:

A. TNWs and Adjacent Wetlands

No TNWs or wetlands adjacent to TNWs occur in the BSA. The nearest downstream TNW is the Sacramento River, which is considered navigable from its mouth to 5 miles past Redding, CA (Corps 2022).

B. RPWs that flow directly or indirectly into TNWs

No RPWs that flow directly or indirectly into TNWs occur in the BSA.

C. Non-RPWs that flow directly or indirectly into TNWs

No Non-RPWs that flow directly or indirectly into TNWs occur in the BSA.

D. Wetlands directly abutting RPWs that flow directly or indirectly into TNWs

No Wetlands directly abutting RPWs that flow directly or indirectly into TNWs occur in the BSA.

E. Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs

No wetlands adjacent to but not directly abutting RPWs occur in the BSA.

F. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs

No Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs occur in the BSA.

G. Impoundments of waters

There are no impoundments of water in the BSA.

H. Isolated (interstate or intrastate) waters, including isolated wetlands

There are no isolated wetlands in the BSA.

I. Corps Non-jurisdictional features

The agricultural ditch consists of approximately 1550 linear feet in the BSA, does not appear to meet the "significant nexus" criteria for federal jurisdiction under the Clean Water Act. Flow is south and west, away from the Sacramento River and adjacent sloughs. Although it was created in historic wetlands it does not appear to pass surface flow to any TNWs, RPWs, or non-RPWs directly or indirectly. The extensive system of levees in the Sacramento Delta allows agriculture to occur in this historic wetland area. The agricultural ditch in the BSA provides ephemeral surface water for agriculture in the Delta.

J. Summary of Corps Jurisdictional Acreages

No waters of the U.S. occur in the BSA.

K. Waters of the State

The agricultural ditch in the BSA has a distinguishable bed and banks (or OHWM) and maybe considered Waters of the State, defined as “any surface water or groundwater, including saline waters, within the boundaries of the state” (California Water Code 13050[e]). Thus, fill or temporary impacts to the ditch may be regulated by the SWRCB.

L. CDFW Jurisdiction

The agricultural ditch provides ephemeral flow and potential habitat for a variety of wildlife including birds, small mammals, amphibians, and reptiles. Thus, fill or temporary impacts the ditch or riparian canopy may be subject to CDFW jurisdiction as a non-riparian stream.

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VII. REPORT PREPARERS

Juan Mejia, President. Mr. Mejia is a 2011 graduate from the University of California Davis with a B.S. in Environmental Science and Management (emphasis Ecology, Conservation and Biodiversity). He is a field botanist with over 10 years' experience in California. He is familiar with the flora and fauna of the Sacramento and San Joaquin valleys, the Sierra Nevada foothills, the northern and southern coast range, and the San Francisco Bay estuary. He conducts biological studies for use in CEQA, USFWS endangered species consultations, CDFW LSA agreements and 2081 take permits, NEPA and other regulations. He performs wetland delineations pursuant to Clean Water Act 404 and 401 requirements and guides clients through permit acquisition. He holds a FAA remote pilot certificate, a U.S. Forest Service wilderness ethics certificate, and is CRAM certified by the San Francisco Estuary Institute.

Appendix A.

Wetland Data Forms

WETLAND DETERMINATION DATA FORM —Arid West Region

Project/Site: Meadows of Isleton RV City/County: Sacramento Sampling Date: 3/31/22

Applicant/Owner: Meadows of Isleton RV State: CA Sampling Point: 1

Investigator(s): Juan L. Mejia Section, Township, Range: See Report

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): None Slope (%): —

Subregion (LRR): See Report Lat: See Report Long: See Report Datum: ______

Soil Map Unit Name: Valpac sandy loam, mucky substrate NWI classification: PF

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ______ (If no, explain in Remarks.)

Are Vegetation ______ Soil ______ or Hydrology ______ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ______

Are Vegetation ______, Soil ______ or Hydrology ______ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ______ No X		Is the Sampled Area within a Wetland? Yes ______ No X
Hydric Soil Present? Yes X No ______		
Wetland Hydrology Present? Yes ______ No X		

Remarks: Adjacent to agricultural ditch.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum 1x1m			
1. Epilobium ciliatum	1		FACW
2. Hordeum murinum	1		UPL
3. Raphanus sativa	2		UPL
4. Polypogon monspeliensis	1		FACW
5. Bromus carinatus	22	D	UPL
6. Persicaria sp	1		~~OBL~~ FACW
7. Rumex crispus	3		FAC
8. Cyperus eragrostis	1		FACW
Total Cover:	38		
~~Woody Vine Stratum~~			
1. Gnaphalium palustre	2		FACW
2. Erigeron sp	4		FACU
Total Cover:			

% Bare Ground in Herb Stratum 62 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptation[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ______ No ______

Remarks: Erigeron likely canadensis or bonariensis (both FACU) persicaria likely amphibia (OBL) but at least FACW.
50% of 38 = 19%
20% of 38 = 7.6%

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/3	100					Loam	
12-16	10YR 3/2	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks: Soil is disked for vegetation control. Valpac soils considered hydric (formed in alluvium). Hydric soil indicators assumed with deeper test pits.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Data point occurs on artificially drained field surrounded by agricultural ditches and vineyards.

WETLAND DETERMINATION DATA FORM —Arid West Region

Project/Site: Isleton RV City/County: Sacramento Sampling Date: 3/31/22

Applicant/Owner: Meadows of Isleton RV State: CA Sampling Point: 2

Investigator(s): JLM Section, Township, Range: See Report

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Concave Slope (%): <1%

Subregion (LRR): See Report Lat: See Report Long: See Report Datum: ____

Soil Map Unit Name: Valpac sandy loam, mucky substrate NWI classification: PF

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: Low spot in field. Occurs in a former detention basin ~ 2002-2003.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum 1x1m			
1. Trifolium fragiferum	62	D	FAC
2. Rumex crispus	7		FAC
3. Helminthotheca echioides	1		FAC
4. Bromus carinatus	5		UPL
5. Hordeum murinum	2		UPL
6. Triticum aestivum	18		UPL
7.			
8.			
Total Cover	95		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x 1 = ____
FACW species	____	x 2 = ____
FAC species	____	x 3 = ____
FACU species	____	x 4 = ____
UPL species	____	x 5 = ____
Column Totals:	____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ Dominance Test is >50%
- ____ Prevalence Index is ≤3.0[1]
- ____ Morphological Adaptation& (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation' (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: 50% of 95 = 47.5
20% of 95 = 19

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10 YR 3/2	100					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

__ Histosol (A1)
__ Histic Epipedon (A2)
__ Black Histic (A3)
__ Hydrogen Sulfide (A4)
__ Stratified Layers (A5) (**LRR C**)
__ 1 cm Muck (A9) (**LRR D**)
__ Depleted Below Dark Surface (A11)
__ Thick Dark Surface (A12)
__ Sandy Mucky Mineral (S1)
__ Sandy Gleyed Matrix (S4)
__ Sandy Redox (S5)
__ Stripped Matrix (S6)
__ Loamy Mucky Mineral (F1)
__ Loamy Gleyed Matrix (F2)
__ Depleted Matrix (F3)
__ Redox Dark Surface (F6)
__ Depleted Dark Surface (F7)
__ Redox Depressions (F8)
__ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

__ 1 cm Muck (A9) (**LRR C**)
__ 2 cm Muck (A10) (**LRR B**)
__ Reduced Vertic (F18)
__ Red Parent Material (TF2)
X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks: Soils are classified as hydric. Hydric soils indicators likely present with deeper test pits.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

__ Surface Water (A1)
__ High Water Table (A2)
__ Saturation (A3)
__ Water Marks (B1) (**Nonriverine**)
__ Sediment Deposits (B2) (**Nonriverine**)
__ Drift Deposits (B3) (**Nonriverine**)
__ Surface Soil Cracks (B6)
__ Inundation Visible on Aerial Imagery (B7)
__ Water-Stained Leaves (B9)
__ Salt Crust (B11)
__ Biotic Crust (B12)
__ Aquatic Invertebrates (B13)
__ Hydrogen Sulfide Odor (C1)
__ Oxidized Rhizospheres along Living Roots (C3)
__ Presence of Reduced Iron (C4)
__ Recent Iron Reduction in Plowed Soils (C6)
__ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

__ Water Marks (B1) (**Riverine**)
__ Sediment Deposits (B2) (**Riverine**)
__ Drift Deposits (B3) (**Riverine**)
__ Drainage Patterns (B10)
__ Dry-Season Water Table (C2)
__ Thin Muck Surface (C7)
__ Crayfish Burrows (C8)
__ Saturation Visible on Aerial Imagery (C9)
__ Shallow Aquitard (D3)
__ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___
Water Table Present? Yes ___ No ___ Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Same as DP1

WETLAND DETERMINATION DATA FORM —Arid West Region

Project/Site: Isleton RV City/County: Sacramento Sampling Date: 3/31/22

Applicant/Owner: Meadows State: ______ Sampling Point: 3

Investigator(s): JLM Section, Township, Range: See Report

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): < 1%

Subregion (LRR): See Report Lat: See Report Long: See Report Datum: ______

Soil Map Unit Name: Colombra silt loam drained 2-5% NWI classification: PF

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ______ (If no, explain in Remarks.)

Are Vegetation ______ Soil ______ or Hydrology ______ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ______

Are Vegetation ______, Soil ______ or Hydrology ______ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ______	Is the Sampled Area within a Wetland? Yes ______ No X
Hydric Soil Present?	Yes X No ______	
Wetland Hydrology Present?	Yes ______ No X	

Remarks: Small depression in field.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum 1x1m			
1. Festuca perennis (Lolium)	45	D	FAC
2. Senecio vulgaris	2		FACU
3. Malva parviflora	5		UPL
4. Erodium botrys (not dsed)	10		FACU
5. Helminthotheca echioides	3		FAC
6. Bromus carinatus	2		UPL
7. Sonchus oleraceus	3		UPL
8. Taraxicum officinale	2		FACU
Total Cover	80		
~~Woody Vine Stratum~~			
1. Raphanus sativa	7		UPL
2. Hordeum murinum	1		UPL
Total Cover:			

% Bare Ground in Herb Stratum ______ % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ______

Remarks: 19% thatch not bare

50% of 80 = 40%

20% of 80 = 16%

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/3	100					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks: Little more yellow than DP1 & DP2 soils are classified as hydric. Hydric soil indicators likely present with deeper test pits.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Same as DP1

M

WETLAND DETERMINATION DATA FORM —Arid West Region

Project/Site: Isleton RV City/County: Sacramento Sampling Date: 3/31/22

Applicant/Owner: Meadows of Isleton RV State: CA Sampling Point: 4

Investigator(s): JLM Section, Township, Range: See Report

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): ______

Subregion (LRR): See Report Lat: See Report Long: See Report Datum: ______

Soil Map Unit Name: Columbia silt loam, drained 2-5%. NWI classification: PF

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ______ (If no, explain in Remarks.)

Are Vegetation ______ Soil ______ or Hydrology ______ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ______

Are Vegetation ______, Soil ______ or Hydrology ______ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No ✓	Is the Sampled Area within a Wetland?	Yes ____ No X
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes ____ No X		

Remarks: ~~Fd~~ Data point on bench; eastern side of field. Just South of abandoned garden.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca bromoides	39	D	FACU
2. Erodium botrys	38	D	FACU
3. Bromus diandrus	2		UPL
4. Raphanus sativa	3		UPL
5. Senecio vulgaris	1		FACU
6. Bromus hordeaceus	1		FACU
7. Persicaria sp.	4		FACW
8. Hordeum murinum	1		UPL
Total Cover	90		
Woody Vine Stratum			
1. Festuca perennis	1		FAC
2.			
Total Cover:			

% Bare Ground in Herb Stratum ______ % Cover of Biotic Crust ∅

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptation& (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation' (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ______ No X

Remarks: 10% thatch no bare ground

50% of 90 = 45%
20% of 90 = 18%

Persicaria likely amphibia but at least FACW

SOIL

Sampling Point: (4)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/3	100					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks: soils are classified as hydric. Hydric soil indicators likely present with deeper test pits

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ______

Water Table Present? Yes ___ No ___ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ______

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Same as DP 1

Appendix B.

Photographs

Photo 1. View looking southwest towards the southern half of the BSA. RV campground access road and abandoned garden in the foreground.

Photo 2. View looking northeast across the BSA from the southwest corner. Agricultural ditch and riparian canopy on the left.

Photo 3. View looking north towards the northern extent of the BSA. Llama corral and chicken coups in the foreground. Agricultural ditch begins just beyond the large weeping willow tree on the left.

Photo 4. View looking south across the BSA. RV campground and access roads in the foreground. Agricultural ditch on the right.

Photo 5. View looking south towards wetland data point 1.

Photo 6. View looking south towards wetland data point 2.

Photo 7. View looking southeast towards wetland data point 3.

Photo 8. View looking north towards wetland data point 4.

MEADOWS OF ISLETON RV RESORT AIR QUALITY, GLOBAL CLIMATE CHANGE, AND ENERGY IMPACT ANALYSIS

City of Isleton

September 9, 2022

ganddini

Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
Air Quality ● Global Climate Change ● Health Risk Assessment

MEADOWS OF ISLETON RV RESORT AIR QUALITY, GLOBAL CLIMATE CHANGE, AND ENERGY IMPACT ANALYSIS

City of Isleton

September 9, 2022

prepared by
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Project No. 19542

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EXECUTIVE SUMMARY

The purpose of this air quality, global climate change, and energy impact analysis is to provide an assessment of the impacts resulting from development of the proposed Meadows of Isleton RV Resort project and to identify measures that may be necessary to reduce potentially significant impacts.

Construction-Source Emissions

Project construction-source emissions would not exceed applicable regional thresholds of significance established by the Sacramento Metropolitan Air Quality Management District (SMAQMD) and would implement the basic construction emission control practices (BCECPs) as required by SMAQMD (see Section 5, Emissions Reduction Measures for more details).

Project construction-source emissions would not conflict with all applicable air quality attainment plans. As discussed herein, the project will comply with all applicable SMAQMD construction-source emission reduction rules and guidelines. Project construction source emissions would not cause or substantively contribute to violation of the California Ambient Air Quality Standards (CAAQS) or National Ambient Air Quality Standards (NAAQS).

Given the temporary and short-term construction schedule, the project would not result in a long-term (i.e., lifetime or 30-year) exposure to TACs as a result of project construction. Furthermore, construction-based particulate matter (PM) emissions (including diesel exhaust emissions) do not exceed any local or regional thresholds. Therefore, impacts from TACs during construction would be less than significant.

Established requirements addressing construction equipment operations, and construction material use, storage, and disposal requirements act to minimize odor impacts that may result from construction activities. Moreover, construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people. Potential construction-source odor impacts are therefore considered less than significant.

Operational-Source Emissions

Project operational-sourced emissions would not exceed applicable regional thresholds of significance established by the SMAQMD. Project operational-source emissions would not result in or cause significant toxic air contaminant (TAC) impacts as discussed in the Operations-Related Local Air Quality Impacts section of this report. Additionally, project-related trips will not cause or result in CO concentrations exceeding applicable state and/or federal standards (CO "hotspots). Project operational-source emissions would therefore not adversely affect sensitive receptors within the vicinity of the project.

Project operational-source emissions would not conflict with all applicable air quality attainment plans. The project's emissions meet SMAQMD regional thresholds and will not result in a significant cumulative impact. The project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential operational-source odor impacts are therefore considered less than significant.

Greenhouse Gases

Project-related GHG emissions would not exceed the SMAQMD threshold of 1,100 metric tons of carbon dioxide equivalents (MTCO2e) per year and the project will implement Tier 1 best management practices (BMPs) as required by SMAQMD (see Section 5, Emissions Reduction Measures for more details).

Furthermore, as the proposed project, would not exceed the threshold of 1,100 metric tons of carbon dioxide equivalents (MTCO2e) per year, the project would not conflict with the goals of AB-32, SB-32, the CARB Scoping Plan or the Metropolitan Transportation Plan Sustainable Communities Strategy (MTP/SCS);

therefore, the project would not conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases and impacts are considered to be less than significant.

Energy

For new development such as that proposed by the Meadows of Isleton RV Resort project, compliance with California Building Standards Code Title 24 energy efficiency requirements (CALGreen), are considered demonstrable evidence of efficient use of energy. As discussed below, the project would provide for, and promote, energy efficiencies required under other applicable federal and State of California standards and regulations, and in so doing would meet or exceed all California Building Standards Code Title 24 standards. Moreover, energy consumed by the project's operation is calculated to be comparable to, or less than, energy consumed by other commercial uses of similar scale and intensity that are constructed and operating in California. On this basis, the project would not result in the inefficient, wasteful, or unnecessary consumption of energy. Impacts are considered to be less than significant.

1. INTRODUCTION

This section describes the purpose of this air quality, global climate change, and energy impact analysis, project location, proposed development, and study area. Figure 1 shows the project location map and Figure 2 illustrates the project site plan.

PURPOSE AND OBJECTIVES

This study was performed to address the possibility of regional/local air quality impacts and global climate change impacts, from project related air emissions. The objectives of the study include:

- documentation of the atmospheric setting
- discussion of criteria pollutants and greenhouse gases
- discussion of the air quality and global climate change regulatory framework
- analysis of the construction related air quality and greenhouse gas emissions
- analysis of the operations related air quality and greenhouse gas emissions
- analysis of the conformity of the proposed project with the all applicable air quality attainment plans
- analysis of the project's energy use during construction and operation
- recommendations for mitigation measures

The City of Isleton is the lead agency for this air quality, global climate change, and energy analysis, in accordance with the CEQA authorizing legislation. Although this is a technical report, effort has been made to write the report clearly and concisely. A glossary is provided in Appendix A to assist the reader with technical terms related to air quality and global climate change.

PROJECT LOCATION

The project site is located west of Jackson Slough Road in the southwest corner of the City of Isleton, California. The project site is part of a working farm that currently offers 20 campsites. A vicinity map showing the project location is provided on Figure 1.

PROJECT DESCRIPTION

The proposed project involves development of a recreational vehicle (RV) park with up to 135 camp sites, including 96 back-in RV sites, 25 pull-through RV sites and 14 tiny home cabins. Figure 2 illustrates the proposed site plan.

PHASING AND TIMING

The proposed project is anticipated to be operational in 2023. The project is anticipated to be built in one phase with project construction anticipated to start no sooner than the beginning of November 2022 and be completed by mid-August 2022.

SENSITIVE RECEPTORS IN PROJECT VICINITY

Those who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. For purposes of CEQA, the SMAQMD considers a sensitive receptor to be facilities that house or attract children, the elderly, and people with illnesses or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors.[1]

[1] Sacramento Metropolitan Air Quality Management District CEQA Guide Section 2.3.2, December 2009.

The nearest sensitive receptors to the project site include the existing single-family detached residential property lines located adjacent to the north and south of the project site boundaries. In addition, Isleton Baseball Field is located adjacent to the northeast corner of the project site boundaries. Other air quality sensitive land uses are located further from the project site and would experience lower impacts.

Figure 1
Project Location Map

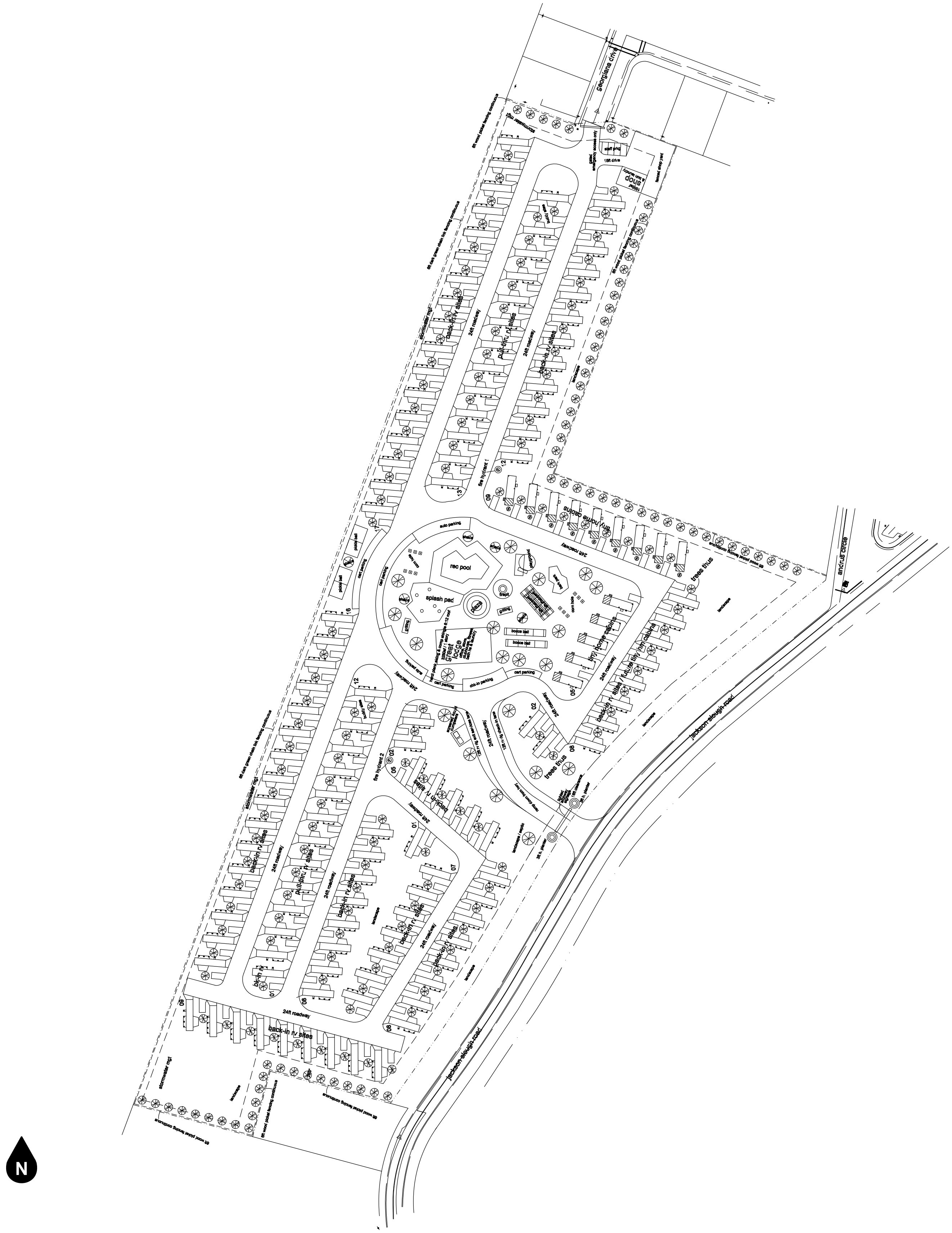

Figure 2
Site Plan

2. AIR QUALITY ANALYSIS

EXISTING AIR QUALITY CONDITIONS

Local Air Quality

The project site is located within the City of Isleton in Sacramento County. Sacramento County is located within the boundaries of the Sacramento Valley Air Basin (SVAB), which is under the jurisdiction of the SMAQMD. The Sacramento Valley Air Basin is bounded by the North Coast Ranges on the west and the Northern Sierra Nevada Mountains on the east. The intervening terrain is flat. Sacramento is often described as a bowl-shaped valley.

The Sacramento Valley has a Mediterranean climate, characterized by hot dry summers and mild rainy winters. During the year the temperature may range from 20 to 115 degrees Fahrenheit with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 20 inches with snowfall being very rare. The prevailing winds are moderate in strength and vary from moist breezes from the south to dry land flows from the north.

The mountains surrounding the Sacramento Valley create a barrier to airflow, which can trap air pollutants in the valley when meteorological conditions are right, and a temperature inversion exists. Air stagnation in the autumn and early winter occurs when large high-pressure cells lie over the valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows pollutants to become concentrated in the air. The surface concentrations of pollutants are highest when these conditions are combined with increased levels of smoke or when temperature inversions trap cool air, fog and pollutants near the ground.

The ozone season (May through October) in the Sacramento Valley is characterized by stagnant morning air or light winds with the Delta Sea breeze arriving in the afternoon out of the southwest. Usually, the evening breeze transports the airborne pollutants to the north out of the Sacramento Valley. During about half of the days from July to September, however, a phenomenon called the "Schultz Eddy" prevents this from occurring. Instead of allowing for the prevailing wind patterns to move north carrying the pollutants out of the valley, the Schultz Eddy causes the wind pattern and pollutants to circle back southward. This phenomenon's effect exacerbates the pollution levels in the area and increases the likelihood of violating the federal and state air quality standards.[2]

The temperature and precipitation levels for the Lodi area (closest monitoring site with data available to the project site) are shown below in Table 1. Table 1 shows that July is typically the warmest month and December is typically the coolest month. Rainfall in the project area varies considerably in both time and space. Almost all the annual rainfall comes from the fringes of mid-latitude storms from November to early April, with summers being almost completely dry.

2 Sacramento Metropolitan Air Quality Management District (SMAQMD) CEQA Guide – Chapter 1 Introduction and Air Quality. http://www.airquality.org/Residents/CEQA-Land-Use-Planning/CEQA-Guidance-Tools.

Table 1
Local Monthly Climate Data

Descriptor	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Max. Temperature	55.4	61.7	67.6	73.9	81.1	87.5	91.2	90.5	87	78.2	62.6	55.4
Avg. Min. Temperature	37.8	40.5	42.9	45.7	50.7	54.7	56.8	56	53.7	48.2	40.5	37.4
Avg. Total Precipitation (in.)	3.51	3.67	2.71	1.41	0.63	0.15	0.01	0.03	0.3	1.13	2.43	3.4

Source: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5032
Data from the Lodi, CA station (045032).

Pollutants

Pollutants are generally classified as either criteria pollutants or non-criteria pollutants. Federal ambient air quality standards have been established for criteria pollutants, whereas no ambient standards have been established for non-criteria pollutants. For some criteria pollutants, separate standards have been set for different periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). A summary of federal and state ambient air quality standards is provided in the Regulatory Framework section.

Criteria Pollutants

The criteria pollutants consist of: ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, lead, and particulate matter. These pollutants can harm your health and the environment, and cause property damage. The Environmental Protection Agency (EPA) calls these pollutants "criteria" air pollutants because it regulates them by developing human health-based and/or environmentally based criteria for setting permissible levels. The following provides descriptions of each of the criteria pollutants.

Nitrogen Dioxides

Nitrogen Oxides (NOx) is the generic term for a group of highly reactive gases which contain nitrogen and oxygen. While most NOx are colorless and odorless, concentrations of nitrogen dioxide (NO_2) can often be seen as a reddish-brown layer over many urban areas. NOx form when fuel is burned at high temperatures, as in a combustion process. The primary manmade sources of NOx are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuel. NOx reacts with other pollutants to form, ground-level ozone, nitrate particles, acid aerosols, as well as NO_2, which cause respiratory problems. NOx and the pollutants formed from NOx can be transported over long distances, following the patterns of prevailing winds. Therefore, controlling NOx is often most effective if done from a regional perspective, rather than focusing on the nearest sources.

Ozone

Ozone (O_3) is not usually emitted directly into the air but at ground-level is created by a chemical reaction between NOx and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust, industrial emissions, gasoline vapors, chemical solvents as well as natural sources emit NOx and VOC that help form O_3. Ground-level O_3 is the primary constituent of smog. Sunlight and hot weather cause ground-level O_3 to form with the greatest concentrations usually occurring downwind from urban areas. O_3 is subsequently considered a regional pollutant. Ground-level O_3 is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Because NOx and VOC are O_3 precursors, the health effects associated with O_3 are also indirect health effects associated with significant levels of NOx and VOC emissions.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires. Woodstoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are indoor sources of CO. The highest levels of CO in the outside air typically occur during the colder months of the year when inversion conditions are more frequent. The air pollution becomes trapped near the ground beneath a layer of warm air. CO is described as having only a local influence because it dissipates quickly. Since CO concentrations are strongly associated with motor vehicle emissions, high CO concentrations generally occur in the immediate vicinity of roadways with high traffic volumes and traffic congestion, active parking lots, and in automobile tunnels. Areas adjacent to heavily traveled and congested intersections are particularly susceptible to high CO concentrations.

CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. The health threat from lower levels of CO is most serious for those who suffer from heart disease such as angina, clogged arteries, or congestive heart failure. For a person with heart disease, a single exposure to CO at low levels may cause chest pain and reduce that person's ability to exercise; repeated exposures may contribute to other cardiovascular effects. High levels of CO can affect even healthy people. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity, and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death.

Sulfur Dioxide

Sulfur Oxide (SOx) gases (including sulfur dioxide [SO_2]) are formed when fuel containing sulfur, such as coal and oil is burned, and from the refining of gasoline. SOx dissolves easily in water vapor to form acid and interacts with other gases and particles in the air to form sulfates and other products that can be harmful to people and the environment.

Lead

Lead (Pb) is a metal found naturally in the environment as well as manufactured products. The major sources of lead emissions have historically been motor vehicles and industrial sources. Due to the phase out of leaded gasoline, metal processing is now the primary source of lead emissions to the air. High levels of lead in the air are typically only found near lead smelters, waste incinerators, utilities, and lead-acid battery manufacturers. Exposure of fetuses, infants and children to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased lead levels are associated with increased blood pressure.

Particulate Matter

Particulate matter (PM) is the term for a mixture of solid particles and liquid droplets found in the air. Particulate matter is made up of a number of components including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health problems. Particles that are less than 10 micrometers in diameter (PM10) are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. Particles that are less than 2.5 micrometers in diameter (PM2.5) have been designated as a subset of PM10 due to their increased negative health impacts and its ability to remain suspended in the air longer and travel further.

Reactive Organic Gases (ROG)

Although not a criteria pollutant, reactive organic gases (ROGs), or volatile organic compounds (VOCs), are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROGs and VOCs, the two terms are often used interchangeably. Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of O_3. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM10 and lower visibility.

Other Pollutants of Concern

Toxic Air Contaminants (TACs)

In addition to the above-listed criteria pollutants, TACs are another group of pollutants of concern. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least forty different TACs. The most important of these TACs, in terms of health risk, are diesel particulates, benzene, formaldehyde, 1,3-butadiene, and acetaldehyde. Public exposure to TACs can result from emissions from normal operations as well as from accidental releases. Health effects of TACs include cancer, birth defects, neurological damage, and death.

TACs are less pervasive in the urban atmosphere than criteria air pollutants, however they are linked to short-term (acute) or long-term (chronic or carcinogenic) adverse human health effects. There are hundreds of different types of TACs with varying degrees of toxicity. Sources of TACs include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), and motor vehicle exhaust.

According to the 2013 California Almanac of Emissions and Air Quality, the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important of which is diesel particulate matter (DPM). Diesel particulate matter is a subset of PM2.5 because the size of diesel particles are typically 2.5 microns and smaller. The identification of diesel particulate matter as a TAC in 1998 led the California Air Resources Board (CARB) to adopt the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-fueled Engines and Vehicles in September 2000. The plan's goals are a 75-percent reduction in diesel particulate matter by 2010 and an 85-percent reduction by 2020 from the 2000 baseline. Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The visible emissions in diesel exhaust are known as particulate matter or PM, which includes carbon particles or "soot". Diesel exhaust also contains a variety of harmful gases and over 40 other cancer-causing substances. California's identification of diesel particulate matter as a TAC was based on its potential to cause cancer, premature deaths, and other health problems. Exposure to diesel particulate matter is a health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems. Overall, diesel engine emissions are responsible for the majority of California's potential airborne cancer risk from combustion sources.

Asbestos

Asbestos is listed as a TAC by the ARB and as a Hazardous Air Pollutant by the EPA. Asbestos occurs naturally in mineral formations and crushing or breaking these rocks, through construction or other means, can release asbestiform fibers into the air. Asbestos emissions can result from the sale or use of asbestos-containing materials, road surfacing with such materials, grading activities, and surface mining. The risk of disease is dependent upon the intensity and duration of exposure. When inhaled, asbestos fibers may remain in the lungs and with time may be linked to such diseases as asbestosis, lung cancer, and mesothelioma. At the request of SMAQMD, the California Geological Survey (formerly the California Division of Mines and Geology) prepared a report called the Relative Likelihood for the Presence of Naturally Occurring Asbestos in Eastern Sacramento County, California. The map in this report displays "areas moderately likely to contain NOA." The project site is located in the southwestern portion of Sacramento County, therefore, due to the distance to the nearest natural occurrences of asbestos, the project site is not likely to contain asbestos.

REGULATORY SETTING

The proposed project is addressed through the efforts of various international, federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality are discussed below.

Federal – United States Environmental Protection Agency

The United States Environmental Protection Agency (USEPA) is responsible for setting and enforcing the NAAQS for atmospheric pollutants. It regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. The NAAQS pollutants were identified using medical evidence and are shown below in Table 2.

The EPA and the California Air Resource Board (CARB) designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Each standard has a different definition, or 'form' of what constitutes attainment, based on specific air quality statistics. For example, the Federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the Federal annual PM2.5 standard is met if the three-year average of the annual average PM2.5 concentration is less than or equal to the standard. Attainment status is shown in Table 3.

As part of its enforcement responsibilities, the EPA requires each state with federal nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the national standards. The State Implementation Plan (SIP) must integrate federal, state, and local components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the State Implementation Plan (SIP).

As indicated below in Table 3, the Sacramento Valley Basin has been designated by the EPA as a non-attainment area for ozone (O_3) and suspended particulates (PM10). Currently, the Basin is in attainment with the ambient air quality standards for carbon monoxide (CO), lead, sulfur dioxide (SO_2), suspended particulate matter (PM-2.5), and nitrogen dioxide (NO_2).

State – California Air Resources Board

The California Air Resources Board (CARB), which is a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the CARB conducts research, sets the CAAQS, compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the State Implementation Plan (SIP). The CAAQS for criteria pollutants are shown in Table 2. In addition, the CARB establishes emission standards for motor vehicles sold in California, consumer products (e.g., hairspray, aerosol paints, and barbeque lighter fluid), and various types of commercial equipment. Furthermore, the motor vehicle emission standards established by CARB include compliance with the Safer Affordable Fuel-Efficient Vehicles (SAFE) Rule, issued by NHTSA and EPA in March 2020 (published on April 30, 2020, and effective after June 29, 2020). The SAFE Rule sets fuel economy and carbon dioxide standards that increase 1.5 percent in stringency each year from model years 2021 through 2026 and apply to both passenger cars and light trucks. CARB also sets fuel specifications to further reduce vehicular emissions.

On June 20, 2002, the CARB revised the PM10 annual average standard to 20 $\mu g/m^3$ and established an annual average standard for PM2.5 of 12 $\mu g/m^3$. These standards were approved by the Office of Administrative Law in June 2003 and are now effective.

On December 12, 2008 the CARB adopted Resolution 08-43, which limits NOx, PM10 and PM2.5 emissions from on-road diesel truck fleets that operate in California. On October 12, 2009, Executive Order R-09-010 was adopted that codified Resolution 08-43 into Section 2025, Title 13 of the California Code of Regulations. This regulation requires that by the year 2023 all commercial diesel trucks that operate in California shall meet model year 2010 (Tier 4) or latter emission standards. In the interim period, this regulation provides annual interim targets for fleet owners to meet. This regulation also provides a few exemptions including a onetime per year 3-day pass for trucks registered outside of California.

The CARB is also responsible for regulations pertaining to TACs. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly) was enacted in 1987 as a means to establish a formal air toxics emission inventory risk quantification program. AB 2588, as amended, establishes a process that requires stationary sources to report the type and quantities of certain substances their facilities routinely release into the South Coast Air Basin. The data is ranked by high, intermediate, and low categories, which are determined by: the potency, toxicity, quantity, volume, and proximity of the facility to nearby receptors.

California Clean Air Act

The California Clean Air Act (CCAA) allows the state to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the CAAQS. CARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB also has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts.

California State Implementation Plan

The federal CAA (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the SIP. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The USEPA has the responsibility to review all SIPs to determine if they conform to the requirements of the CAA.

State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards SIP revisions to the USEPA for approval and publication in the Federal Register. The SMAQMD 2015 Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2015), the PM10 Implementation/Maintenance Plan and Re-Designation Request (2010), and PM2.5 Implementation/Maintenance Plan and Re-designation Request for Sacramento PM2.5 Nonattainment Area (2013) are air quality attainment plans and reports that constitute the SIP for the Sacramento County portion of the SVAB. These air quality planning documents present comprehensive strategies to reduce the O3 precursor pollutants (ROG and NOx) as well as PM emissions from stationary, area, mobile, and indirect sources.

AB 617 Nonvehicular air pollution: criteria air pollutants and toxic air contaminants

This bill requires the state board to develop a uniform statewide system of annual reporting of emissions of criteria air pollutants and TACs for use by certain categories of stationary sources. The bill requires those stationary sources to report their annual emissions of criteria air pollutants and TACs, as specified. This bill required the state board, by October 1, 2018, to prepare a monitoring plan regarding technologies for monitoring criteria air pollutants and TACs and the need for and benefits of additional community air monitoring systems, as defined. The bill requires the state board to select, based on the monitoring plan, the highest priority locations in the state for the deployment of community air monitoring systems. The bill requires an air district containing a selected location, by July 1, 2019, to deploy a system in the selected location. The bill would authorize the air district to require a stationary source that emits air pollutants in, or that materially affect, the selected location to deploy a fence-line monitoring system, as defined, or other specified real-time, on-site monitoring. The bill authorizes the state board, by January 1, 2020, and annually thereafter, to select additional locations for the deployment of the systems. The bill would require air districts that have deployed a system to provide to the state board air quality data produced by the system. By increasing the duties of air districts, this bill would impose a state-mandated local program. The bill requires the state board to publish the data on its Internet Web site.

Regional

The SMAQMD is the agency principally responsible for comprehensive air pollution control in the Sacramento Valley Air Basin (SVAB). The agency's primary responsibility is ensuring that the NAAQS and CAAQS are attained and maintained in the Sacramento County portion of the SVAB. To that end, as a regional agency, the SMAQMD works directly with the Sacramento Area Council of Governments (SACOG), other air districts in the Sacramento region, county and city transportation and planning departments, and various non-governmental organizations and cooperates actively with all federal and state agencies.

Sacramento Metropolitan Air Quality Management District

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. The SMAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, and conducting public education campaigns, as well as many other activities.

SMAQMD Rules and Regulations

During construction and operation, the project must comply with applicable rules and regulations. The following are rules that the project may be required to comply with, either directly, or indirectly:

SMAQMD Rule 202

Any project that includes the use of equipment capable of releasing emissions to the atmosphere may require permit(s) from SMAQMD prior to equipment operation. The applicant, developer or operator of a project that includes an emergency generator, boiler, or heater should contact the District early to determine if a permit is required, and to begin the permit application process. Portable construction equipment (e.g., generator, compressors, pile drives, lighting equipment, etc.) with an internal combustion engine over 50 horsepower are required to have a SMAQMD permit or a California Air Resources Board portable equipment registration.

SMAQMD Rule 402

Prohibits a person from discharging from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause or have natural tendency to cause injury or damage to business or property.

SMAQMD Rule 403

The developer or contractor is required to control dust emissions from earth moving activities or any other construction activity to prevent airborne dust from leaving the project site.

SMAQMD Rule 442

The developer or contractor is required to use coatings that comply with the volatile organic compound content limits specified in the rule.

SMAQMD Rule 902

Limits asbestos emissions from demolition or renovation of structures and the associated disturbance of regulated asbestos containing material (RACM) generated or handled during these activities. The rule addresses the national emissions standards for asbestos along with some additional requirements. The rule requires lead agencies, building owners, and their contractors to notify the district of any regulated renovation or demolition activity. This notification includes specific requirements for surveying, removal, location, work methods, and disposal of RACM. Projects that comply with Rule 902 ensure that RACM will be disposed of appropriately and safely, minimizing the release of airborne asbestos emissions. Therefore, demolition activity would not result in a significant impact to air quality. Because District Rule 902 is in place, no further analysis about the demolition of RACM is needed in a CEQA document.

The SMAQMD was created by state law to enforce local, state, and federal air pollution regulations within the Sacramento Valley Air Basin. The SMAQMD's overall mission is to achieve clean air goals by leading the Sacramento region in protecting public health and the environment through effective programs, community involvement, and public education. The SMAQMD interacts with local, state, and federal government agencies, the business community, environmental groups, and private citizens to achieve these goals. The SMAQMD regulates air pollutant emissions from stationary sources through permit limitations and inspection programs and oversees compliance with state and federal mandates by adopting rules and regulations as necessary. Because the Sacramento Valley Air Basin is in nonattainment for ozone, PM10, and PM2.5, the SMAQMD requires the implementation of the following Basic Construction Emission Control Practices (BCECPs), regardless of the project's significance determination under CEQA.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to, soil piles, graded areas, unpaved parking areas, staging areas, and access roads;
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered;
- Use wet power vacuum street sweepers to remove any visible track out mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited;
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph);
- All roadways, driveways, sidewalks, and parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used;
- Minimize idling time by either shutting equipment off when not in use or reducing time of idling to 5 minutes. Provide clear signage that posts this requirement for workers at the entrances to the site; and
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

Air Quality Guidance Documents

SMAQMD CEQA Guide

Although the SMAQMD is responsible for regional air quality planning efforts, it does not have the authority to directly regulate air quality issues associated with plans and new development projects throughout the South Coast Air Basin. Instead, this is controlled through local jurisdictions in accordance with the CEQA. In order to assist local jurisdictions with air quality compliance issues the Guide to Air Quality Assessment in Sacramento County (CEQA Guide) prepared by the SCAQMD (2009) with the most current updates found at http://www.airquality.org/Residents/CEQA-Land-Use-Planning/CEQA-Guidance-Tools, was developed. The purpose of the SMAQMD CEQA Guide is to provide methods to analyze air quality impacts from plans and projects, including screening criteria, thresholds of significance, calculation methods, and mitigation measures in order to assist lead agencies in complying with CEQA. The SMAQMD CEQA Guide is used in this analysis.

Local – City of Isleton

Local jurisdictions, such as the City of Isleton, have the authority and responsibility to reduce air pollution through its police power and decision-making authority. Specifically, the City is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. In accordance with CEQA requirements and the CEQA review process, the City assesses the air quality impacts of new development projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, and monitors and enforces implementation of such mitigation.

In accordance with the CEQA requirements, the City does not, however, have the expertise to develop plans, programs, procedures, and methodologies to ensure that air quality within the City and region will meet federal and state standards. Instead, the City relies on the expertise of the SMAQMD and utilizes the SMAQMD CEQA Guide as the guidance document for the environmental review of plans and development proposals within its jurisdiction.

The City of Isleton General Plan (2000) does not include an air quality element nor air quality related goals or policies.

Table 2
State and Federal Criteria Pollutant Standards

Air Pollutant	Concentration / Averaging Time: California Standards	Concentration / Averaging Time: Federal Primary Standards	Most Relevant Effects
Ozone (O_3)	0.09 ppm/1-hour 0.07 ppm/8-hour	0.070 ppm/8-hour	(a) Decline in pulmonary function and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; and (f) Property damage.
Carbon Monoxide (CO)	20.0 ppm/1-hour 9.0 ppm/8-hour	35.0 ppm/1-hour 9.0 ppm/8-hour	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses.
Nitrogen Dioxide (NO_2)	0.18 ppm/1-hour 0.03 ppm/annual	100 ppb/1-hour 0.053 ppm/annual	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration.
Sulfur Dioxide (SO_2)	0.25 ppm/1-hour 0.04 ppm/24-hour	75 ppb/1-hour 0.14 ppm/annual	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
Suspended Particulate Matter (PM_{10})	50 $\mu g/m^3$/24-hour 20 $\mu g/m^3$/annual	150 $\mu g/m^3$/24-hour	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; (c) Increased risk of premature death from heart or lung diseases in elderly.
Suspended Particulate Matter ($PM_{2.5}$)	12 $\mu g/m^3$ / annual	35 $\mu g/m^3$/24-hour 12 $\mu g/m^3$/annual	
Sulfates	25 $\mu g/m^3$/24-hour	No Federal Standards	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) property damage.
Lead	1.5 $\mu g/m^3$/30-day	0.15 $\mu g/m^3$/3-month rolling	(a) Learning disabilities; (b) Impairment of blood formation and nerve conduction.
Visibility Reducing Particles	Extinction coefficient of 0.23 per kilometer-visibility of 10 miles or more due to particles when humidity is less than 70 percent.	No Federal Standards	Visibility impairment on days when relative humidity is less than 70 percent.

Source: https://ww2.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf

Table 3
Sacramento Valley Air Basin Air Quality Attainment Status

Pollutant	National Standard	Federal Designation (attainment date)	California Standard	State Designation
Carbon Monoxide (CO)	1-hour std (2011 NAAQS) - 35 ppm[1]	Attainment (1998)	1-hour std - 20 ppm	Attainment
	8-hour std (2011 NAAQS) - 9 ppm[1]	Attainment (1998)	8-hour std - 9 ppm	Attainment
Lead (Pb)	3-month rolling ave (2008 NAAQS) - 0.15 ug/m3	Attainment (2011)	30 day average - 1.5 ug/m3	Attainment
Nitrogen dioxide	1-hour std (2010 NAAQS) - 0.100 ppm	Unflassifiable/ Attainment (2012)[3]	1-hour std - 0.18 ppm	Attainment (2012)
	Annual arithmetic mean (2010 NAAQS) - 0.053 ppm[2]	Unclassifiable/ Attainment (2012)[3]	Annual arithmetic mean - 0.030 ppm	Attainment
Ozone (O_3)	1-hour std (1979 NAAQS) - 124 ppb[4]	Nonaattainment (2010)[5]	1-hour std (1988)- 90 ppb	Nonattainment
	8-hour std (1997 NAAQS) - 84 ppb[4]	Nonattainment[6]	8-hour std- 70 ppb[8]	Nonattainment
	8-hour std (2008 NAAQS) - 75 ppb	Nonattainment[6]		
	8-hour std (2015 NAAQS) - 70 ppb	Nonattainment[7]		
Particulate Matter - 2.5 microns (PM2.5)	24-hour std (2012 NAAQS) - 35 µg/m3	Nonattainment[9]	Annual arithmetic mean - 12 µg/m3	Attainment
	Annual arithmetic mean (2012 NAAQS) - 12 µg/m3	Attainment (Never designated as Nonattainment)		
Particulate Matter - 10 microns (PM10)	24-hour std (2012 NAAQS) - 150 µg/m3	Attainment (2013)	24-hour std - 50 µg/m3	Nonattainment
			Annual arithmetic mean - 20 µg/m3	Nonattainment
Sulfur Dioxide (SO_2)	1-hour std - 75 ppb (2010 NAAQS)	Attainment/ Unclassifiable[10]	1-hour std - 0.25 ppm	Attainment
			24 -hour average std - 0.04 ppm	Attainment
Hydrogen Sulfide (H_2S)	No Federal Standard		1-hour std - 30 ppb	Unclassified
Sulfates			24-hour std - 25 µg/m3	Attainment
Visibility-Reducing Particles			Statewide - 0.23 per kilometer[11]	Unclassified
			Lake Tahoe - 0.07 per kilometer[12]	
Vinyl Chloride			24-hour - 10 ppb	Unclassified

Source: Sacramento Metropolitan Air Quality Management District (SMAQMD) Air quality Pollutant Standards obtained at http://www.airquality.org/air-quality-health/air-quality-pollutants-and-standards.

(1) The original NAAQS was established in 1971. EPA reviewed both the 1-hour and 8-hour standards and decided to retain these standards in
(2) The original NAAQS were established in 1971. EPA reviewed and decided to retain the annual arithmetic mean standard in 2010.
(3) EPA designates areas as "unclassifiable/attainment" if they met the standard or are expected to meet the standard despite a lack of
(4) EPA revoked the 1979 1-hour and 1997 8-hour standards.
(5) EPA issued Determination of Attainment on Oct 18, 2012 (77 FR 64036) but the Sacramento Federal Ozone Nonattainment Area has not
(6) The nonattainment area is classified as Severe-15.
(7) The nonattainment area is classified as Moderate for the 2015 NAAQS of 70 ppb (83 FR 25788).
(8) In April 2005, the California Air Resources Board (CARB) approved a new 8-hour standard of 70 ppb and retained the 1-hour standard of
(9) EPA issued Determination of Attainment on May 10, 2017 (82 FR 21711) but the Sacramento Federal PM2.5 Nonattainment Area has not
(10) Attainment /Unclassifiable designation was made as par of EPA's Air Quality Designations for the 2010 Sulfur Dioxide (SO2) Primary National Ambient Air Quality Standard - Round 3 designation in December 2017.
(11) The statewide standard, the extinction of 0.23 per kilometer, is equivalent to the standard adopted by ARB in 1969, defined as particles "in sufficient amount to reduce the visibility to less than ten miles when the relative humidity is less than 70 percent.
(12) The Lake Tahoe Air Basin standard, the extinction of 0.07 per kilometer, is equivalent to the standard adopted by ARB in 1976, defined as particles "in sufficient amount to reduce the prevailing visibility to less than 30 miles when relative humidity is less than 70 percent.

MONITORED AIR QUALITY

The air quality at any site is dependent on the regional air quality and local pollutant sources. Regional air quality is determined by the release of pollutants throughout the air basin.

The SMAQMD and CARB maintain several air quality monitoring sites in the Sacramento area. Data was taken from the Elk Grove – Bruceville Road monitoring station (Elk Grove Station). The Elk Grove Station is located approximately 14.4 miles northeast of the project site at 12490 Bruceville Road, Elk Grove. As not all monitoring station monitor all pollutants, data was also taken from the Sacramento T-Street monitoring station (Sacramento Station). The Sacramento Station is located approximately 28.9 miles northeast of the project site at 1309 T Street, Sacramento. Table 4 presents the monitored pollutant levels from the Elk Grove and Sacramento Stations. However, it should be noted that due to the air monitoring stations distances from the project site, recorded air pollution levels at the air monitoring station reflect with varying degrees of accuracy, local air quality conditions at the project site.

Table 4 summarizes 2019 through 2021 published monitoring data, which is the most recent 3-year period available. The data shows that during the past few years, the project area has exceeded the ozone standards.

Ozone

During the 2019 to 2021 monitoring period, the State 1-hour concentration standard for ozone was exceeded between one and two days each year at the Elk Grove Station. The State 8-hour ozone standard has been exceeded between two and six days each year over the past three years at the Elk Grove Station. The Federal 8-hour ozone standard was exceeded between two and five days each year over the past three years at the Elk Grove Station.

Ozone is a secondary pollutant as it is not directly emitted. Ozone is the result of chemical reactions between other pollutants, most importantly hydrocarbons and NO_2, which occur only in the presence of bright sunlight. Pollutants emitted from upwind cities react during transport downwind to produce the oxidant concentrations experienced in the area. Many areas of the SCAQMD contribute to the ozone levels experienced at the monitoring station, with the more significant areas being those directly upwind.

Carbon Monoxide

CO is another important pollutant that is due mainly to motor vehicles. The Elk Grove Station did not record an exceedance of the state or federal 8-hour CO standard for the last three years.

Nitrogen Dioxide

The Elk Grove Station did not record an exceedance of the State or Federal NO_2 standards for the last three years.

Particulate Matter

The State 24-hour concentration standards for PM10 were exceed between 12 and 59 days each year over the last three years at the Sacramento Station. Over the past three years, the Federal 24-hour standards for PM10 were exceeded for only one day in 2019 and four days in 2020 at the Sacramento Station.

During the 2018 to 2020 monitoring period, there was insufficient data for the Federal 24-hour standard for PM2.5 at the Elk Grove Station.

According to the EPA, some people are much more sensitive than others to breathing fine particles (PM10 and PM2.5). People with influenza, chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death due to breathing these fine particles. People with bronchitis can expect aggravated symptoms from breathing in fine particles. Children may experience decline in lung function due to breathing in PM10 and PM2.5. Other groups considered sensitive are smokers and people who cannot breathe well through their noses. Exercising athletes are also considered sensitive, because many breathe through their mouths during exercise.

Table 4
Air Quality Monitoring Summary

Pollutant (Standard)[1]		Year 2019	2020	2021
Ozone:	Maximum 1-Hour Concentration (ppm)	0.103	0.111	0.105
	Days > CAAQS (0.09 ppm)	2	1	2
	Maximum 8-Hour Concentration (ppm)	0.078	0.082	0.080
	Days > NAAQS (0.070 ppm)	4	2	5
	Days > CAAQS (0.070 ppm)	6	2	5
Carbon Monoxide:	Maximum 8-Hour Concentration (ppm)	*	*	*
	Days > CAAQS (9 ppm)	0	0	0
	Days > NAAQS (9 ppm)	0	0	0
Nitrogen Dioxide:	Maximum 1-Hour Concentration (ppm)	0.059	0.021	0.024
	Days > CAAQS (0.18 ppm)	0	0	0
Inhalable Particulates (PM10):[2]	Maximum 24-Hour Concentration (μg/m^3)	179.1	298.7	142.6
	Days > NAAQS (150 μg/m3)	1	4	0
	Days > CAAQS (50 μg/m3)	24	59	12
	Annual Average (μg/m3)	20.7	31.2	23.5
Ultra-Fine Particulates (PM2.5):	Maximum 24-Hour Concentration (μg/m3)	34.9	148.5	67.6
	Days > NAAQS (35 μg/m3)	*	*	*
	Annual Average (μg/m3)	5.9	11	*

Notes:

Source: http://www.arb.ca.gov/adam/topfour/topfour1.php. Data from the Elk Grove - Bruceville Road Monitoring Station, unless otherwise noted.

(1) CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard; ppm = parts per million

(2) Data taken from the Sacramento - T Street monitoring station.

* Means there was insufficient data available to determine value.

AIR QUALITY STANDARDS

Significance Thresholds

Appendix G of the State CEQA Guidelines

Appendix G of the State CEQA Guidelines states that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make a significance determination. Pursuant to Appendix G, the project would result in a significant impact related to air quality if it would:

- Conflict with or obstruct the implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The CEQA Guidelines Section 15064.7 provides the significance criteria established by the applicable air quality management district or air pollution control district, when available, may be relied upon to make determinations of significance. According to the SMAQMD, an air quality impact is considered significant if the proposed Project would violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. The SMAQMD has established thresholds of significance for air quality for construction and operational activities of land use development projects such as that proposed, see Table 5. The SMAQMD CEQA Guide states that any project whose emissions are expected to meet or exceed the recommended significance criteria will have a potentially significant adverse impact on air quality.

Therefore, for the purposes of this air quality impact analysis, an air quality impact would be considered significant if emissions exceed the SMAQMD significance thresholds identified in Table 5.

Toxic Air Contaminants

Construction

Temporary TAC emissions associated with DPM emissions from heavy construction equipment would occur during the construction phase of the Project. According to the Office of Environmental Health Hazard Assessment (OEHHA)[3], health effects from TACs are described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of TACs over a 30-year lifetime will contract cancer based on the use of standard risk-assessment methodology. Construction activities associated with the project would be sporadic, transitory, and short-term in nature (approximately 9.5 months). Thus, construction of the project would not result in a substantial, long-term (i.e., 30-year) source of TAC emissions. Nonetheless, a qualitative assessment of TAC emissions associated with short-term construction TAC emissions is provided in the analysis section below.

Operation

The project proposes to develop the site with commercial land uses consisting of a recreational vehicle (RV) park with up to 135 camp sites. Therefore, the project is not anticipated be a source of toxic air contaminants and sensitive receptors would not be exposed to toxic sources of air pollution.

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[3] Office of Environmental Health Hazard Assessment, Air Toxic Hot Spots Program Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessment, February 2015, https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

Odor Impacts

The SMAQMD CEQA Guide states that any project with the potential to create objectionable odors affecting a substantial number of people would be considered to have a significant impact under CEQA Guidelines Appendix G. In addition, the District's Rule 402 (Nuisance) prohibits any person or source from emitting air contaminants that cause detriment, nuisance, or annoyance to a considerable number of persons or the public. The adverse effects of odors on residential areas and other sensitive receptors, such as hospitals, day-care centers, and schools warrant the closest scrutiny; but consideration should also be given to other land use types where people congregate, such as recreational facilities, worksites, and commercial areas.

Examples of common land use types that typically generate significant odor impacts include, but are not limited to wastewater treatment plants, sanitary landfills, composting/green waste facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting/coating operations, rendering plants, and food packaging plants. The SMAQMD CEQA Guide provides recommended odor screening distances for these types of facilities, as shown in Table 6.

If the proposed project results in a violation of Rule 402 with regards to odor impacts, then the proposed project would create a significant odor impact.

Table 5
SMAQMD Thresholds of Significance

All Project Subject to CEQA		
Mass Emission Thresholds		
	Construction Phase	Operational Phase
NOX (ozone precursor)	85 pounds/day	65 pounds/day
ROG (VOC) (ozone precursor)	None	65 pounds/day
PM10	Zero (0). If all feasible BACT/BMPs are applied, then 80 pounds/day and 14.6 tons/year	Zero (0). If all feasible BACT/BMPs are applied, then 80 pounds/day and 14.6 tons/year
PM2.5	Zero (0). If all feasible BACT/BMPs are applied, then 82 pounds/day and 15 tons/year	Zero (0). If all feasible BACT/BMPs are applied, then 82 pounds/day and 15 tons/year
Concetration Thresholds (based on the California Ambient Air Quality Standard, identical threshold for both phases of development)		
CO	20 ppm 1-hour standard (23 mg/m3); 9 ppm 8-hour standard (10 mg/m3)	
NO_2	0.18 ppm 1-hour standard (339 μg/m3); 0.03 ppm Annual Arithmetic Mean (57 μg/m3)	
SO_2	0.25 ppm 1-hour standard (665 μg/m3); 0.04 ppm 24-hour standard (105 μg/m3)	
Lead	1.5 μg/m3 30-day average	
Visibility Reducing Particulates	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more due to particles when relative humidity is less than 70 percent	
Sulfates	25 μg/m3 24-hour standard	
H_2S	0.03 ppm (42 μg/m3) 1-hour standard	
Vinyl Chloride	0.01 ppm (26 μg/m3) 24-hour standard	

Land Development and Construction Projects		
Greenhouse Gas Emissions (GHG) Thresholds		
	Construction Phase	Operational Phase
GHG as CO2e	1,100 metric tons/year	Demonstrate consistency with the Climate Change Scoping Plan by implementing applicable Best Management Practices (BMP), or equivalent on-site or off-site mitigation.
		All projects must implement Tier 1 BMPs (BMP 1 & 2): BMP 1 - projects shall be designed and constructed without natural gas infrastructure. BMP 2 - projects shall meet the current CalGreen Tier 2 standards, except all electric vehicle capable spaces shall instead be electric vehicle ready.
		Projects that exceed 1,100 metrict tons/year after implementation of Tier 1 BMPs must implement Tier 2 BMPs (BMP 3): BMP 3 - residential projects shall achieve a 15% reduction in vehicle miles traveled per resident and office projects shall achieve a 15% reduction in vehicle miles traveled per worker compared to existing average vehicle miles traveled for the county, and retail projects shall achieve a no net increase in total vehicle miles traveled to show consistency with SB 743.

Stationary Source Only		
Toxic Air Contaminant (TAC) Thresholds		
Cancer Risk	An incremental increase in cancer risk greater than 10 in one million at any off-site receptor.	
Non-cancer (Hazard Index)	Ground-level concentration of project-generated TACs that would result in a Hazard Index greater than 1 at any off-site receptor.	
Greenhouse Gas Emissions (GHG) Thresholds		
	Construction Phase	Operational Phase
GHG as CO2e	1,100 metric tons/year	10,000 metric tons/year

Source: http://www.airquality.org/LandUseTransportation/Documents/CH2ThresholdsTable4-2020.pdf

Table 6
SMAQMD's Recommended Odor Screening Distances

Land Use/Type of Operation	Project Screening Distance
Wastewater Treatment Plant	2 miles
Wastewater Pumping Facilities	1 mile
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	2 miles
Petroleum Refinery	2 miles
Asphalt Batch Plant	2 miles
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations	1 mile
Rendering Plant	4 miles
Coffee Roaster	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Green Waste and Recycling Operations	2 miles
Metal Smelting Plants	1 mile

Notes:

Source: Sacramento Metropolitan Air Quality Management District (SMAQMD) CEQA Guide (2009).
http://www.airquality.org/LandUseTransportation/Documents/Ch7ScreeningDistancesFINAL12-2009.pdf

(1) Odor screening distances should not be used as absolute thresholds of significance for an odor significance determination. Refer to Section 7.3 Methodologies and Section 7.4 Significant Determination for further guidance about the significance determination for odor impacts.

SHORT-TERM CONSTRUCTION EMISSIONS

Construction activities associated with the proposed project would have the potential to generate air emissions, TAC emissions, and odor impacts. Assumptions for the phasing, duration, and required equipment for the construction of the proposed project were obtained from the project applicant. The construction activities for the proposed project are anticipated to include: grading of approximately 13.73 acres; construction of an RV Resort with 135 guest sites [including 121 RV site and 14 tiny home cabins (each tiny home cabin is approximately 320 square feet)], a 1,000 square foot shop, and a 3,250 square foot lodge; paving of approximately 18,700 cubic yards (approximately 3.9 acres) of the site for parking areas, on-site roadways, and driveways etc.; and application of architectural coatings. Grading of the proposed project is anticipated to balance. See Appendix B for more details.

The Traffic and VMT Assessment prepared for the project (Ganddini Group, 2022) utilized the land use of Campground Recreational Vehicle Park (ITE 416) for the proposed RV Resort; however, this land use is not available in CalEEMod's database. Therefore, the next closest land use of City Park (ITE 911) was utilized for the proposed RV Resort land use.

The proposed project is anticipated to start construction no sooner than the beginning of November 2022 and be completed by mid-August 2023. The project is anticipated to be operational in 2023.

Methodology

The following provides a discussion of the methodology used to calculate regional construction air emissions and an analysis of the proposed project's short-term construction emissions for the criteria pollutants. The construction-related regional air quality impacts have been analyzed for both criteria pollutants and GHGs.

Emissions are estimated using the CalEEMod (Version 2022.1) software, which is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions from a variety of land use projects. CalEEMod was developed in collaboration with the air districts of California. Regional data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts to account for local requirements and conditions. The model is considered to be an accurate and comprehensive tool for quantifying air quality and GHG impacts from land use projects throughout California and is recommended by the SMAQMD.[4]

Daily regional emissions during construction are forecasted by assuming a conservative estimate of construction activities (i.e., assuming all construction occurs at the earliest feasible date) and applying the mobile source and fugitive dust emissions factors. The input values used in this analysis were adjusted to be project-specific for the construction schedule and the equipment used was based on CalEEMod defaults. The CalEEMod program uses the EMFAC2021 computer program to calculate the emission rates specific for Sacramento County for construction-related employee vehicle trips and the OFFROAD2017 computer program to calculate emission rates for heavy truck operations. EMFAC2021 and OFFROAD2017 are computer programs generated by CARB that calculates composite emission rates for vehicles. Emission rates are reported by the program in grams per trip and grams per mile or grams per running hour. Daily truck trips and CalEEMod default trip length data were used to assess roadway emissions from truck exhaust. The maximum daily emissions are estimated values for the worst-case day and do not represent the emissions that would occur for every day of project construction. The maximum daily emissions are compared to the SMAQMD daily regional numeric indicators. Detailed construction equipment lists, construction scheduling, and emission calculations are provided in Appendix B.

[4] Sacramento Metropolitan Air Quality Management District, CEQA Guidance & Tools, http://www.airquality.org/Residents/CEQA-Land-Use-Planning/CEQA-Guidance-Tools

The project will be required to comply with SMAQMD Rule 403 for the reduction of fugitive dust emissions. As stated previously, because the Sacramento Valley Air Basin is in nonattainment for ozone, PM10, and PM2.5, the SMAQMD requires the implementation of the following Basic Construction Emission Control Practices (BCECPs), regardless of the project's significance determination under CEQA.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to, soil piles, graded areas, unpaved parking areas, staging areas, and access roads;

- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered;

- Use wet power vacuum street sweepers to remove any visible track out mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited;

- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph);

- All roadways, driveways, sidewalks, and parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used;

- Minimize idling time by either shutting equipment off when not in use or reducing time of idling to 5 minutes. Provide clear signage that posts this requirement for workers at the entrances to the site; and

- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

The project will be required to comply with the BCECPs (see Section 5, Emissions Reduction Measures). Furthermore, the CalEEMod modeling for the proposed project included watering twice a day for compliance with both SMAQMD Rule 403 and the BCECPs.

In addition, per SMAQMD Rule 442 as republished March 24, 2016, the architectural coatings will be limited to an average of 50 grams per liter or less of VOCs for building coatings and 100 grams per liter or less of VOCs for traffic coatings.

The phases of the construction activities which have been analyzed below for each phase are: (1) demolition, (2) grading, (3) building construction, (4) paving, and (5) application of architectural coatings. Details pertaining to the project's construction timing and the type of equipment modeled for each construction phase are available in the CalEEMod output in Appendix B.

Construction-Related Regional Impacts

The construction-related criteria pollutant emissions for each phase are shown below in Table 7. Table 7 shows that none of the project's emissions will exceed SMAQMD thresholds.

Furthermore, in addition to the required BCECPs the following fugitive dust control practices [best management practices (BMPs)] are to be implemented during project construction.[5]

- Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 mph.

[5] http://www.airquality.org/LandUseTransportation/Documents/Ch3EnhancedFugitiveDustControlFINAL12-2009.pdf

- Plant vegetative ground cover (fast-germinating native grass seed) in disturbed areas as soon as possible. Water appropriately until vegetation is established.

Therefore, a less than significant regional air quality impact would occur from construction of the proposed project.

Construction-Related Human Health Impacts

Regarding health effects related to criteria pollutant emissions, the applicable significance thresholds are established for regional compliance with the state and federal ambient air quality standards, which are intended to protect public health from both acute and long-term health impacts, depending on the potential effects of the pollutant. Because regional and local emissions of criteria pollutants during construction of the project would be below the applicable thresholds, it would not contribute to long-term health impacts related to nonattainment of the ambient air quality standards. Therefore, significant adverse acute health impacts as a result of project construction are not anticipated.

Construction-Related Toxic Air Contaminant Impacts

The greatest potential for TAC emissions would be related to diesel particulate emissions associated with heavy equipment operations during construction of the proposed project. According to the Office of Environmental Health Hazard Assessment (OEHHA)[6], health effects from TACs are described in terms of individual cancer risk based on a lifetime (i.e., 30-year) resident exposure duration. Given the temporary and short-term construction schedule (approximately 9.5 months), the project would not result in a long-term (i.e., lifetime or 30-year) exposure as a result of project construction. Furthermore, construction-based particulate matter (PM) emissions (including diesel exhaust emissions) do not exceed applicable thresholds and the project will include implementation of the SMAQMD's BCECPs and additional BMPs (see Methodology section above).

The project would comply with the CARB Air Toxics Control Measure that limits diesel powered equipment and vehicle idling to no more than 5 minutes at a location, and the CARB In-Use Off-Road Diesel Vehicle Regulation; compliance with these would minimize emissions of TACs during construction. The project would also comply with the requirements of SMAQMD Rule 902 if asbestos is found during the renovation and construction activities. Therefore, impacts from TACs during construction would be less than significant.

Construction-Related Odor Impacts

Potential sources that may emit odors during construction activities include the application of materials such as asphalt pavement. The objectionable odors that may be produced during the construction process are of short-term in nature and the odor emissions are expected to cease upon the drying or hardening of the odor producing materials. Due to the short-term nature and limited amounts of odor producing materials being utilized, no significant impact related to odors would occur during construction of the proposed project. Diesel exhaust and VOCs would be emitted during construction of the project, which are objectionable to some; however, emissions would disperse rapidly from the project site and therefore should not reach an objectionable level at the nearest sensitive receptors.

[6] Office of Environmental Health Hazard Assessment, Air Toxic Hot Spots Program Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessment, February 2015, https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

Table 7
Construction-Related Regional Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)			
	ROG	NOx	PM10	PM2.5
Maximum Daily Emissions[1,2]	10.00	40.60	5.54	3.09
SMAQMD Thresholds	-	85	80 [3]	82 [3]
Exceeds Thresholds?	No	No	No	No

Notes:

Source: CalEEMod Version 2022.1

(1) On-site emissions from equipment operated on-site that is not operated on public roads. On-site grading PM-10 and PM-2.5 emissions include watering twice a day for compliance with SMAQMD Rules 403 and BCECPs.

(2) Paving and painting phase may overlap with construction phase.

(3) Only applies to projects for which all feasible best available control technology (BACT) and best management practices (BMPs) have been applied. Projects that fail to apply all feasible BACT/BMPs must meet a significance threshold of 0 lbs/day.

LONG-TERM OPERATIONAL EMISSIONS

The on-going operation of the proposed project would result in a long-term increase in air quality emissions. This increase would be due to emissions from the project-generated vehicle trips and through operational emissions from the on-going use of the proposed project. The following section provides an analysis of potential long-term air quality impacts due to: regional air quality impacts with the on-going operations of the proposed project.

Operations-Related Regional Air Quality Impacts

The potential operations-related air emissions have been analyzed below for the criteria pollutants and cumulative impacts.

Operations-Related Criteria Pollutants Analysis

The operations-related criteria air quality impacts created by the proposed project have been analyzed through the use of the CalEEMod model. The operating emissions were based on the year 2023, which is the anticipated opening year for the proposed project. The operations daily emissions printouts from the CalEEMod model are provided in Appendix B. The CalEEMod analyzes operational emissions from area sources, energy usage, and mobile sources, which are discussed below.

Mobile Sources

Mobile sources include emissions from the additional vehicle miles generated from the proposed project. The vehicle trips associated with the proposed project have been analyzed by inputting the project-generated vehicular trips from the Meadows of Isleton RV Resort Traffic and Vehicle Miles Traveled Assessment (Traffic and VMT Assessment) prepared by Ganddini Group, Inc. (August 2022) into the CalEEMod Model. The Traffic and VMT Assessment found that the proposed project would create approximately 311 vehicle trips per day with a trip generation rate of 2.7 trips per occupied campsite per day. The program then applies the emission factors for each trip which is provided by the EMFAC2021 model to determine the vehicular traffic pollutant emissions.

Area Sources

Per the CAPCOA Appendix A Calculation Details for CalEEMod, area sources include emissions from consumer products, landscape equipment and architectural coatings. Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers, as well as air compressors, generators, and pumps. As specifics were not known about the landscaping equipment fleet, CalEEMod defaults were used to estimate emissions from landscaping equipment. No changes were made to the default area source parameters.

Energy Usage

Energy usage includes emissions from the generation of electricity and natural gas used on-site. No changes were made to the default energy usage parameters.

Project Impacts

The worst-case summer or winter criteria pollutant emissions created from the proposed project's long-term operations have been calculated and are shown below in Table 8.

Furthermore, in order to support the district's non-zero thresholds of significance for PM emissions, the district provides guidance on potential BMPs. In the SMAQMD CEQA Guide, it is stated that operational BMPs are generally required by existing regulation.[7] The project is to be compliant with any applicable mandatory measures under the California Green Building Code and California Building Energy Efficiency Standards (Title 24, Part 6).

Therefore, the results show that none of the SMAQMD thresholds would be exceeded, and a less than significant regional air quality impact would occur from operation of the proposed project.

Operations-Related Local Air Quality Impacts

Project-related air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Sacramento Valley Air Basin. The proposed project has been analyzed for the potential local CO emission impacts from the project-generated vehicular trips. The following analysis analyzes the vehicular CO emissions and odor impacts.

Local CO Emission Impacts from Project-Generated Vehicular Trips

CO is the pollutant of major concern along roadways because the most notable source of CO is motor vehicles. For this reason, CO concentrations are usually indicative of the local air quality generated by a roadway network and are used as an indicator of potential local air quality impacts. Local air quality impacts can be assessed by comparing future without and with project CO levels to the State and Federal CO standards which were presented above.

The SMAQMD CEQA Guide discusses that, in general, land use development projects do not typically have the potential to result in localized concentrations of criteria air pollutants that expose sensitive receptors to substantial pollutant concentrations. This is because criteria air pollutants are predominantly generated in the form of mobile-source exhaust from vehicle trips associated with the land use development project. These vehicle trips occur throughout a paved network of roads, and, therefore, associated exhaust emissions of criteria air pollutants are not generated in a single location where high concentrations could be formed. However, there may be unique situations where a project with high levels of emissions may require concentration modeling to determine if the emissions will expose sensitive receptors to substantial pollutant concentrations. A substantial pollutant concentration occurs when the project emissions alone would cause an exceedance of the AAQS. Projects that exceed the AAQS are considered to have a significant impact. Therefore, if modeling is undertaken and the results do not exceed the respective concentration-based threshold of significance, the project will have a less-than significant air quality impact. However, if modeled concentrations will exceed an applicable threshold of significance, the proposed project will result in a significant impact, and all feasible mitigation measures will need to be implemented to reduce emissions.[8]

As shown in Table 8 above, the proposed project's CO emissions alone would not exceed the AAQS thresholds. Therefore, no CO "hot spot" modeling was performed and no significant long-term air quality impact is anticipated to local air quality with the on-going use of the proposed project.

Operations-Related Odor Impacts

Potential sources that may emit odors during the on-going operations of the proposed project would include odor emissions from the intermittent diesel delivery truck emissions and trash storage areas. Due to the distance of the nearest receptors from the project site and through compliance with SMAQMD's Rule 402 no significant impact related to odors would occur during the on-going operations of the proposed project.

[7] http://www.airquality.org/LandUseTransportation/Documents/ch4OperationalBMPS-PMFinal10-2020.pdf

[8] Sacramento Metropolitan Air Quality Management District CEQA Guide Section 4.3.2, December 2009.

Operations-Related Human Health Impacts

Regarding health effects related to criteria pollutant emissions, the applicable significance thresholds are established for regional compliance with the state and federal ambient air quality standards, which are intended to protect public health from both acute and long-term health impacts, depending on the potential effects of the pollutant. Because regional and local emissions of criteria pollutants during operation of the project would be below the applicable thresholds, it would not contribute to long-term health impacts related to nonattainment of the ambient air quality standards. Therefore, significant adverse acute health impacts as a result of project operation are not anticipated.

Table 8
Regional Operational Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)				
	ROG	NOx	CO	PM10	PM2.5
Maximum Daily Emissions	1.99	2.44	19.50	1.26	0.25
SMAQMD Thresholds[1]	65	65	-	80 [2]	82 [2]
Exceeds Threshold?	No	No	No	No	No

Notes:

Source: CalEEMod Version 2022.1; the higher of either summer or winter emissions.

(1) As shown in Table 5, the concentration threshold for CO is the CAAQS, 20 ppm 1-hour standard (23 mg/m3); 9 ppm 8-hour standard (10 mg/m3).

(2) Only applies to projects for which all feasible best available control technology (BACT) and best management practices (BMPs) have been applied. Projects that fail to apply all feasible BACT/BMPs must meet a significance threshold of 0 lbs/day.

CUMULATIVE AIR QUALITY IMPACTS

There are a number of cumulative projects in the project area that have not yet been built or are currently under construction. Since the timing or sequencing of the cumulative projects is unknown, any quantitative analysis to ascertain daily construction emissions that assumes multiple, concurrent construction projects would be speculative. Further, cumulative projects include local development as well as general growth within the project area. However, as with most development, the greatest source of emissions is from mobile sources, which travel well out of the local area. Therefore, from an air quality standpoint, the cumulative analysis would extend beyond any local projects and when wind patterns are considered would cover an even larger area.

The SMAQMD CEQA Guide Section 8 states that if a project's emissions are estimated to be less than the SMAQMD thresholds (see Table 5), then the project would not be expected to result in a cumulatively considerable contribution to the significant cumulative impact. However, it is also acknowledged that, an exceedance of the project-level thresholds does not necessarily constitute a significant cumulative impact.

Section 8.3 of the SMAQMD CEQA Guide provides a framework for cumulative air quality impact determination. An analysis of the project's emissions utilizing this framework has been provided below.

Construction Related Cumulative Air Quality Impacts

Ozone Precursors

Project construction would not result in emissions that exceed the applicable ozone precursor project-level thresholds of significance. Therefore, project construction would not be considered cumulatively considerable, and would be less than significant for this cumulative impact.

Particulate Matter

The project would not result in emissions that exceed the applicable PM10 and PM2.5 project-level thresholds of significance and would incorporate the basic construction emissions control practices (BCECPs). Therefore, project construction would not be considered cumulatively considerable, and would be less than significant for this cumulative impact.

Operations Related Cumulative Air Quality Impacts

Ozone Precursors

The project would not result in emissions that exceed the applicable ozone precursor project-level thresholds. Therefore, the project would not be considered cumulatively considerable, and would be less than significant for this cumulative impact.

Particulate Matter

The project would not result in emissions that exceed the applicable PM project-level thresholds, and the project includes incorporation of all feasible best management practices. Therefore, the project would not be considered cumulatively considerable, and would be less than significant for this cumulative impact.

3. GLOBAL CLIMATE CHANGE ANALYSIS

EXISTING GREENHOUSE GAS ENVIRONMENT

Constituent gases of the Earth's atmosphere, called atmospheric GHGs, play a critical role in the Earth's radiation amount by trapping infrared radiation emitted from the Earth's surface, which otherwise would have escaped to space. Prominent GHGs contributing to this process include carbon dioxide (CO_2), methane (CH_4), ozone, water vapor, nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Anthropogenic (caused or produced by humans) emissions of these GHGs in excess of natural ambient concentrations are responsible for the enhancement of the Greenhouse Effect and have led to a trend of unnatural warming of the Earth's natural climate, known as global warming or climate change. Emissions of gases that induce global warming are attributable to human activities associated with industrial/manufacturing, agriculture, utilities, transportation, and residential land uses. Transportation is responsible for 41 percent of the State's GHG emissions, followed by electricity generation. Emissions of CO_2 and nitrous oxide (NOx) are byproducts of fossil fuel combustion. Methane, a potent GHG, results from off-gassing associated with agricultural practices and landfills. Sinks of CO_2, where CO_2 is stored outside of the atmosphere, include uptake by vegetation and dissolution into the ocean. The following provides a description of each of the GHGs and their global warming potential.

Water Vapor

Water vapor is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. The feedback loop in which water is involved is critically important to projecting future climate change. As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to "hold" more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop". The extent to which this positive feedback loop will continue is unknown as there is also dynamics that put the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually also condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the Earth's surface and heat it up).

Carbon Dioxide (CO_2)

The natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean. However, humankind has altered the natural carbon cycle by burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid-1700s. Each of these activities has increased in scale and distribution. CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration with the first conclusive measurements being made in the last half of the 20th century. Prior to the industrial revolution, concentrations were fairly stable at 280 parts per million (ppm). The International Panel on Climate Change (IPCC Fifth Assessment Report, 2014) Emissions of CO_2 from fossil fuel combustion and industrial processes contributed about 78% of the total GHG emissions increase from 1970 to 2010, with a similar percentage contribution for the increase during the period 2000 to 2010. Globally, economic and population growth continued to be the most important drivers of increases in CO_2 emissions from fossil fuel combustion. The contribution of population growth between 2000 and 2010 remained roughly identical to the previous three decades, while the contribution of economic growth has risen sharply.

Methane (CH_4)

CH_4 is an extremely effective absorber of radiation, although its atmospheric concentration is less than that of CO_2. Its lifetime in the atmosphere is brief (10 to 12 years), compared to some other GHGs (such as CO_2, N_2O, and Chlorofluorocarbons (CFCs). CH_4 has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropocentric sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide (N_2O)

Concentrations of N_2O also began to rise at the beginning of the industrial revolution. In 1998, the global concentration of this GHG was documented at 314 parts per billion (ppb). N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is also commonly used as an aerosol spray propellant, (i.e., in whipped cream bottles, in potato chip bags to keep chips fresh, and in rocket engines and in race cars).

Chlorofluorocarbons (CFC)

CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the Earth's surface). CFCs have no natural source, but were first synthesized in 1928. It was used for refrigerants, aerosol propellants, and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and in 1989 the European Community agreed to ban CFCs by 2000 and subsequent treaties banned CFCs worldwide by 2010. This effort was extremely successful, and the levels of the major CFCs are now remaining level or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

Hydrofluorocarbons (HFC)

HFCs are synthetic man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, they are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF_3), HFC-134a (CF_3CH_2F), and HFC-152a (CH_3CHF_2). Prior to 1990, the only significant emissions were HFC-23. HFC-134a use is increasing due to its use as a refrigerant. Concentrations of HFC-23 and HFC-134a in the atmosphere are now about 10 parts per trillion (ppt) each. Concentrations of HFC-152a are about 1 ppt. HFCs are manmade for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons (PFC)

PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). Concentrations of CF_4 in the atmosphere are over 70 ppt. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing.

Sulfur Hexafluoride (SF_6)

SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 has the highest global warming potential of any gas evaluated; 23,900 times that of CO_2. Concentrations in the 1990s were about 4 ppt. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Aerosols

Aerosols are particles emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light. Cloud formation can also be affected by aerosols. Sulfate aerosols are emitted when fuel containing sulfur is burned. Black carbon (or soot) is emitted during biomass burning due to the incomplete combustion of fossil fuels. Particulate matter regulation has been lowering aerosol concentrations in the United States; however, global concentrations are likely increasing.

Global Warming Potential

The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO_2). The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. The time period usually used for GWPs is 100 years. GWPs provide a common unit of measure, which allows analysts to add up emissions estimates of different gases (e.g., to compile a national GHG inventory), and allows policymakers to compare emissions reduction opportunities across sectors and gases. A summary of the atmospheric lifetime and the global warming potential of selected gases are summarized in Table 9. As shown in Table 9, the global warming potential of GHGs ranges from 1 to 22,800.

Table 9
Global Warming Potentials and Atmospheric Lifetimes

Gas	Atmospheric Lifetime	Global Warming Potential[1] (100 Year Horizon)
Carbon Dioxide (CO_2)	--[2]	1
Methane (CH_4)	12	28-36
Nitrous Oxide (NO)	114	298
Hydrofluorocarbons (HFCs)	1-270	12-14,800
Perfluorocarbons (PFCs)	2,600-50,000	7,390-12,200
Nitrogen trifluoride (NF_3)	740	17,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Notes:

Source: http://www3.epa.gov/climatechange/ghgemissions/gases.html

(1) Compared to the same quantity of CO_2 emissions.

(2) Carbon dioxide's lifetime is poorly defined because the gas is not destroyed over time, but instead moves among different parts of the ocean–atmosphere–land system. Some of the excess carbon dioxide will be absorbed quickly (for example, by the ocean surface), but some will remain in the atmosphere for thousands of years, due in part to the very slow process by which carbon is transferred to ocean sediments.

GREENHOUSE GAS STANDARDS AND REGULATION

International

Montreal Protocol

In 1988, the United Nations established the Intergovernmental Panel on Climate Change (IPCC) to evaluate the impacts of global climate change and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change (UNFCCC) agreement with the goal of controlling GHG emissions. As a result, the Climate Change Action Plan was developed to address the reduction of GHGs in the United States. The plan consists of more than 50 voluntary programs.

Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete ozone in the stratosphere—CFCs, halons, carbon tetrachloride, and methyl chloroform—were to be phased out, with the first three by the year 2000 and methyl chloroform by 2005.

The Paris Agreement

The Paris Agreement became effective on November 4, 2016. Thirty days after this date at least 55 Parties to the United Nations Framework Convention on Climate Change (Convention), accounting in total for at least an estimated 55 % of the total global GHG emissions, had deposited their instruments of ratification, acceptance, approval or accession with the Depositary.

The Paris Agreement built upon the Convention and – for the first time – attempted to bring all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries to do so. As such, it charts a new course in the global climate effort.

The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change. To reach these ambitious goals, appropriate financial flows, a new technology framework and an enhanced capacity building framework will be put in place, thus supporting action by developing countries and the most vulnerable countries, in line with their own national objectives. The Agreement also provides for enhanced transparency of action and support through a more robust transparency framework.

Federal

The USEPA is responsible for implementing federal policy to address GHGs. The federal government administers a wide array of public-private partnerships to reduce the GHG intensity generated in the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions. The USEPA implements numerous voluntary programs that contribute to the reduction of GHG emissions. These programs (e.g., the ENERGY STAR labeling system for energy-efficient products) play a significant role in encouraging voluntary reductions from large corporations, consumers, industrial and commercial buildings, and many major industrial sectors.

In Massachusetts v. Environmental Protection Agency (Docket No. 05–1120), argued November 29, 2006 and decided April 2, 2007, the U.S. Supreme Court held that not only did the EPA have authority to regulate GHGs, but the EPA's reasons for not regulating this area did not fit the statutory requirements. As such, the

U.S. Supreme Court ruled that the EPA should be required to regulate CO_2 and other GHGs as pollutants under the federal Clean Air Act (CAA).

In response to the FY2008 Consolidations Appropriations Act (H.R. 2764; Public Law 110-161), EPA proposed a rule on March 10, 2009 that requires mandatory reporting of GHG emissions from large sources in the United States. On September 22, 2009, the Final Mandatory Reporting of GHG Rule was signed and published in the Federal Register on October 30, 2009. The rule became effective on December 29, 2009. This rule requires suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to EPA.

On December 7, 2009, the EPA Administrator signed two distinct findings under section 202(a) of the Clean Air Act. One is an endangerment finding that finds concentrations of the six GHGs in the atmosphere threaten the public health and welfare of current and future generations. The other is a cause or contribute finding, that finds emissions from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare. These actions will not themselves impose any requirements on industry or other entities. However, it is a prerequisite to finalizing the EPA's proposed GHG emission standards for light-duty vehicles, which were jointly proposed by the EPA and Department of Transportation on September 15, 2009.

Clean Air Act

In Massachusetts v. Environmental Protection Agency (Docket No. 05–1120), the U.S. Supreme Court held in April of 2007 that the USEPA has statutory authority under Section 202 of the federal Clean Air Act (CAA) to regulate GHGs. The court did not hold that the USEPA was required to regulate GHG emissions; however, it indicated that the agency must decide whether GHGs cause or contribute to air pollution that is reasonably anticipated to endanger public health or welfare. On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA. The USEPA adopted a Final Endangerment Finding for the six defined GHGs (CO2, CH4, N2O, HFCs, PFCs, and SF6) on December 7, 2009. The Endangerment Finding is required before USEPA can regulate GHG emissions under Section 202(a)(1) of the CAA consistently with the United States Supreme Court decision. The USEPA also adopted a Cause or Contribute Finding in which the USEPA Administrator found that GHG emissions from new motor vehicle and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. These findings do not, by themselves, impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

Energy Independence Security Act

The Energy Independence and Security Act of 2007 (EISA) facilitates the reduction of national GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;
- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;
- Requiring approximately 25 percent greater efficiency for light bulbs by phasing out incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and
- While superseded by the USEPA and NHTSA actions described above, (i) establishing miles per gallon targets for cars and light trucks and (ii) directing the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks.

Additional provisions of EISA address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of green jobs.[9]

Executive Order 13432

In response to the Massachusetts v. Environmental Protection Agency ruling, the President signed Executive Order 13432 on May 14, 2007, directing the USEPA, along with the Departments of Transportation, Energy, and Agriculture, to initiate a regulatory process that responds to the Supreme Court's decision. Executive Order 13432 was codified into law by the 2009 Omnibus Appropriations Law signed on February 17, 2009. The order sets goals in the areas of energy efficiency, acquisition, renewable energy, toxics reductions, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation. Light-Duty Vehicle GHG and Corporate Average Fuel Economy Standards.

On May 19, 2009, President Obama announced a national policy for fuel efficiency and emissions standards in the United States auto industry. The adopted federal standard applies to passenger cars and light-duty trucks for model years 2012 through 2016. The rule surpasses the prior Corporate Average Fuel Economy standards (CAFE)[10] and requires an average fuel economy standard of 35.5 miles per gallon (mpg) and 250 grams of CO2 per mile by model year 2016, based on USEPA calculation methods. These standards were formally adopted on April 1, 2010. In August 2012, standards were adopted for model year 2017 through 2025 for passenger cars and light-duty trucks. By 2025, vehicles are required to achieve 54.5 mpg (if GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO2 per mile. According to the USEPA, a model year 2025 vehicle would emit one-half of the GHG emissions from a model year 2010 vehicle.[11] In 2017, the USEPA recommended no change to the GHG standards for light-duty vehicles for model years 2022-2025.

Issued by NHTSA and EPA in March 2020 (published on April 30, 2020 and effective after June 29, 2020), the Safer Affordable Fuel-Efficient Vehicles Rule would maintain the CAFE and CO2 standards applicable in model year 2020 for model years 2021 through 2026. The estimated CAFE and CO2 standards for model year 2020 are 43.7 mpg and 204 grams of CO2 per mile for passenger cars and 31.3 mpg and 284 grams of CO2 per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012. This Rule also excludes CO2- equivalent emission improvements associated with air conditioning refrigerants and leakage (and, optionally, offsets for nitrous oxide and methane emissions) after model year 2020.[12]

On May 12, 2021, the National Highway Traffic Safety Administration (NHTSA) published a notice of proposed rulemaking in the Federal Register, proposing to repeal "The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program," published Sept. 27, 2019 (SAFE I Rule), in which NHTSA codified regulatory text and made additional pronouncements regarding the preemption of state and local laws related to fuel economy standards. Specifically, this document proposes to fully repeal the regulatory text and appendices promulgated in the SAFE I Rule. In addition, this document proposes to repeal and withdraw the interpretative statements made by the Agency in the SAFE I Rule preamble, including those

[9] A green job, as defined by the United States Department of Labor, is a job in business that produces goods or provides services that benefit the environment or conserve natural resources.

[10] The Corporate Average Fuel Economy standards are regulations in the United States, first enacted by Congress in 1975, to improve the average fuel economy of cars and light trucks. The U.S Department of Transportation has delegated the National Highway Traffic Safety Administration as the regulatory agency for the Corporate Average Fuel Economy standards.

[11] United States Environmental Protection Agency, EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks, August 2012, https://nepis.epa.gov/Exe/ZyPDF.cgi/P100EZ7C.PDF?Dockey=P100EZ7C.PDF.

[12] National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (USEPA), 2018. Federal Register / Vol. 83, No. 165 / Friday, August 24, 2018 / Proposed Rules, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks 2018. Available at: https://www.gpo.gov/fdsys/pkg/FR-2018-08-24/pdf/2018-16820.pdf.

regarding the preemption of particular state Greenhouse Gas (GHG) Emissions standards or Zero Emissions Vehicle (ZEV) mandates. As such, this document proposes to establish a clean slate with respect to NHTSA's regulations and interpretations concerning preemption under the Energy Policy and Conservation Act (EPCA).[13]

State of California

California Air Resources Board

CARB, a part of the CalEPA, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets state ambient air quality standards (CAAQS), compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

In 2004, the California Air Resources Board (CARB) adopted an Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other TACs (Title 13 California Code of Regulations [CCR], Section 2485). The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure generally does not allow diesel-fueled commercial vehicles to idle for more than 5 minutes at any given location with certain exemptions for equipment in which idling is a necessary function such as concrete trucks. While this measure primarily targets diesel particulate matter emissions, it has co-benefits of minimizing GHG emissions from unnecessary truck idling.

In 2008, CARB approved the Truck and Bus regulation to reduce particulate matter and nitrogen oxide emissions from existing diesel vehicles operating in California (13 CCR, Section 2025, subsection (h)). CARB has also promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The regulation, adopted by the CARB on July 26, 2007, aims to reduce emissions by installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models. Refer to Section IV.B, *Air Quality*, of this Draft EIR for additional details regarding these regulations. While these regulations primarily target reductions in criteria air pollutant emission, they have co-benefits of minimizing GHG emissions due to improved engine efficiencies.

The State currently has no regulations that establish ambient air quality standards for GHGs. However, the State has passed laws directing CARB to develop actions to reduce GHG emissions, which are listed below.

Assembly Bill 1493

California Assembly Bill 1493 enacted on July 22, 2002, required the CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. In 2005, the CARB submitted a “waiver” request to the EPA from a portion of the federal Clean Air Act in order to allow the State to set more stringent tailpipe emission standards for CO_2 and other GHG emissions from passenger vehicles and light duty trucks. On December 19, 2007 the EPA announced that it denied the “waiver” request. On January 21, 2009, CARB submitted a letter to the EPA administrator regarding the State’s request to reconsider the waiver denial. The EPA approved the waiver on June 30, 2009.

[13] https://www.federalregister.gov/documents/2021/05/12/2021-08758/corporate-average-fuel-economy-cafe-preemption

Executive Order S-3-05

The California Governor issued Executive Order S-3-05, GHG Emission, in June 2005, which established the following reduction targets:

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

The Executive Order directed the secretary of the CalEPA to coordinate a multi-agency effort to reduce GHG emissions to the target levels. To comply with the Executive Order, the secretary of CalEPA created the California Climate Action Team (CAT), made up of members from various state agencies and commissions. The team released its first report in March 2006. The report proposed to achieve the targets by building on the voluntary actions of businesses, local governments, and communities and through State incentive and regulatory programs.

Assembly Bill 32 (California Health and Safety Code, Division 25.5 – California Global Warming Solutions Act of 2006)

In 2006, the California State Legislature adopted Assembly Bill (AB) 32 (codified in the California Health and Safety Code [HSC], Division 25.5 – California Global Warming Solutions Act of 2006), which focuses on reducing GHG emissions in California to 1990 levels by 2020. HSC Division 25.5 defines GHGs as CO2, CH4, N2O, HFCs, PFCs, and SF6 and represents the first enforceable statewide program to limit emissions of these GHGs from all major industries with penalties for noncompliance. The law further requires that reduction measures be technologically feasible and cost effective. Under HSC Division 25.5, CARB has the primary responsibility for reducing GHG emissions. CARB is required to adopt rules and regulations directing state actions that would achieve GHG emissions reductions equivalent to 1990 statewide levels by 2020.

Senate Bill 32 and Assembly Bill 197

In 2016, the California State Legislature adopted Senate Bill (SB) 32 and its companion bill AB 197, and both were signed by Governor Brown. SB 32 and AB 197 amends HSC Division 25.5 and establishes a new climate pollution reduction target of 40 percent below 1990 levels by 2030 and includes provisions to ensure the benefits of state climate policies reach into disadvantaged communities.

Climate Change Scoping Plan (2008)

A specific requirement of AB 32 was to prepare a Climate Change Scoping Plan for achieving the maximum technologically feasible and cost-effective GHG emission reduction by 2020 (Health and Safety Code section 38561 (h)). CARB developed an AB 32 Scoping Plan that contains strategies to achieve the 2020 emissions cap. The initial Scoping Plan was approved in 2008, and contains a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the State's long-range climate objectives.

As required by HSC Division 25.5, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was originally set at 427 MMTCO2e using the GWP values from the IPCC SAR. CARB also projected the state's 2020 GHG emissions under no-action-taken (NAT) conditions – that is, emissions that would occur without any plans, policies, or regulations to reduce GHG emissions. CARB originally used an average of the state's GHG emissions from 2002 through 2004 and projected the 2020 levels at approximately 596 MMTCO2e (using GWP values from the IPCC SAR). Therefore, under the original projections, the state must reduce its 2020 NAT emissions by 28.4 percent in order to meet the 1990 target of 427 MMTCO2e.

First Update to the Climate Change Scoping Plan (2014)

The First Update to the Scoping Plan was approved by CARB in May 2014 and builds upon the initial Scoping Plan with new strategies and recommendations. In 2014, CARB revised the target using the GWP values from the IPCC AR4 and determined that the 1990 GHG emissions inventory and 2020 GHG emissions limit is 431 MMTCO2e. CARB also updated the State's 2020 NAT emissions estimate to account for the effect of the 2007–2009 economic recession, new estimates for future fuel and energy demand, and the reductions required by regulation that were recently adopted for motor vehicles and renewable energy. CARB's projected statewide 2020 emissions estimate using the GWP values from the IPCC AR4 is 509.4 MMTCO2e.

2017 Climate Change Scoping Plan

In response to the 2030 GHG reduction target, CARB adopted the 2017 Climate Change Scoping Plan at a public meeting held in December 2017. The 2017 Scoping Plan outlines the strategies the State will implement to achieve the 2030 GHG reduction target of 40 percent below 1990 levels. The 2017 Scoping Plan also addresses GHG emissions from natural and working lands of California, including the agriculture and forestry sectors. The 2017 Scoping Plan considered the Scoping Plan Scenario and four alternatives for achieving the required GHG reductions but ultimately selected the Scoping Plan Scenario.

CARB states that the Scoping Plan Scenario "is the best choice to achieve the State's climate and clean air goals."[14] Under the Scoping Plan Scenario, the majority of the reductions would result from the continuation of the Cap-and-Trade regulation. Additional reductions are achieved from electricity sector standards (i.e., utility providers to supply at least 50 percent renewable electricity by 2030), doubling the energy efficiency savings at end uses, additional reductions from the LCFS, implementing the short-lived GHG strategy (e.g., hydrofluorocarbons), and implementing the mobile source strategy and sustainable freight action plan. The alternatives were designed to consider various combinations of these programs, as well as consideration of a carbon tax in the event the Cap-and-Trade regulation is not continued. However, in July 2017, the California Legislature voted to extend the Cap-and-Trade regulation to 2030. Implementing this Scoping Plan will ensure that California's climate actions continue to promote innovation, drive the generation of new jobs, and achieve continued reductions of smog and air toxics. The ambitious approach draws on a decade of successful programs that address the major sources of climate-changing gases in every sector of the economy:

- More Clean Cars and Trucks: The plan sets out far-reaching programs to incentivize the sale of millions of zero-emission vehicles, drive the deployment of zero-emission trucks, and shift to a cleaner system of handling freight statewide.
- Increased Renewable Energy: California's electric utilities are ahead of schedule meeting the requirement that 33 percent of electricity come from renewable sources by 2020. The Scoping Plan guides utilities to 50 percent renewables, as required under SB 350.
- Slashing Super-Pollutants: The plan calls for a significant cut in super-pollutants such as methane and HFC refrigerants, which are responsible for as much as 40 percent of global warming.
- Cleaner Industry and Electricity: California's renewed cap-and-trade program extends the declining cap on emissions from utilities and industries and the carbon allowance auctions. The auctions will continue to fund investments in clean energy and efficiency, particularly in disadvantaged communities.
- Cleaner Fuels: The Low Carbon Fuel Standard will drive further development of cleaner, renewable transportation fuels to replace fossil fuels.
- Smart Community Planning: Local communities will continue developing plans which will further link transportation and housing policies to create sustainable communities.
- Improved Agriculture and Forests: The Scoping Plan also outlines innovative programs to account for and reduce emissions from agriculture, as well as forests and other natural lands.

[14] California Air Resources Board, California's 2017 Climate Change Scoping Plan, November 2017, https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf

The 2017 Scoping Plan also evaluates reductions of smog-causing pollutants through California's climate programs.

SB 32, Pavley. California Global Warming Solutions Act of 2006

(1) The California Global Warming Solutions Act of 2006 designates the State Air Resources Board as the state agency charged with monitoring and regulating sources of emissions of greenhouse gases. The state board is required to approve a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions level in 1990 to be achieved by 2020 and to adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective greenhouse gas emissions reductions. This bill would require the state board to ensure that statewide greenhouse gas emissions are reduced to 40% below the 1990 level by 2030.
(2) This bill would become operative only if AB 197 of the 2015–16 Regular Session is enacted and becomes effective on or before January 1, 2017. AB 197 requires that the California Air Resources Board, which directs implementation of emission-reduction programs, should target direct reductions at both stationary and mobile sources. AB 197 of the 2015-2016 Regular Session was approved on September 8, 2016.

Executive Order S-1-07

Executive Order S-1-07 was issued in 2007 and proclaims that the transportation sector is the main source of GHG emissions in the State, since it generates more than 40 percent of the State's GHG emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in the State by at least ten percent by 2020. This Order also directs the CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

On April 23, 2009 CARB approved the proposed regulation to implement the low carbon fuel standard and began implementation on January 1, 2011. The low carbon fuel standard is anticipated to reduce GHG emissions by about 16 MMT per year by 2020. CARB approved some amendments to the LCFS in December 2011, which were implemented on January 1, 2013. In September 2015, the Board approved the re-adoption of the LCFS, which became effective on January 1, 2016, to address procedural deficiencies in the way the original regulation was adopted. In 2018, the Board approved amendments to the regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in-line with California's 2030 GHG emission reduction target enacted through SB 32, adding new crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector.

The LCFS is designed to encourage the use of cleaner low-carbon transportation fuels in California, encourage the production of those fuels, and therefore, reduce GHG emissions and decrease petroleum dependence in the transportation sector. Separate standards are established for gasoline and diesel fuels and the alternative fuels that can replace each. The standards are "back-loaded", with more reductions required in the last five years, than during the first five years. This schedule allows for the development of advanced fuels that are lower in carbon than today's fuels and the market penetration of plug-in hybrid electric vehicles, battery electric vehicles, fuel cell vehicles, and flexible fuel vehicles. It is anticipated that compliance with the low carbon fuel standard will be based on a combination of both lower carbon fuels and more efficient vehicles.

Reformulated gasoline mixed with corn-derived ethanol at ten percent by volume and low sulfur diesel fuel represent the baseline fuels. Lower carbon fuels may be ethanol, biodiesel, renewable diesel, or blends of these fuels with gasoline or diesel as appropriate. Compressed natural gas and liquefied natural gas also may be low carbon fuels. Hydrogen and electricity, when used in fuel cells or electric vehicles are also considered as low carbon fuels for the low carbon fuel standard.

Senate Bill 97

Senate Bill 97 (SB 97) was adopted August 2007 and acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. SB 97 directed the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to the CARB guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Natural Resources Agency was required to certify and adopt those guidelines by January 1, 2010.

Pursuant to the requirements of SB 97 as stated above, on December 30, 2009, the Natural Resources Agency adopted amendments to the state CEQA guidelines that address GHG emissions. The CEQA Guidelines Amendments changed 14 sections of the CEQA Guidelines and incorporate GHG language throughout the Guidelines. However, no GHG emissions thresholds of significance were provided and no specific mitigation measures were identified. The GHG emission reduction amendments went into effect on March 18, 2010, and are summarized below:

- Climate action plans and other greenhouse gas reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.
- Local governments are encouraged to quantify the greenhouse gas emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. The section also recommends consideration of several qualitative factors that may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. OPR does not set or dictate specific thresholds of significance. Consistent with existing CEQA Guidelines, OPR encourages local governments to develop and publish their own thresholds of significance for GHG impacts assessment.
- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.
- New amendments include guidelines for determining methods to mitigate the effects of greenhouse gas emissions in Appendix F of the CEQA Guidelines.
- OPR is clear to state that "to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation".
- OPR's emphasizes the advantages of analyzing GHG impacts on an institutional, programmatic level. OPR therefore approves tiering of environmental analyses and highlights some benefits of such an approach.
- Environmental impact reports (EIRs) must specifically consider a project's energy use and energy efficiency potential.

Senate Bill 100

Senate Bill 100 (SB 100) requires 100 percent of total retail sales of electricity in California to come from eligible renewable energy resources and zero-carbon resources by December 31, 2045. SB 100 was adopted September 2018.

The interim thresholds from prior Senate Bills and Executive Orders would also remain in effect. These include Senate Bill 1078 (SB 1078), which requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. Senate Bill 107 (SB 107) which changed the target date to 2010. Executive Order S-14-08, which was signed on November 2008 and expanded the State's Renewable Energy Standard to 33 percent renewable energy by 2020. Executive Order S-21-09 directed the CARB to adopt regulations by July 31, 2010 to enforce S-14-08. Senate Bill X1-2 codifies the 33 percent renewable energy requirement by 2020.

Senate Bill 375

Senate Bill 375 (SB 375) was adopted September 2008 and aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPO) to adopt a sustainable communities strategy (SCS) or alternate planning strategy (APS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP). The CARB, in consultation with each MPO, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. The CARB is also charged with reviewing each MPO's sustainable communities strategy or alternate planning strategy for consistency with its assigned targets.

The proposed project is located within the SCAG jurisdiction, which has authority to develop the SCS or APS. For the SCAG region, the targets set by the CARB are at eight percent below 2005 per capita GHG emissions levels by 2020 and 19 percent below 2005 per capita GHG emissions levels by 2035. These reduction targets became effective October 2018.

Senate Bill X7-7

Senate Bill X7-7 (SB X7-7), enacted on November 9, 2009, mandates water conservation targets and efficiency improvements for urban and agricultural water suppliers. SB X7-7 requires the Department of Water Resources (DWR) to develop a task force and technical panel to develop alternative best management practices for the water sector. In addition, SB X7-7 required the DWR to develop criteria for baseline uses for residential, commercial, and industrial uses for both indoor and landscaped area uses. The DWR was also required to develop targets and regulations that achieve a statewide 20 percent reduction in water usage.

Assembly Bill 939 and Senate Bill 1374

Assembly Bill 939 (AB 939) requires that each jurisdiction in California to divert at least 50 percent of its waste away from landfills, whether through waste reduction, recycling or other means. Senate Bill 1374 (SB 1374) requires the California Integrated Waste Management Board to adopt a model ordinance by March 1, 2004, suitable for adoption by any local agency to require 50 to 75 percent diversion of construction and demolition of waste materials from landfills.

California Code of Regulations (CCR) Title 24, Part 6

CCR Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

The Energy Commission adopted 2008 Standards on April 23, 2008, and Building Standards Commission approved them for publication on September 11, 2008. These updates became effective on August 1, 2009. CalEEMod modeling defaults to 2008 standards. 2013 Standards were approved and have been effective since July 1, 2014. 2016 Standards were adopted January 1, 2017. 2019 standards were published July 1, 2019 and became effective January 1, 2020. All buildings for which an application for a building permit is submitted on or after January 1, 2020 must follow the 2019 standards. The 2016 residential standards were estimated to be approximately 28 percent more efficient than the 2013 standards, whereas the 2019 residential standards are estimated to be approximately 7 percent more efficient than the 2016 standards. Furthermore, once rooftop solar electricity generation is factored in, 2019 residential standards are estimated to be approximately 53 percent more efficient than the 2016 standards. Under the 2019 standards, nonresidential buildings are estimated to be approximately 30 percent more efficient than the 2016 standards.

Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions.

Per Section 100 Scope, the 2019 Title 24, Part 6 Building Code now requires healthcare facilities, such as assisted living facilities, hospitals, and nursing homes, to meet documentation requirements of Title 24, Part 1 Chapter 7 – Safety Standards for Health Facilities. A healthcare facility is defined as any building or portion thereof licensed pursuant to California Health and Safety Code Division 2, Chapter 1, Section 1204 or Chapter 2, Section 1250.

Section 120.1 Ventilation and Indoor Air Quality included both additions and revisions in the 2019 Code. This section now requires nonresidential and hotel/motel buildings to have air filtration systems that use forced air ducts to supply air to occupiable spaces to have air filters. Further, the air filter efficiency must be either MERV 13 or use a particle size efficiency rating specific in the Energy Code AND be equipped with air filters with a minimum 2-inch depth or minimum 1-inch depth if sized according to the equation 120.1-A. If natural ventilation is to be used the space must also use mechanical unless ventilation openings are either permanently open or controlled to stay open during occupied times. The 2019 version of the Code also completely revised the minimum ventilation requirements including DVC airflow rates within Section 120.1 Table 120.1–A. Table 120.1-A now includes air classification and recirculation limitations, these are based on either the number of occupants or the CFM/ft^2 (cubic feet per minute per square foot), whichever is greater.

Section 120.1 Ventilation and Indoor Air Quality also included additions for high-rise residential buildings. Requirements include that mechanical systems must provide air filters that and that air filters must be MERV 13 or use a particle size efficiency rating specified in the Energy Code. Window operation is no longer a method allowed to meet ventilation requirements, continuous operation of central forced air system handlers used in central fan integrated ventilation system is not a permissible method of providing the dwelling unit ventilation airflow, and central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow to each dwelling unit. In addition, requirements for kitchen range hoods were also provided in the updated Section 120.1.

Per Section 120.1(a) healthcare facilities must be ventilated in accordance with Chapter 4 of the California Mechanical Code and are NOT required to meet the ventilations requirements of Title 24, Part 6.

Section 140.4 Space Conditioning Systems included both additions and revisions within the 2019 Code. The changes provided new requirements for cooling tower efficiency, new chilled water cooling system requirements, as well as new formulas for calculating allowed fan power. Section 140.4(n) also provide a new exception for mechanical system shut-offs for high-rise multifamily dwelling units, while Section 140.4(o) added new requirements for conditioned supply air being delivered to space with mechanical exhaust.

Section 120.6 Covered Processes added information in regards to adiabatic chiller requirements that included that all condenser fans for air-cooled converseness, evaporative-cooled condensers, adiabatic condensers, gas coolers, air or water fluid coolers or cooling towers must be continuously variable speed, with the speed of all fans serving a common condenser high side controlled in unison .Further, the mid-condensing setpoint must be 70 degrees Fahrenheit for all of the above mentioned systems.

New regulations were also adopted under Section 130.1 Indoor Lighting Controls. These included new exceptions being added for restrooms, the exception for classrooms being removed, as well as exceptions in regard to sunlight provided through skylights and overhangs.

Section 130.2 Outdoor Lighting Controls and Equipment added automatic scheduling controls which included that outdoor lighting power must be reduced by 50 to 90 percent, turn the lighting off during unoccupied times and have at least two scheduling options for each luminaire independent from each other and with a 2-hour override function. Furthermore, motion sensing controls must have the ability to reduce power within 15 minutes of area being vacant and be able to come back on again when occupied. An exception allows for lighting subject to a health or life safety statute, ordinance, or regulation may have a minimum time-out period longer than 15 minutes or a minimum dimming level above 50% when necessary to comply with the applicable law.

California Code of Regulations (CCR) Title 24, Part 11 (California Green Building Standards)

On January 12, 2010, the State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code, which went into effect on January 1, 2011.

2016 CALGreen Code: The 2016 residential standards were estimated to be approximately 28 percent more efficient than the 2013 standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. During the 2016-2017 fiscal year, the Department of Housing and Community Development (HCD) updated CALGreen through the 2015 Triennial Code Adoption Cycle.

HCD also increased the required construction waste reduction from 50 percent to 65 percent of the total building site waste. This increase aids in meeting CalRecycle's statewide solid waste recycling goal of 75 percent for 2020 as stated in Chapter 476, Statutes of 2011 (AB 341). HCD adopted new regulations requiring recycling areas for multifamily projects of five or more dwelling units. This regulation requires developers to provide readily accessible areas adequate in size to accommodate containers for depositing, storage and collection of non-hazardous materials (including organic waste) for recycling. This requirement assists businesses that were required as of April 1, 2016, to meet the requirements of Chapter 727, Statutes of 2014 (AB 1826).

HCD adopted new regulations to require information on photovoltaic systems and electric vehicle chargers to be included in operation and maintenance manuals. Currently, CALGreen section 4.410.1 Item 2(a) requires operation and maintenance instructions for equipment and appliances. Photovoltaic systems and electric vehicle chargers are systems that play an important role in many households in California, and their importance is increasing every day. HCD incorporated these two terms in the existing language in order to provide clarity to code users as to additional systems requiring operation and maintenance instructions.

HCD updated the reference to Clean Air Standards of the USEPA applicable to woodstoves and pellet stoves. HCD also adopted a new requirement for woodstoves and pellet stoves to have a permanent label indicating they are certified to meet the emission limits. This requirement provides clarity to the code user and is consistent with the USEPA's New Source Performance Standards. HCD updated the list of standards which can be used for verification of compliance for exterior grade composite wood products. This list now includes four standards from the Canadian Standards Association (CSA): CSA O121, CSA O151, CSA O153 and CSA O325. HCD updated heating and air-conditioning system design references to the ANSI/ACCA 2 Manual J, ANSI/ACCA 1 Manual D, and ANSI/ACCA 3 Manual S to the most recent versions approved by ANSI. HCD adopted a new elective measure for hot water recirculation systems for water conservation. The United States Department of Energy estimates that 3,600 to 12,000 gallons of water per year can be saved by the typical household (with four points of hot water use) if a hot water recirculation system is installed.

2019 CALGreen Code: During the 2019-2020 fiscal year, the Department of Housing and Community Development (HCD) updated CALGreen through the 2019 Triennial Code Adoption Cycle.

HCD modified the best management practices for stormwater pollution prevention adding Section 5.106.2 for projects that disturb one or more acres of land. This section requires projects that disturb one acre or more of land or less than one acre of land but are part of a larger common plan of development or sale must comply with the postconstruction requirement detailed in the applicable National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board. The NPDES permits require postconstruction runoff (post-project hydrology) to match the preconstruction runoff pre-project hydrology) with installation of postconstruction stormwater management measures.

HCD added sections 5.106.4.1.3 and 5.106.4.1.5 in regard to bicycle parking. Section 5.106.4.1.3 requires new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility. In addition, Section 5.106.4.1.5 states that acceptable bicycle parking facility for Sections 5.106.4.1.2 through 5.106.4.1.4 shall be convenient from the street and shall meeting one of the following: (1) covered, lockable enclosures with permanently anchored racks for bicycles; (2) lockable bicycle rooms with permanently anchored racks; or (3) lockable, permanently anchored bicycle lockers.

HCD amended section 5.106.5.3.5 allowing future charging spaces to qualify as designated parking for clean air vehicles.

HCD updated section 5.303.3.3 in regard to showerhead flow rates. This update reduced the flow rate to 1.8 GPM.

HCD amended section 5.304.1 for outdoor potable water use in landscape areas and repealed sections 5.304.2 and 5.304.3. The update requires nonresidential developments to comply with a local water efficient landscape ordinance or the current California Department of Water Resource's' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent. Some updates were also made in regard to the outdoor potable water use in landscape areas for public schools and community colleges.

HCD updated Section 5.504.5.3 in regard to the use of MERV filters in mechanically ventilated buildings. This update changed the filter use from MERV 8 to MERV 13. MERV 13 filters are to be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Executive Order B-30-15

On April 29, 2015, Governor Brown issued Executive Order B-30-15. Therein, the Governor directed the following:

- Established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030.
- Ordered all state agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets.
- Directed CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent.

Executive Order B-29-15

Executive Order B-29-15, mandates a statewide 25 percent reduction in potable water usage. EO B-29-15 signed into law on April 1, 2015.

Executive Order B-37-16

Executive Order B-37-16, continuing the State's adopted water reductions, was signed into law on May 9, 2016. The water reductions build off the mandatory 25 percent reduction called for in EO B-29-15.

Executive Order N-79-20

Executive Order N-79-20 was signed into law on September 23, 2020 and mandates 100 percent of in-state sales of new passenger cars and trucks be zero-emission by 2035; 100 percent of medium- and heavy-duty vehicles in the state be zero-emission vehicles by 2045 for all operations where feasible and by 2035 for drayage trucks; and to transition to 100 percent zero-emission off-road vehicles and equipment by 2035 where feasible.

SBX1 2

Signed into law in April 2011, SBX1 2, requires one-third of the State's electricity to come from renewable sources. The legislation increases California's current 20 percent renewables portfolio standard target in 2010 to a 33 percent renewables portfolio standard by December 31, 2020.

Senate Bill 350

Signed into law October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard (RPS) eligible resources, including solar, wind, biomass, geothermal, and others. In addition, SB 350 requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. To help ensure these goals are met and the greenhouse gas emission reductions are realized, large utilities will be required to develop and submit Integrated Resource Plans (IRPs). These IRPs will detail how each entity will meet their customers resource needs, reduce greenhouse gas emissions and ramp up the deployment of clean energy resources.

Energy Sector and CEQA Guidelines Appendix F

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods. The 2016 update to the Energy Efficiency Standards for Residential and Nonresidential Buildings focuses on several key areas to improve the energy efficiency of renovations and addition to existing buildings as well as newly constructed buildings and renovations and additions to existing buildings. The major efficiency improvements to the residential Standards involve improvements for attics, walls, water heating, and lighting, whereas the major efficiency improvements to the nonresidential Standards include alignment with the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1-2013 national standards. Furthermore, the 2016 update required that enforcement agencies determine compliance with CCR, Title 24, Part 6 before issuing building permits for any construction.[15]

Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality."[16] As of January 1, 2011, the CALGreen Code is mandatory for all new buildings constructed in the state. The CALGreen Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality. The CALGreen Code was most recently updated in 2019 to include new mandatory measures for residential and nonresidential uses; the new measures took effect on January 1, 2020.

[15] California Energy Commission, 2016 Building Energy Efficiency Standards, June 2015, http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf

[16] California Building Standards Commission, 2010 California Green Building Standards Code, (2010).

Regional – Sacramento Metropolitan Air Quality Management District

The project is within the Sacramento Valley Air Basin, which is under the jurisdiction of SMAQMD.

SMAQMD Threshold Development

The District recognizes that although there is no known level of emissions that determines if a single project will substantially impact the environment, a threshold must be set to trigger review and to assess the need for mitigation. Lead agencies shall compare the project's estimated GHG emissions to the District's recommended thresholds of significance:

- Construction phase of all project types -1,100 metric tons of CO_2e per year.
- Stationary source operational emissions – 10,000 metric tons of CO_2e per year.
- Land development project operational emissions are reviewed in the context of consistency with ARB's 2017 Climate Change Scoping Plan (which pertains to the second GHG-related question from appendix G).

If a project's emissions exceed the thresholds of significance for construction or stationary source emissions, then the project emissions may have a cumulatively considerable contribution to a significant cumulative environmental impact, answering Appendix G's first GHG-related question on whether the project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. For projects that exceed the District's thresholds of significance, lead agencies shall implement all feasible mitigation to reduce GHG emissions (see discussed in Section 6.4, Mitigation, of the SMAQMD CEQA Guide for further details). The second GHG-related question in Appendix G asks if the project will conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. In order to answer this question, project emissions should be evaluated with respect to consistency with the following plans and policies, if applicable, that have been adopted to reduce GHG emissions:

- A jurisdiction's qualified climate action plan or GHG reduction plan.
- The Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS).
- ARB's 2017 Climate Change Scoping Plan (including State climate goals beyond 2030).

In April 2020, the District adopted an update to the land development project operational GHG threshold, which requires a project to demonstrate consistency with ARB's 2017 Climate Change Scoping Plan. The District's technical support document, Greenhouse Gas Thresholds for Sacramento County, identified operational measures that should be applied to a project to demonstrate consistency. The measures target GHG emissions inventory areas where State measures did not fully achieve reductions, allowing for local supportive measures. These measures, known as tier 1 and tier 2 Best Management Practices are discussed in Section 6.4, Mitigation, of the SMAQMD CEQA Guide.

Construction Emissions

Lead agencies shall compare the project's annual construction GHG emissions to the District's 1,100 metric ton per year threshold of significance. If the threshold is exceeded, then the project may have a cumulatively considerable contribution to a significant cumulative environmental impact, and all feasible mitigation is required.

Operational Emissions

Lead agencies shall estimate and report a project's annual operational GHG emissions in the first year of full operation (or if various phases, for each phase of operation) for projects that cannot screen out by comparing to the District's operational screening levels table (equivalent to 1,100 metric tons of CO_2e per year), including implementation of tier 1 Best Management Practices. If the project emissions exceed the screening level, or the project fails to implement tier 1 Best Management Practices, the project may have a cumulatively considerable contribution to a significant cumulative environmental impact, and all feasible mitigation is required. Projects exceeding the screening level, must implement tier 1 and tier 2 Best Management Practices, or provide equivalent on-site or off-site mitigation measures.

Local – City of Isleton

The City of Isleton does not have a Climate Action Plan.

SIGNIFICANCE THRESHOLDS

Appendix G of State CEQA Guidelines

The CEQA Guidelines recommend that a lead agency consider the following when assessing the significance of impacts from GHG emissions on the environment:

- The extent to which the project may increase (or reduce) GHG emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;
- The extent to which the project complies with regulations or requirements adopted to implement an adopted statewide, regional, or local plan for the reduction or mitigation of GHG emissions[17].

Thresholds of Significance for this Project

To determine whether the project's GHG emissions are significant, this analysis uses the SMAQMD threshold of 1,100 MTCO2e per year for both construction and operation. Additionally, as the City of Isleton does not have an adopted climate action plan or GHG reduction plan, the project's emissions will be assessed for consistency with the Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) and the CARB Scoping Plan. The project will also be required to implement SMAQMD tier 1 BMPs during operation.

METHODOLOGY

The proposed project is anticipated to generate GHG emissions from area sources, energy usage, mobile sources, waste, water, and construction equipment. The following provides the methodology used to calculate the project-related GHG emissions and the project impacts.

CalEEMod Version 2022.1 was used to calculate the GHG emissions from the proposed project. The CalEEMod Annual Output for year 2023 is available in Appendix B. Each source of GHG emissions is described in greater detail below.

Area Sources

Area sources include emissions from consumer products, landscape equipment and architectural coatings. No changes were made to the default area source emissions.

[17] The Governor's Office of Planning and Research recommendations include a requirement that such a plan must be adopted through a public review process and include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable, notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

Energy Usage

Energy usage includes emissions from the generation of electricity and natural gas used on-site. No changes were made to the default energy usage parameters.

Mobile Sources

Mobile sources include emissions from the additional vehicle miles generated from the proposed project. The vehicle trips associated with the proposed project have been analyzed by inputting the project-generated vehicular trips from the Traffic and VMT Assessment into the CalEEMod Model. The program then applies the emission factors for each trip which is provided by the EMFAC2021 model to determine the vehicular traffic pollutant emissions. See Section 2 for details.

Waste

Waste includes the GHG emissions generated from the processing of waste from the proposed project as well as the GHG emissions from the waste once it is interred into a landfill. No changes were made to the default waste parameters.

Water

Water includes the water used for the interior of the building as well as for landscaping and is based on the GHG emissions associated with the energy used to transport and filter the water. No changes were made to the default water usage parameters.

Construction

The construction-related GHG emissions were also included in the analysis. The construction-related GHG emissions were calculated by CalEEMod and in the manner detailed above in Section 2.

PROJECT GREENHOUSE GAS EMISSIONS

The GHG emissions have been calculated based on the parameters described above. A summary of the results is shown below in Table 10 and the CalEEMod Model run for the proposed project is provided in Appendix B. Table 10 shows that the total for the proposed project's emissions (without credit for any reductions from sustainable design and/or regulatory requirements) would be 633 MTCO2e per year for operation and 307 MTCO2e per year for construction resulting in a combined total of 940 MTCO2e per year.

According to the thresholds of significance established above, the project is required to implement tier 1 BMPS (see Section 5, Emissions Reduction Measures for details) and a cumulative global climate change impact would occur if the GHG emissions created from the on-going operations of the proposed project would exceed the SMAQMD threshold of 1,100 $MTCO_2e$ per year for construction and operation. Therefore, as neither construction or operational emissions for the proposed project would exceed the screening threshold of 1,100 MTCO2e per year, additional emissions reductions beyond tier 1 BMPs are not required (see Section 5, Emissions Reduction Measures for details on required Tier 1 BMPs). Therefore, with implementation of Tier 1 BMPs, the proposed project would not create a significant cumulative impact to global climate change.

Table 10
Project-Related Greenhouse Gas Emissions

Category	Greenhouse Gas Emissions (Metric Tons/Year)					
	Bio-CO2	NonBio-CO_2	CO_2	CH_4	N_2O	CO_2e
Maximum Annual Operations	0.08	622.00	622.00	0.04	0.03	633.00
Construction	0.00	306.00	306.00	0.02	0.01	307.00
Total Emissions[1]	0.08	928.00	928.00	0.06	0.04	940.00
SMAQMD Screening Threshold						1,100
Exceeds Threshold?						No

Notes:

Source: CalEEMod Version 2022.1 for Opening Year 2023.

(1) Implementation of tier 1 BMPs (BMP 1 & 2, see Table 5) are required.

CONSISTENCY WITH APPLICABLE GREENHOUSE GAS REDUCTION PLANS AND POLICIES

The proposed project would have the potential to conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases. As stated previously, the City of Isleton has not adopted a Climate Action Plan; therefore, the project's emissions have been compared to the goals of the CARB Scoping Plan and Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS).

Scoping Plan

Emission reductions in California alone would not be able to stabilize the concentration of greenhouse gases in the earth's atmosphere. However, California's actions set an example and drive progress towards a reduction in greenhouse gases elsewhere. If other states and countries were to follow California's emission reduction targets, this could avoid medium or higher ranges of global temperature increases. Thus, severe consequences of climate change could also be avoided.

CARB Board approved a Climate Change Scoping Plan in December 2008. The Scoping Plan outlines the State's strategy to achieve the 2020 greenhouse gas emissions limit. The Scoping Plan "proposes a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health" (California Air Resources Board 2008). The measures in the Scoping Plan have been in place since 2012.

This Scoping Plan calls for an "ambitious but achievable" reduction in California's greenhouse gas emissions, cutting approximately 30 percent from business-as-usual emission levels projected for 2020, or about 10 percent from today's levels. On a per-capita basis, that means reducing annual emissions of 14 tons of carbon dioxide for every man, woman and child in California down to about 10 tons per person by 2020.

In May 2014, CARB released its *First Update to the Climate Change Scoping Plan* (CARB 2014). This *Update* identifies the next steps for California's leadership on climate change. While California continues on its path to meet the near-term 2020 greenhouse gas limit, it must also set a clear path toward long-term, deep GHG emission reductions. This report highlights California's success to date in reducing its GHG emissions and lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050.

In November 2017, CARB release the 2017 Scoping Plan. This Scoping Plan incorporates, coordinates, and leverages many existing and ongoing efforts and identifies new policies and actions to accomplish the State's climate goals, and includes a description of a suite of specific actions to meet the State's 2030 GHG limit. In addition, Chapter 4 of the Scoping Plan provides a broader description of the many actions and proposals being explored across the sectors, including the natural resources sector, to achieve the State's mid and long-term climate goals.

Guided by legislative direction, the actions identified in the 2017 Scoping Plan reduce overall GHG emissions in California and deliver policy signals that will continue to drive investment and certainty in a low carbon economy. The 2017 Scoping Plan builds upon the successful framework established by the Initial Scoping Plan and First Update, while identifying new, technologically feasible, and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities. The Plan includes policies to require direct GHG reductions at some of the State's largest stationary sources and mobile sources. These policies include the use of lower GHG fuels, efficiency regulations, and the Cap-and Trade Program, which constrains and reduces emissions at covered sources.

As the latest, 2017 Scoping Plan builds upon previous versions, project consistency with applicable strategies of both the 2008 and 2017 Plan are assessed in Table 11. As shown in Table 11, the project is consistent with the applicable strategies and would result in a less than significant impact.

Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS)

The 2020 MTP/SCS was adopted by the Sacramento Area Council of Governments (SACOG) November 18, 2019. The 2020 MTP/SCS lays out a transportation investment and land use strategy to support a prosperous region, with access to jobs and economic opportunity, transportation options, and affordable housing that works for all residents. The plan also lays out a path for improving air quality, preserving open space and natural resources, and helping California achieve its goal to reduce greenhouse gas emissions that contribute to climate change. The MTP/SCS identifies the City of Isleton as an area not identified for development in the MTP/SC Planning Period. Appendix C of the MTP/SC includes population and employment projections that are based on land use and transportation planning throughout the region. According to these projections, the City of Isleton would add approximately 60 new dwelling units and 20 new jobs by 2040 without consideration of any development within the project site. The proposed project is that of an of a recreational vehicle (RV) park with up to 135 camp sites. As an RV park, the proposed development does not include new dwelling units and would be anticipated to generate few new jobs. Therefore, the proposed project would be consistent with the projections identified in the MTP/SCS.

At a level of 633 MTCO2e per year for operation, 307 MTCO2e per year for construction resulting in a combined total of 940 MTCO2e per year, the project's GHG emissions fall below the SMAQMD threshold of 1,100 $MTCO_2e$ per year for both construction and operation and is in compliance with the reduction goals of the CARB Scoping Plan, MTP/SCS, AB-32 and SB-32. Furthermore, the project will comply with applicable Green Building Standards and City of Isleton's policies regarding sustainability (as dictated by the City's General Plan); impacts are considered to be less than significant.

CUMULATIVE GREENHOUSE GAS IMPACTS

Although the project is expected to emit GHGs, the emission of GHGs by a single project into the atmosphere is not itself necessarily an adverse environmental effect. Rather, it is the increased accumulation of GHG from more than one project and many sources in the atmosphere that may result in global climate change. Therefore, in the case of global climate change, the proximity of the project to other GHG emission generating activities is not directly relevant to the determination of a cumulative impact because climate change is a global condition. According to CAPCOA, "GHG impacts are exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective."[18] The resultant consequences of that climate change can cause adverse environmental effects. A project's GHG emissions typically would be very small in comparison to state or global GHG emissions and, consequently, they would, in isolation, have no significant direct impact on climate change.

The state has mandated a goal of reducing statewide emissions to 1990 levels by 2020, even though statewide population and commerce are predicted to continue to expand. In order to achieve this goal, CARB is in the process of establishing and implementing regulations to reduce statewide GHG emissions. Consistent with

[18] Source: California Air Pollution Control Officers Association, CEQA & Climate change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, (2008).

CEQA Guidelines Section 15064h(3),[19] the City, as lead agency, has determined that the project's contribution to cumulative GHG emissions and global climate change would be less than significant if the project is consistent with the applicable regulatory plans and policies to reduce GHG emissions.

As discussed in the Consistency With Applicable Greenhouse Gas Reduction Plans and Policies section above, the project is consistent with the goals and objectives of the CARB Scoping Plan and MTP/SCS.

Thus, given the project's consistency with the CARB Scoping Plan and MTP/SCS and SMAQMD's 1,1000 MTCO2e per year threshold for both construction and operation, the project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. Given this consistency, it is concluded that the project's incremental contribution to greenhouse gas emissions and their effects on climate change would not be cumulatively considerable.

[19] The State CEQA Guidelines were amended in response to SB 97. In particular, the State CEQA Guidelines were amended to specify that compliance with a GHG emissions reduction program renders a cumulative impact insignificant. Per State CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project will comply with an approved plan or mitigation program that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such a plan or program must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, [and] plans or regulations for the reduction of greenhouse gas emissions."

Table 11 (1 of 2)
Project Consistency with CARB Scoping Plan Policies and Measures

2008 Scoping Plan Measures to Reduce Greenhouse Gas Emissions	Project Compliance with Measure
California Light-Duty Vehicle Greenhouse Gas Standards – Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.	No conflict. These are CARB enforced standards; vehicles that access the project, that are required to comply with the standards, will comply with the strategy.
Energy Efficiency – Maximize energy efficiency building and appliance standards; pursue additional efficiency including new technologies, policy, and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California.	No conflict. The project will be compliant with the current Title 24 standards.
Low Carbon Fuel Standard – Develop and adopt the Low Carbon Fuel Standard.	No conflict. These are CARB enforced standards; vehicles that access the project, that are required to comply with the standards, will comply with the strategy.
Vehicle Efficiency Measures – Implement light-duty vehicle efficiency measures.	No conflict. These are CARB enforced standards; vehicles that access the project, that are required to comply with the standards, will comply with the strategy.
Medium/Heavy-Duty Vehicles – Adopt medium and heavy-duty vehicle efficiency measures.	No conflict. These are CARB enforced standards; vehicles that access the project, that are required to comply with the standards, will comply with the strategy.
Green Building Strategy – Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	No conflict. The California Green Building Standards Code (proposed Part 11, Title 24) was adopted as part of the California Building Standards Code in the CCR. Part 11 establishes voluntary standards, that are mandatory in the 2019 edition of the Code, on planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The project will be subject to these mandatory standards.
High Global Warming Potential Gases – Adopt measures to reduce high global warming potential gases.	No conflict. CARB identified five measures that reduce HFC emissions from vehicular and commercial refrigeration systems; vehicles that access the project that are required to comply with the measures will comply with the strategy.
Recycling and Waste – Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.	No conflict. The state is currently developing a regulation to reduce methane emissions from municipal solid waste landfills. The project will be required to comply with City programs, such as any City recycling and waste reduction programs, which comply, with the 75 percent reduction required by 2020 per AB 341.
Water – Continue efficiency programs and use cleaner energy sources to move and treat water.	No conflict. The project will comply with all applicable City ordinances and CAL Green requirements.

Table 11 (2 of 2)
Project Consistency with CARB Scoping Plan Policies and Measures

2017 Scoping Plan Recommended Actions to Reduce Greenhouse Gas Emissions	Project Compliance with Recommended Action
Implement Mobile Source Strategy: Further increase GHG stringency on all light-duty vehicles beyond existing Advanced Clean Car regulations.	No conflict. These are CARB enforced standards; vehicles that access the project, that are required to comply with the standards, will comply with the strategy.
Implement Mobile Source Strategy: At least 1.5 million zero emission and plug-in hybrid light-duty electric vehicles by 2025 and at least 4.2 million zero emission and plug-in hybrid light-duty electric vehicles by 2030.	No conflict. These are CARB enforced standards; vehicles that access the project, that are required to comply with the standards, will comply with the strategy.
Implement Mobile Source Strategy: Innovative Clean Transit: Transition to a suite of to-be-determined innovative clean transit options. Assumed 20 percent of new urban buses purchased beginning in 2018 will be zero emission buses with the penetration of zero-emission technology ramped up to 100 percent of new sales in 2030. Also, new natural gas buses, starting in 2018, and diesel buses, starting in 2020, meet the optional heavy-duty low-NOX standard.	No conflict. These are CARB enforced standards; vehicles that access the project, that are required to comply with the standards, will comply with the strategy.
Implement Mobile Source Strategy: Last Mile Delivery: New regulation that would result in the use of low NOX or cleaner engines and the deployment of increasing numbers of zero-emission trucks primarily for class 3-7 last mile delivery trucks in California. This measure assumes ZEVs comprise 2.5 percent of new Class 3–7 truck sales in local fleets starting in 2020, increasing to 10 percent in 2025 and remaining flat through 2030.	No conflict. These are CARB enforced standards; vehicles that access the project, that are required to comply with the standards, will comply with the strategy.
Implement SB 350 by 2030: Establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses by 2030.	No conflict. The project will be compliant with the current Title 24 standards.
By 2019, develop regulations and programs to support organic waste landfill reduction goals in the SLCP and SB 1383.	No conflict. The project will be required to comply with City programs, such as any City recycling and waste reduction programs, which comply, with the 75 percent reduction required by 2020 per AB 341.

Source: CARB Scoping Plan (2008 and 2017)

4. ENERGY ANALYSIS

EXISTING CONDITIONS

This section provides an overview of the existing energy conditions in the project area and region.

Overview

California's estimated annual energy use as of 2020 included:

- Approximately 272,576 gigawatt hours of electricity;[20]
- Approximately 2,074,302 million cubic feet of natural gas per year;[21] and
- Approximately 23.2 billion gallons of transportation fuel (for the year 2015).[22]

As of 2019, the year of most recent data currently available by the United States Energy Information Administration (EIA), energy use in California by demand sector was:

- Approximately 39.3 percent transportation;
- Approximately 23.2 percent industrial;
- Approximately 18.7 percent residential; and
- Approximately 18.9 percent commercial.[23]

California's electricity in-state generation system generates approximately 190,913 gigawatt-hours each year. In 2020, California produced approximately 70 percent of the electricity it uses; the rest was imported from the Pacific Northwest (approximately 15 percent) and the U.S. Southwest (approximately 15 percent). Natural gas is the main source for electricity generation at approximately 48.34 percent of the total in-state electric generation system power as shown in Table 12.

A summary of and context for energy consumption and energy demands within the State is presented in "U.S. Energy Information Administration, California State Profile and Energy Estimates, Quick Facts" excerpted below:

- California was the seventh-largest producer of crude oil among the 50 states in 2018, and, as of January 2019, it ranked third in oil refining capacity.
- California is the largest consumer of jet fuel among the 50 states and accounted for one-fifth of the nation's jet fuel consumption in 2018.
- California's total energy consumption is the second-highest in the nation, but, in 2018, the State's per capita energy consumption ranked the fourth-lowest, due in part to its mild climate and its energy efficiency programs.
- In 2018, California ranked first in the nation as a producer of electricity from solar, geothermal, and biomass resources and fourth in the nation in conventional hydroelectric power generation.

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[20] California Energy Commission. Energy Almanac. Total Electric Generation. [Online] 2021. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2020-total-system-electric-generation.

[21] Natural Gas Consumption by End Use. U.S. Energy Information Administration. [Online] 2021. https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm.

[22] California Energy Commission. Revised Transportation Energy Demand Forecast 2018-2030. [Online] 2021. https://www.energy.ca.gov/data-reports/planning-and-forecasting

[23] U.S. Energy Information Administration. California Energy Consumption by End-Use Sector. California State Profile and Energy Estimates.[Online] January 16, 2020 https://www.eia.gov/state/?sid=CA#tabs-2

- In 2018, large- and small-scale solar PV and solar thermal installations provided 19% of California's net electricity generation.[24]

As indicated above, California is one of the nation's leading energy-producing states, and California per capita energy use is among the nation's most efficient. Given the nature of the proposed project, the remainder of this discussion will focus on the three sources of energy that are most relevant to the project—namely, electricity and natural gas for building uses, and transportation fuel for vehicle trips associated with the proposed project.

Electricity and Natural Gas

Electricity and natural gas would be provided to the project by Pacific Gas and Electric (PG&E). PG&E is one of the largest combined natural gas and electric energy companies in the United States. he company provides natural gas and electric service to approximately 16 million people throughout a 70,000-square-mile service area in northern and central California.[25]

Table 13 identifies PG&E's specific proportional shares of electricity sources in 2020. As shown in Table 14, the 2020 PG&E Power Mix has renewable energy at 30.6 percent of the overall energy resources, of which biomass and waste is at 2.6 percent, geothermal is at 2.6 percent, eligible hydroelectric is at 1.2 percent, solar energy is at 15.9 percent, and wind power is at 8.3 percent; other energy sources include large hydroelectric at 10.1 percent, natural gas at 16.4 percent, and nuclear at 42.8 percent.

Pacific Gas and Electric Company and other energy companies in the state are regulated by the California Public Utilities Commission. The following summary of natural gas resources and service providers, delivery systems, and associated regulation is excerpted from information provided by the California Public Utilities Commission (CPUC).

The CPUC regulates natural gas utility service for approximately 11 million customers that receive natural gas from Pacific Gas and Electric (PG&E), Southern California Gas (SoCalGas), San Diego Gas & Electric (SDG&E), Southwest Gas, and several smaller investor-owned natural gas utilities. The CPUC also regulates independent storage operators Lodi Gas Storage, Wild Goose Storage, Central Valley Storage and Gill Ranch Storage.

The vast majority of California's natural gas customers are residential and small commercial customers, referred to as "core" customers. Larger volume gas customers, like electric generators and industrial customers, are called "noncore" customers. Although very small in number relative to core customers, noncore customers consume about 65% of the natural gas delivered by the state's natural gas utilities, while core customers consume about 35%.

The PUC regulates the California utilities' natural gas rates and natural gas services, including in-state transportation over the utilities' transmission and distribution pipeline systems, storage, procurement, metering and billing.

Most of the natural gas used in California comes from out-of-state natural gas basins. In 2017, for example, California utility customers received 38% of their natural gas supply from basins located in the U.S. Southwest, 27% from Canada, 27% from the U.S. Rocky Mountain area, and 8% from production located in California."[26]

[24] State Profile and Energy Estimates. Independent Statistics and Analysis. [Online] [Cited: January 16, 2020.] http://www.eia.gov/state/?sid=CA#tabs2.

[25] https://www.pge.com/en_US/about-pge/company-information/profile/profile.page

[26] California Public Utilities Commission. Natural Gas and California. http://www.cpuc.ca.gov/natural_gas/

Transportation Energy Resources

The project would attract additional vehicle trips with resulting consumption of energy resources, predominantly gasoline and diesel fuel. Gasoline (and other vehicle fuels) are commercially provided commodities and would be available to the project patrons and employees via commercial outlets.

The most recent data available shows the transportation sector emits 40 percent of the total greenhouse gases in the state and about 84 percent of smog-forming oxides of nitrogen (NOx).[27,28] About 28 percent of total United States energy consumption in 2019 was for transporting people and goods from one place to another. In 2019, petroleum comprised about 91 percent of all transportation energy use, excluding fuel consumed for aviation and most marine vessels.[29] In 2020, about 123.49 billion gallons (or about 2.94 billion barrels) of finished motor gasoline were consumed in the United States, an average of about 337 million gallons (or about 8.03 million barrels) per day.[30]

REGULATORY BACKGROUND

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation, the United States Department of Energy, and the United States Environmental Protection Agency are three federal agencies with substantial influence over energy policies and programs. On the state level, the PUC and the California Energy Commissions (CEC) are two agencies with authority over different aspects of energy. Relevant federal and state energy-related laws and plans are summarized below.

Federal Regulations

Corporate Average Fuel Economy (CAFE) Standards

First established by the U.S. Congress in 1975, the Corporate Average Fuel Economy (CAFE) standards reduce energy consumption by increasing the fuel economy of cars and light trucks. The National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (USEPA) jointly administer the CAFE standards. The U.S. Congress has specified that CAFE standards must be set at the "maximum feasible level" with consideration given for: (1) technological feasibility; (2) economic practicality; (3) effect of other standards on fuel economy; and (4) need for the nation to conserve energy.[31]

Issued by NHTSA and EPA in March 2020 (published on April 30, 2020 and effective after June 29, 2020), the Safer Affordable Fuel-Efficient Vehicles Rule would maintain the CAFE and CO2 standards applicable in model year 2020 for model years 2021 through 2026. The estimated CAFE and CO2 standards for model year 2020 are 43.7 mpg and 204 grams of CO2 per mile for passenger cars and 31.3 mpg and 284 grams of CO2 per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012.[32]

[27] CARB. California Greenhouse Gas Emissions Inventory – 2020 Edition. https://www.arb.ca.gov/cc/inventory/data/data.htm

[28] CARB. 2016 SIP Emission Projection Data. https://www.arb.ca.gov/app/emsinv/2017/emseic1_query.php?F_DIV=-4&F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_AREA=CA

[29] US Energy Information Administration. Use of Energy in the United States Explained: Energy Use for Transportation. https://www.eia.gov/energyexplained/?page=us_energy_transportation

[30] https://www.eia.gov/tools/faqs/faq.php?id=23&t=10

[31] https://www.nhtsa.gov/lawsregulations/corporate-average-fuel-economy.

[32] National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (USEPA), 2018. Federal Register / Vol. 83, No. 165 / Friday, August 24, 2018 / Proposed Rules, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks 2018. Available at: https://www.epa.gov/regulations-emissions-vehicles-and-engines/safer-affordable-fuel-efficient-safe-vehicles-final-rule.

Intermodal Surface transportation Efficiency Act of 1991 (ISTEA)

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) promoted the development of inter-modal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that Metropolitan Planning Organizations (MPOs) were to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values guiding transportation decisions.

The Transportation Equity Act of the 21st Century (TEA-21)

The Transportation Equity Act for the 21st Century (TEA-21) was signed into law in 1998 and builds upon the initiatives established in the ISTEA legislation, discussed above. TEA-21 authorizes highway, highway safety, transit, and other efficient surface transportation programs. TEA-21 continues the program structure established for highways and transit under ISTEA, such as flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of good transportation decisions. TEA-21 also provides for investment in research and its application to maximize the performance of the transportation system through, for example, deployment of Intelligent Transportation Systems, to help improve operations and management of transportation systems and vehicle safety.

State Regulations

Integrated Energy Policy Report (IEPR)

Senate Bill 1389 requires the California Energy Commission (CEC) to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the State's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety. The Energy Commission prepares these assessments and associated policy recommendations every two years, with updates in alternate years, as part of the Integrated Energy Policy Report.

The 2019 Integrated Energy Policy Report (2019 IEPR) was adopted February 20, 2020, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2019 IEPR focuses on a variety of topics such as decarbonizing buildings, integrating renewables, energy efficiency, energy equity, integrating renewable energy, updates on Southern California electricity reliability, climate adaptation activities for the energy sector, natural gas assessment, transportation energy demand forecast, and the California Energy Demand Forecast.[33]

State of California Energy Plan

The CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

[33] California Energy Commission. Final 2019 Integrated Energy Policy Report. February 20, 2020. https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2019-integrated-energy-policy-report

California Building Standards Code (Title 24)

The California Building Standards Code Title 24 was previously discussed in Section 3 of this report.

California Building Energy Efficiency Standards (Title 24, Part 6)

The California Building Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) were adopted to ensure that building construction and system design and installation achieve energy efficiency and preserve outdoor and indoor environmental quality. The current California Building Energy Efficiency Standards (Title 24 standards) are the 2019 Title 24 standards, which became effective on January 1, 2020. The 2019 Title 24 standards include efficiency improvements to the lighting and efficiency improvements to the non-residential standards include alignment with the American Society of Heating and Air-Conditioning Engineers. For example, window operation is no longer a method allowed to meet ventilation requirements, continuous operation of central forced air system handlers used in central fan integrated ventilation system is not a permissible method of providing the dwelling unit ventilation airflow, and central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow to each dwelling unit. In addition, requirements for kitchen range hoods were also provided in the updated Section 120.1. Ventilation and Indoor Air Quality included both additions and revisions in the 2019 Code. This section now requires nonresidential and hotel/motel buildings to have air filtration systems that use forced air ducts to supply air to occupiable spaces to have air filters. Further, the air filter efficiency must be either MERV 13 or use a particle size efficiency rating specific in the Energy Code AND be equipped with air filters with a minimum 2-inch depth or minimum 1-inch depth if sized according to the equation 120.1-A. If natural ventilation is to be used the space must also use mechanical unless ventilation openings are either permanently open or controlled to stay open during occupied times.

New regulations were also adopted under Section 130.1 Indoor Lighting Controls. These included new exceptions being added for restrooms, the exception for classrooms being removed, as well as exceptions in regard to sunlight provided through skylights and overhangs.

All buildings for which an application for a building permit is submitted on or after January 1, 2020 must follow the 2019 standards. The 2016 residential standards were estimated to be approximately 28 percent more efficient than the 2013 standards, whereas the 2019 residential standards are estimated to be approximately 7 percent more efficient than the 2016 standards. Furthermore, once rooftop solar electricity generation is factored in, 2019 residential standards are estimated to be approximately 53 percent more efficient than the 2016 standards. Under the 2019 standards, nonresidential buildings are estimated to be approximately 30 percent more efficient than the 2016 standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions.

California Building Energy Efficiency Standards (Title 24, Part 11)

The 2019 California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, went into effect on January 1, 2020. The 2019 CALGreen Code includes mandatory measures for non-residential development related to site development; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality.

As previously discussed in Section 3 of this report, the Department of Housing and Community Development (HCD) updated CALGreen through the 2019 Triennial Code Adoption Cycle. HCD modified the best management practices for stormwater pollution prevention adding Section 5.106.2 for projects that disturb one or more acres of land. This section requires projects that disturb one acre or more of land or less than one acre of land but are part of a larger common plan of development or sale must comply with the postconstruction requirement detailed in the applicable National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board. The NPDES permits require postconstruction runoff (post-project hydrology) to match the preconstruction runoff pre-project hydrology) with installation of postconstruction stormwater management measures.

HCD added sections 5.106.4.1.3 and 5.106.4.1.5 in regard to bicycle parking. Section 5.106.4.1.3 requires new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility. In addition, Section 5.106.4.1.5 states that acceptable bicycle parking facility for Sections 5.106.4.1.2 through 5.106.4.1.4 shall be convenient from the street and shall meeting one of the following: (1) covered, lockable enclosures with permanently anchored racks for bicycles; (2) lockable bicycle rooms with permanently anchored racks; or (3) lockable, permanently anchored bicycle lockers.

HCD amended section 5.106.5.3.5 allowing future charging spaces to qualify as designated parking for clean air vehicles.

HCD updated section 5.303.3.3 in regard to showerhead flow rates. This update reduced the flow rate to 1.8 GPM.

HCD amended section 5.304.1 for outdoor potable water use in landscape areas and repealed sections 5.304.2 and 5.304.3. The update requires nonresidential developments to comply with a local water efficient landscape ordinance or the current California Department of Water Resource's' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent. Some updates were also made in regard to the outdoor potable water use in landscape areas for public schools and community colleges.

HCD updated Section 5.504.5.3 in regard to the use of MERV filters in mechanically ventilated buildings. This update changed the filter use from MERV 8 to MERV 13. MERV 13 filters are to be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Senate Bill 100

Senate Bill 100 (SB 100) requires 100 percent of total retail sales of electricity in California to come from eligible renewable energy resources and zero-carbon resources by December 31, 2045. SB 100 was adopted September 2018.

The interim thresholds from prior Senate Bills and Executive Orders would also remain in effect. These include Senate Bill 1078 (SB 1078), which requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. Senate Bill 107 (SB 107) which changed the target date to 2010. Executive Order S-14-08, which was signed on November 2008 and expanded the State's Renewable Energy Standard to 33 percent renewable energy by 2020. Executive Order S-21-09 directed the CARB to adopt regulations by July 31, 2010 to enforce S-14-08. Senate Bill X1-2 codifies the 33 percent renewable energy requirement by 2020.

Senate Bill 350

As previously discussed in Section 3 of this report, Senate Bill 350 (SB 350) was signed into law October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard (RPS) eligible resources, including solar, wind, biomass, geothermal, and others. In addition, SB 350 requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. To help ensure these goals are met and the greenhouse gas emission reductions are realized, large utilities will be required to develop and submit Integrated Resource Plans (IRPs). These IRPs will detail how each entity will meet their customers resource needs, reduce greenhouse gas emissions and ramp up the deployment of clean energy resources.

Assembly Bill 32

As discussed in Section 3 of this report, in 2006 the California State Legislature adopted Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006. AB 32 requires CARB, to adopt rules and regulations that would achieve GHG emissions equivalent to statewide levels in 1990 by 2020 through an enforceable statewide emission cap which will be phased in starting in 2012. Emission reductions shall include carbon sequestration projects that would remove carbon from the atmosphere and best management practices that are technologically feasible and cost effective. Please see Section 3 for further detail on AB 32.

Assembly Bill 1493/Pavley Regulations

As discussed in Section 3 of this report, California Assembly Bill 1493 enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. In 2005, the CARB submitted a "waiver" request to the EPA from a portion of the federal Clean Air Act in order to allow the State to set more stringent tailpipe emission standards for CO_2 and other GHG emissions from passenger vehicles and light duty trucks. On December 19, 2007 the EPA announced that it denied the "waiver" request. On January 21, 2009, CARB submitted a letter to the EPA administrator regarding the State's request to reconsider the waiver denial. The EPA approved the waiver on June 30, 2009.

Executive Order S-1-07/Low Carbon Fuel Standard

As discussed in Section 3 of this report, Executive Order S-1-07 was issued in 2007 and proclaims that the transportation sector is the main source of GHG emissions in the State, since it generates more than 40 percent of the State's GHG emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in the State by at least ten percent by 2020. This Order also directs CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

On April 23, 2009 CARB approved the proposed regulation to implement the low carbon fuel standard. The low carbon fuel standard is anticipated to reduce GHG emissions by about 16 MMT per year by 2020. The low carbon fuel standard is designed to provide a framework that uses market mechanisms to spur the steady introduction of lower carbon fuels. The framework establishes performance standards that fuel producers and importers must meet each year beginning in 2011. Separate standards are established for gasoline and diesel fuels and the alternative fuels that can replace each. The standards are "back-loaded", with more reductions required in the last five years, than during the first five years. This schedule allows for the development of advanced fuels that are lower in carbon than today's fuels and the market penetration of plug-in hybrid electric vehicles, battery electric vehicles, fuel cell vehicles, and flexible fuel vehicles. It is anticipated that compliance with the low carbon fuel standard will be based on a combination of both lower carbon fuels and more efficient vehicles.

Reformulated gasoline mixed with corn-derived ethanol at ten percent by volume and low sulfur diesel fuel represent the baseline fuels. Lower carbon fuels may be ethanol, biodiesel, renewable diesel, or blends of these fuels with gasoline or diesel as appropriate. Compressed natural gas and liquefied natural gas also may be low carbon fuels. Hydrogen and electricity, when used in fuel cells or electric vehicles are also considered as low carbon fuels for the low carbon fuel standard.

California Air Resources Board

CARB's Advanced Clean Cars Program

Closely associated with the Pavley regulations, the Advanced Clean Cars emissions control program was approved by CARB in 2012. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles for model years 2015–2025.15 The components of the Advanced Clean Cars program include the Low-Emission Vehicle (LEV) regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero-Emission Vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles (PHEV) in the 2018 through 2025 model years.[34]

Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

The Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling (Title 13, California Code of Regulations, Division 3, Chapter 10, Section 2435) was adopted to reduce public exposure to diesel particulate matter and other air contaminants by limiting the idling of diesel-fueled commercial motor vehicles. This section applies to diesel-fueled commercial motor vehicles with gross vehicular weight ratings of greater than 10,000 pounds that are or must be licensed for operation on highways. Reducing idling of diesel-fueled commercial motor vehicles reduces the amount of petroleum-based fuel used by the vehicle.

Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen, and other Criteria Pollutants, form In-Use Heavy-Duty Diesel-Fueled Vehicles

The Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles (Title 13, California Code of Regulations, Division 3, Chapter 1, Section 2025) was adopted to reduce emissions of diesel particulate matter, oxides of nitrogen (NOX) and other criteria pollutants from in-use diesel-fueled vehicles. This regulation is phased, with full implementation by 2023. The regulation aims to reduce emissions by requiring the installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models. The newer emission-controlled models would use petroleum-based fuel in a more efficient manner.

Sustainable Communities Strategy

The Sustainable Communities and Climate Protection Act of 2008, or Senate Bill 375 (SB 375), coordinates land use planning, regional transportation plans, and funding priorities to help California meet the GHG reduction mandates established in AB 32.

As previously stated in Section 3 of this report, Senate Bill 375 (SB 375) was adopted September 2008 and aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPO) to adopt a sustainable communities strategy (SCS) or alternate planning strategy (APS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP). CARB, in consultation with each MPO, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's sustainable communities strategy or alternate planning strategy for consistency with its assigned targets.

The proposed project is located within the Sacramento Area Council of Governments (SACOG) jurisdiction, which has authority to develop the SCS or APS.

PROJECT ENERGY DEMANDS AND ENERGY EFFICIENCY MEASURES

Evaluation Criteria

In compliance with Appendix G of the State CEQA Guidelines, this report analyzes the project's anticipated energy use to determine if the project would:

[34] California Air Resources Board, California's Advanced Clean Cars Program, January 18, 2017. www.arb.ca.gov/msprog/acc/acc.htm.

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

In addition, Appendix F of the State CEQA Guidelines states that the means of achieving the goal of energy conservation includes the following:

- Decreasing overall per capita energy consumption;
- Decreasing reliance on fossil fuels such as coal, natural gas and oil; and
- Increasing reliance on renewable energy sources.

Methodology

Information from the CalEEMod 2022.1 Outputs contained in Appendix C, utilized for air quality and greenhouse gas analyses in Sections 2 and 3 of this report, were also utilized for this analysis. The CalEEMod outputs detail project related construction equipment, transportation energy demands, and facility energy demands.

Construction Energy Demands

The construction schedule is anticipated to occur no sooner than the beginning of November 2022 to mid-August 2023 and be completed in one phase. Staging of construction vehicles and equipment will occur on-site. The approximately 9.5-month schedule is relatively short and the project site is approximately 13.73 acres.

Construction Equipment Electricity Usage Estimates

As stated previously, Electrical service will be provided by PG&E. The focus within this section is the energy implications of the construction process, specifically the power cost from on-site electricity consumption during construction of the proposed project. Based on the 2021 National Construction Estimator, Richard Pray (2021)[35], the typical power cost per 1,000 square feet of building construction per month is estimated to be $2.37. The project plans to develop the site 135 camp sites, including 96 back-in RV sites, 25 pull-through RV sites and 14 tiny home cabins, with 8,730 square feet of total buildings (320 square foot per tiny home cabin, 1,000 square foot shop, and 3,250 square foot lodge). Based on Table 14, the total power cost of the on-site electricity usage during the construction of the proposed project is estimated to be approximately $196.56. As shown in Table 14, the total electricity usage from project construction related activities is estimated to be approximately 604 kWh.[36]

Construction Equipment Fuel Estimates

Fuel consumed by construction equipment would be the primary energy resource expended over the course of project construction. Fuel consumed by construction equipment was evaluated with the following assumptions:

- Construction schedule of 9.5 months
- All construction equipment was assumed to run on diesel fuel
- Typical daily use of 8 hours, with some equipment operating from ~6-7 hours

[35] Pray, Richard. 2021 National Construction Estimator. Carlsbad : Craftsman Book Company, 2021.

[36] Assumes the project will be under the Commercial/General Service Rate (used the highest of the "Average" bundled Total Rates) under PG&E. https://www.pge.com/tariffs/electric.shtml#RESELEC_INCLUTOU

- Aggregate fuel consumption rate for all equipment was estimated at 18.5 hp-hr/gallon (from CARB's 2017 Emissions Factors Tables and fuel consumption rate factors as shown in Table D-21 of the Moyer Guidelines: (https://www.arb.ca.gov/msprog/moyer/guidelines/2017gl/2017_gl_appendix_d.pdf).
- Diesel fuel would be the responsibility of the equipment operators/contractors and would be sources within the region.
- Project construction represents a "single-event" for diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources during long term operation.

Using the CalEEMod data input for the air quality and greenhouse gas analyses (Sections 2 and 3 of this report), the project's construction phase would consume electricity and fossil fuels as a single energy demand, that is, once construction is completed their use would cease. CARB's 2017 Emissions Factors Tables show that on average aggregate fuel consumption (gasoline and diesel fuel) would be approximately 18.5 hp-hr-gal. Table 15 shows the results of the analysis of construction equipment.

As presented in Table 15, project construction activities would consume an estimated 30,257 gallons of diesel fuel. As stated previously, project construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

Construction Worker Fuel Estimates

It is assumed that construction worker trips are from light duty autos (LDA), light duty truck 1 (LDT1), and light duty truck 2 (LDT2) at a mix of 25 percent/50 percent/25 percent, respectively, along area roadways.[37] With respect to estimated VMT, the construction worker trips would generate an estimated 17,160 VMT. Data regarding project related construction worker trips were based on CalEEMod 2022.1 model defaults.

Vehicle fuel efficiencies for construction workers were estimated in the air quality and greenhouse gas analyses (Sections 2 and 3 of this report) using information generated using CARB's 2021 EMFAC model (see Appendix B for details). An aggregate fuel efficiency of 24.7 miles per gallon (mpg) was used to calculate vehicle miles traveled for construction worker trips. Table 16 shows that an estimated 694 gallons of fuel would be consumed for construction worker trips.

Construction Vendor/Hauling Fuel Estimates

Tables 17 and 18 show the estimated fuel consumption for vendor and hauling during demolition. With respect to estimated VMT, the vendor and hauling trips would generate an estimated 17,160 VMT. Data regarding project related construction worker trips were based on CalEEMod 2022.1 model defaults.

For the architectural coatings it is assumed that the contractors would be responsible for bringing coatings and equipment with them in their light duty vehicles. Therefore, vendors delivering construction material or hauling debris from the site during demolition would use medium to heavy duty vehicles with an average fuel consumption of 7.33 mpg for medium heavy duty trucks and 5.46 mpg for heavy heavy duty trucks (see Appendix B for details).[38] Tables 17 and 18 show that an estimated 5 gallons of fuel would be consumed for vendor and hauling trips.

Construction Energy Efficiency/Conservation Measures

Construction equipment used over the approximately 9.5-month construction phase would conform to CARB regulations and California emissions standards and is evidence of related fuel efficiencies. There are no

[37] CalEEMod User's Guide Appendix C (April 2022) states that construction work trips are made by a fleet consisting of 25 percent light-duty auto (or passenger car), 50 percent light-duty truck type 1 (LDT1), and 25 percent light duty truck type 2 (LDT2).

[38] CalEEMod User's Guide Appendix C (April 2022) states that vendor trips are made by a fleet consisting of 50 percent medium trucks (MHDT) and 50 percent heavy trucks (HHDT) and that hauling and onsite truck trips are made by a fleet consisting of 100 percent HHDT.

unusual project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with these measures would result in a more efficient use of construction-related energy and would minimize or eliminate wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, as required by California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby minimizing or eliminating unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. Enforcement of idling limitations is realized through periodic site inspections conducted by City building officials, and/or in response to citizen complaints.

Operational Energy Demands

Energy consumption in support of or related to project operations would include transportation energy demands (energy consumed by employee and patron vehicles accessing the project site) and facilities energy demands (energy consumed by building operations and site maintenance activities).

Transportation Fuel Consumption

Using the CalEEMod output from the air quality and greenhouse gas analyses (Sections 2 and 3 of this report), it is assumed that an average trip for autos and light trucks was assumed to be 9.1 miles and 3- 4-axle trucks were assumed to travel an average of 27.3 miles.[39] In order to present a worst-case scenario, it was assumed that vehicles would operate 365 days per year. Table 19 shows the estimated annual fuel consumption for all classes of vehicles from autos to heavy-heavy trucks.[40]

The proposed project would generate 311 trips per day. The vehicle fleet mix was used from the CalEEMod output. Table 19 shows that an estimated 65,615 gallons of fuel would be consumed per year for the operation of the proposed project.

Trip generation and VMT generated by the proposed project are consistent with other similar commercial uses of similar scale and configuration as reflected respectively in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021). That is, the proposed project does not propose uses or operations that would inherently result in excessive and wasteful vehicle trips and VMT, nor associated excess and wasteful vehicle energy consumption. Furthermore, the state of California consumed approximately 4.2 billion gallons of diesel and 15.1 billion gallons of gasoline in 2015.[41,42] Therefore, the increase in fuel consumption from the proposed project is insignificant in comparison to the State's demand. Therefore, project transportation energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

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[39] CalEEMod default distance for W-O (work-other) is 9.1 miles and 27.3 miles for H-W (home-work).

[40] Average fuel economy based on aggregate mileage calculated in EMFAC 2021 for opening year (2023). See Appendix B for EMFAC output.

[41] https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-gasoline-data-facts-and-statistics

[42] https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/diesel-fuel-data-facts-and-statistics

Facility Energy Demands (Electricity and Natural Gas)

Building operation and site maintenance (including landscape maintenance) would result in the consumption of electricity and natural gas (provided by PG&E). The annual natural gas and electricity demands were provided per the CalEEMod output from the air quality and greenhouse gas analyses (Sections 2 and 3 of this report) and are provided in Table 20.

As shown in Table 20, the estimated electricity demand for the proposed project is approximately 0 kWh per year. In 2020, the non-residential sector of the County of Sacramento consumed approximately 5,902 million kWh of electricity.[43] In addition, the estimated natural gas consumption for the proposed project is approximately 0 kBTU per year. In 2020, the non-residential sector of the County of Sacramento consumed approximately 102 million therms of gas.[44] Therefore, the increase in both electricity and natural gas demand from the proposed project is insignificant compared to the County's 2020 non-residential sector demand.

Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building such as in plug-in appliances. In California, the California Building Standards Code Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting. Non-building energy use, or "plug-in" energy use can be further subdivided by specific end-use (refrigeration, cooking, appliances, etc.). The proposed project would be required to comply with Title 24 standards.

Furthermore, the proposed project energy demands in total would be comparable to other non-residential projects of similar scale and configuration. Therefore, the project facilities' energy demands and energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

RENEWABLE ENERGY AND ENERGY EFFICIENCY PLAN CONSISTENCY

Regarding federal transportation regulations, the project site is located in an already developed area. Access to/from the project site is from existing roads. These roads are already in place so the project would not interfere with, nor otherwise obstruct intermodal transportation plans.

Regarding the State's Energy Plan and compliance with Title 24 CCR energy efficiency standards, the applicant is required to comply with the California Green Building Standard Code requirements for energy efficient buildings and appliances as well as utility energy efficiency programs implemented by PG&E.

Regarding Pavley (AB 1493) regulations, an individual project does not have the ability to comply or conflict with these regulations because they are intended for agencies and their adoption of procedures and protocols for reporting and certifying GHG emission reductions from mobile sources.

Regarding the State's Renewable Energy Portfolio Standards, the project would be required to meet or exceed the energy standards established in the California Green Building Standards Code, Title 24, Part 11 (CALGreen). CALGreen Standards require that new buildings reduce water consumption, employ building commissioning to increase building system efficiencies, divert construction waste from landfills, and install low pollutant-emitting finish materials.

As shown in Section 3 above, with compliance with regulation and incorporation of sustainable design, the proposed project would be consistent with the goals of the CARB Scoping Plan and MTP/SCS.

[43] California Energy Commission, Electricity Consumption by County. https://ecdms.energy.ca.gov/elecbycounty.aspx

[44] California Energy Commission, Gas Consumption by County. http://ecdms.energy.ca.gov/gasbycounty.aspx

CONCLUSIONS

As supported by the preceding analyses, project construction and operations would not result in the inefficient, wasteful or unnecessary consumption of energy. The proposed project does not include any unusual project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities and is a commercial project that is not proposing any additional features that would require a larger energy demand than other commercial projects of similar scale and configuration. The energy demands of the project are anticipated to be accommodated within the context of available resources and energy delivery systems. The project would therefore not cause or result in the need for additional energy producing or transmission facilities. The project would not engage in wasteful or inefficient uses of energy and aims to achieve energy conservations goals within the State of California. Notwithstanding, the project proposes commercial uses and will not have any long-term effects on an energy provider's future energy development or future energy conservation strategies.

Table 12
Total Electricity System Power (California 2020)

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	Total Imports (GWh)	Percent of Imports	Total California Energy Mix (GWh)	Total California Power Mix
Coal	317	0.17%	194	6,963	7,157	8.76%	7,474	2.74%
Natural Gas	92,298	48.35%	70	8,654	8,724	10.68%	101,022	37.06%
Nuclear	16,280	8.53%	672	8,481	9,154	11.21%	25,434	9.33%
Oil	30	0.02%	-	-	0	0.00%	30	0.01%
Other (Petroleum Coke/Waste Heat)	384	0.20%	125	9	134	0.16%	518	0.19%
Large Hydro	17,938	9.40%	14,078	1,259	15,337	18.78%	33,275	12.21%
Unspecified Sources of Power	-	0.00%	12,870	1,745	14,615	17.90%	14,615	5.36%
Renewables	63,665	33.35%	13,184	13,359	26,543	32.50%	90,208	33.09%
Biomass	5,680	2.97%	975	25	1,000	1.22%	6,679	2.45%
Geothermal	11,345	5.94%	166	1,825	1,991	2.44%	13,336	4.89%
Small Hydro	3,476	1.82%	320	2	322	0.39%	3,798	1.39%
Solar	29,456	15.43%	284	6,312	6,596	8.08%	36,052	13.23%
Wind	13,708	7.18%	11,438	5,197	16,635	20.37%	30,343	11.13%
Total	190,913	100%	41,193	40,471	81,663	100%	272,576	100%

Notes:

(1) Source: California Energy Commission. 2020 Total System electric Generation. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2020-total-system-electric-generation

Table 13
PG&E 2020 Power Content Mix

Energy Resources	2020 PG&E Power Mix (Base Plan)
Eligible Renewable	30.6%
Biomass & Biowaste	*2.6%*
Geothermal	*2.6%*
Eligible Hydroelectric	*1.2%*
Solar	*15.9%*
Wind	*8.3%*
Coal	0.0%
Large Hydroelectric	10.1%
Natural Gas	16.4%
Nuclear	42.8%
Other	0.0%
Unspecified Sources of power*	0.0%
Total	100%

Notes:

(1) https://www.energy.ca.gov/filebrowser/download/3882

* Unspecified sources of power means electricity from transactions that are not traceable to specific generation sources.

Table 14
Project Construction Power Cost and Electricity Usage

Power Cost (per 1,000 square foot of building per month of construction)	Total Building Size (1,000 Square Foot)	Construction Duration (months)	Total Project Construction Power Cost
$2.37	8.730	9.5	$196.56

Cost per kWh	Total Project Construction Electricity Usage (kWh)
$0.33	604

*Assumes the project will be under the Commercial/General Service Rate (used the highest of the "Average" bundled Total Rates) under PG&E. https://www.pge.com/tariffs/electric.shtml#RESELEC_INCLUTOU

Table 15
Construction Equipment Fuel Consumption Estimates

Phase	Number of Days	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	HP hrs/day	Total Fuel Consumption (gal diesel fuel)[1]
Demolition	20	Rubber Tired Dozers	2	8	367	0.4	2,349	2,539
	20	Excavators	3	8	36	0.38	328	355
	20	Concrete/Industrial Saws	1	8	33	0.73	193	208
Grading	30	Graders	1	8	148	0.41	485	787
	30	Excavators	2	8	36	0.38	219	355
	30	Tractors/Loaders/Backhoes	2	8	84	0.37	497	806
	30	Scrapers	2	8	423	0.48	3,249	5,268
	30	Rubber Tired Dozers	1	8	367	0.4	1,174	1,904
Building Construction	150	Forklifts	3	8	82	0.2	394	3,191
	150	Generator Sets	1	8	14	0.74	83	672
	150	Cranes	1	7	367	0.29	745	6,041
	150	Welders	1	8	46	0.45	166	1,343
	150	Tractors/Loaders/Backhoes	3	7	84	0.37	653	5,292
Paving	20	Pavers	2	8	81	0.42	544	588
	20	Paving Equipment	2	8	89	0.36	513	554
	20	Rollers	2	8	36	0.38	219	237
Architectural Coating	20	Air Compressors	1	6	37	0.48	107	115
CONSTRUCTION FUEL DEMAND (gallons of diesel fuel)								30,257

Notes:

(1) Using Carl Moyer Guidelines Table D-21 Fuel consumption rate factors (bhp-hr/gal) for engines less than 750 hp.
(Source: https://www.arb.ca.gov/msprog/moyer/guidelines/2017gl/2017_gl_appendix_d.pdf)

Table 16
Construction Worker Fuel Consumption Estimates

Phase	Number of Days	Worker Trips/Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Demolition	20	15	14.3	4290	24.7	174
Grading	30	20	14.3	8,580	24.7	347
Building Construction	150	0	14.3	0	24.7	0
Paving	20	15	14.3	4,290	24.7	174
Architectural Coating	20	0	14.3	0	24.7	0
Total Construction Worker Fuel Consumption						694

Notes:

(1) Assumptions for the worker trip length and vehicle miles traveled are consistent with CalEEMod Version 2022.1 defaults.

(2) Per CalEEMod User's Guide Appendix C (April 2022), CalEEMod assumes that construction work trips are made by a fleet consisting of 25 percent light-duty auto (or passenger car), 50 percent light-duty truck type 1 (LDT1), and 25 percent light duty truck type 2 (LDT2).

Table 17
Construction Vendor Fuel Consumption Estimates (MHD & HHD Trucks)

Phase	Number of Days	Vendor Trips/Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Demolition	20	0	8.8	0	6.4	0
Grading	30	0	8.8	0	6.4	0
Building Construction	150	0	8.8	0	6.4	0
Paving	20	0	8.8	0	6.4	0
Architectural Coating	20	0	8.8	0	6.4	0
Total Construction Vendor Fuel Consumption						0

Notes:

(1) Assumptions for the vendor trip length and vehicle miles traveled are consistent with CalEEMod Version 2022.1 defaults.

(2) Per CalEEMod User's Guide Appendix C (April 2022), CalEEMod assumes vendor trips are made by a fleet consisting of 50 percent medium trucks (MHDT) and 50 percent heavy trucks (HHDT).

Table 18
Construction Hauling Fuel Consumption Estimates (HHD Trucks)

Phase	Number of Days	Total Hauling Trips	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Demolition	20	1.3	20	26	5.46	5
Grading	30	0	20	0	5.46	0
Building Construction	150	0	20	0	5.46	0
Paving	20	0	20	0	5.46	0
Architectural Coating	20	0	20	0	5.46	0
Total Construction Hauling Fuel Consumption						5

Notes:

(1) Assumptions for the hauling trip length and vehicle miles traveled are consistent with CalEEMod Version 2022.1 defaults.

(2) Per CalEEMod User's Guide Appendix C (April 2022), CalEEMod assumes hauling and onsite truck trips are made by a fleet consisting of 100 percent HHDT.

Table 19
Estimated Vehicle Operations Fuel Consumption

Vehicle Type	Vehicle Mix	Number of Vehicles	Average Trip (miles)[1]	Daily VMT	Average Fuel Economy (mpg)	Total Gallons per Day	Total Annual Fuel Consumption (gallons)
Light Auto	Automobile	152	9.1	1,383	30.02	46.08	16,818
Light Truck	Automobile	15	9.1	137	23.93	5.70	2,082
Light Truck	Automobile	67	9.1	610	23.09	26.41	9,638
Light Heavy Truck	2-Axle Truck	11	27.3	300	11.17	26.88	9,813
Light Heavy Truck 10,000 lbs +	2-Axle Truck	2	27.3	55	10.99	4.97	1,813
Motorcycle	Automobile	8	9.1	73	39.79	1.83	668
Medium Truck	Automobile	45	9.1	410	18.95	21.61	7,887
Motor Home	--	1	27.3	27	5.15	5.30	1,935
Medium Heavy Truck	3-Axle Truck	5	27.3	137	7.43	18.37	6,706
Other Bus	--	1	27.3	27	5.97	4.57	1,669
School Bus	--	1	27.3	27	8.37	3.26	1,191
Urban Bus	--	0	27.3	0	16.22	0.00	0
Heavy Heavy Truck	4-Axle Truck	3	27.3	82	5.54	14.78	5,396
Total		311	--	3,267	-	179.77	--
Total Annual Fuel Consumption							65,615

Notes:
(1) Based on the size of the site and relative location, trips were assumed to be local rather than regional.

Table 20
Project Annual Operational Energy Demand Summary

Natural Gas Demand	kBTU/year[1]
City Park[2]	0
Total	0

Electricity Demand	kWh/year[1]
City Park[2]	0
Total	0

Notes:

(1) Taken from the CalEEMod Version 2022.1 output (Appendix B of this report).

(2) The proposed project is an RV Resort; however, CalEEMod does not have an RV Resort land use in it's database; therefore, the next closest land use, City Park, was utilized for modeling purposes.

5. EMISSIONS REDUCTION MEASURES

Construction Measures

The following basic construction emission control practices (BCECPs) are required by SMAQMD.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.

- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.

- Use wet power vacuum street sweepers to remove any visible track out mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.

- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).

- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used. Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.

- Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation [California Code of Regulations, Title 13, sections 2449 and 2449.1]. For more information contact CARB at 877-593-6677, doors@arb.ca.gov, or www.arb.ca.gov/doors/compliance_cert1.html.

- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated

Furthermore, in addition to the required BCECPs the following fugitive dust control practices [best management practices (BMPs)] are to be implemented during project construction.

- Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 mph.

- Plant vegetative ground cover (fast-germinating native grass seed) in disturbed areas as soon as possible. Water appropriately until vegetation is established.

Operational Measures

The following best management practices (BMPs) are required by SMAQMD.

BMP 1. No natural gas: projects shall be designed and constructed without natural gas infrastructure.

BMP 2. Electric vehicle (EV) ready: projects shall meet the current CALGreen Tier 2 standards, except all EV capable spaces shall be instead EV ready.

6. REFERENCES

California Air Resources Board

2008 Resolution 08-43

2008 Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act

2008 Climate Change Scoping Plan, a framework for change.

2011 Supplement to the AB 32 Scoping Plan Functional Equivalent Document

2013 Almanac of Emissions and Air Quality.
Source: https://www.arb.ca.gov/aqd/almanac/almanac13/almanac13.htm

2014 First Update to the Climate Change Scoping Plan, Building on the Framework Pursuant to AB32, the California Global Warming Solutions Act of 2006. May.

2017 California's 2017 Climate Change Scoping Plan. November.

2022 Historical Air Quality, Top 4 Summary

City of Isleton

2000 Comprehensive General Plan & Environmental Impact Report for the City of Isleton. October.

Ganddini Group, Inc.

2022 Meadows of Isleton RV Resort Traffic and Vehicle Miles Traveled Assessment. August.

Governor's Office of Planning and Research

2008 CEQA and Climate: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review

2018 CEQA Guideline Sections to be Added or Amended

Intergovernmental Panel on Climate Change (IPCC)

2014 IPCC Fifth Assessment Report, Climate Change 2014: Synthesis Report

Sacramento Metropolitan Air Quality Management District

2009 Guide to Air Quality Assessment in Sacramento County (CEQA Guide). December.

Sacramento Area Council of Governments (SACOG)

2019 2020 Metropolitan Transportation Plan Sustainable Communities Strategy (MTP/SCS. November 18.

U.S. Environmental Protection Agency (EPA)

2017 Understanding Global Warming Potentials
(Source: https://www.epa.gov/ghgemissions/understanding-global-warming-potentials)

U.S. Geological Survey

2011 Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California

APPENDICES

APPENDIX A

GLOSSARY

AQMP	Air Quality Management Plan
BACT	Best Available Control Technologies
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCAR	California Climate Action Registry
CEQA	California Environmental Quality Act
CFCs	Chlorofluorocarbons
CH_4	Methane
CNG	Compressed natural gas
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DPM	Diesel particulate matter
EPA	U.S. Environmental Protection Agency
GHG	Greenhouse gas
GWP	Global warming potential
HIDPM	Hazard Index Diesel Particulate Matter
HFCs	Hydrofluorocarbons
IPCC	International Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LST	Localized Significant Thresholds
$MTCO_2e$	Metric tons of carbon dioxide equivalent
$MMTCO_2e$	Million metric tons of carbon dioxide equivalent
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NOx	Nitrogen Oxides
NO_2	Nitrogen dioxide
N_2O	Nitrous oxide
O_3	Ozone
OPR	Governor's Office of Planning and Research
PFCs	Perfluorocarbons
PM	Particle matter
PM10	Particles that are less than 10 micrometers in diameter
PM2.5	Particles that are less than 2.5 micrometers in diameter
PMI	Point of maximum impact
PPM	Parts per million
PPB	Parts per billion
RTIP	Regional Transportation Improvement Plan
RTP	Regional Transportation Plan
SANBAG	San Bernardino Association of Governments
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SSAB	Salton Sea Air Basin
SF_6	Sulfur hexafluoride
SIP	State Implementation Plan
SOx	Sulfur Oxides
TAC	Toxic air contaminants
VOC	Volatile organic compounds

Appendix B

CalEEMod Model Detailed Report & EMFAC Data

19542 Meadows of Isleton RV Resort Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	19542 Meadows of Isleton RV Resort
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	5.70
Precipitation (days)	20.6
Location	38.15856893480944, -121.61806285272806
County	Sacramento
City	Isleton
Air District	Sacramento Metropolitan AQMD
Air Basin	Sacramento Valley
TAZ	715
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
City Park	9.83	Acre	9.83	0.00	4.20	0.00	—	—
Other Asphalt Surfaces	3.90	Acre	3.90	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-12	Sweep Paved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.80	10.0	20.9	25.4	0.04	1.00	0.15	1.15	0.92	0.04	0.96	—	4,219	4,219	0.17	0.04	0.77	4,236
Mit.	2.80	10.0	20.9	25.4	0.04	1.00	0.15	1.15	0.92	0.04	0.96	—	4,219	4,219	0.17	0.04	0.77	4,236
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.78	4.02	40.6	33.4	0.06	1.75	3.79	5.54	1.61	1.47	3.09	—	6,807	6,807	0.28	0.06	0.03	6,833
Mit.	4.78	4.02	40.6	33.4	0.06	1.75	3.79	5.54	1.61	1.47	3.09	—	6,807	6,807	0.28	0.06	0.03	6,833
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.78	1.07	6.08	6.70	0.01	0.28	0.25	0.43	0.26	0.10	0.29	—	1,218	1,218	0.05	0.01	0.05	1,222
Mit.	0.78	1.07	6.08	6.70	0.01	0.28	0.25	0.43	0.26	0.10	0.29	—	1,218	1,218	0.05	0.01	0.05	1,222

% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.14	0.20	1.11	1.22	< 0.005	0.05	0.05	0.08	0.05	0.02	0.05	—	202	202	0.01	< 0.005	0.01	202
Mit.	0.14	0.20	1.11	1.22	< 0.005	0.05	0.05	0.08	0.05	0.02	0.05	—	202	202	0.01	< 0.005	0.01	202
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	2.80	10.0	20.9	25.4	0.04	1.00	0.15	1.15	0.92	0.04	0.96	—	4,219	4,219	0.17	0.04	0.77	4,236
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2022	4.78	4.02	40.6	33.4	0.06	1.75	3.79	5.54	1.61	1.47	3.09	—	6,807	6,807	0.28	0.06	0.03	6,832
2023	4.52	3.80	37.4	32.4	0.06	1.59	3.79	5.39	1.47	1.47	2.94	—	6,807	6,807	0.27	0.06	0.03	6,833
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2022	0.50	0.42	4.18	3.48	0.01	0.18	0.25	0.43	0.17	0.10	0.26	—	629	629	0.03	0.01	0.05	631
2023	0.78	1.07	6.08	6.70	0.01	0.28	0.08	0.37	0.26	0.03	0.29	—	1,218	1,218	0.05	0.01	0.03	1,222
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2022	0.09	0.08	0.76	0.63	< 0.005	0.03	0.05	0.08	0.03	0.02	0.05	—	104	104	< 0.005	< 0.005	0.01	105
2023	0.14	0.20	1.11	1.22	< 0.005	0.05	0.02	0.07	0.05	0.01	0.05	—	202	202	0.01	< 0.005	< 0.005	202

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	2.80	10.0	20.9	25.4	0.04	1.00	0.15	1.15	0.92	0.04	0.96	—	4,219	4,219	0.17	0.04	0.77	4,236
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2022	4.78	4.02	40.6	33.4	0.06	1.75	3.79	5.54	1.61	1.47	3.09	—	6,807	6,807	0.28	0.06	0.03	6,832
2023	4.52	3.80	37.4	32.4	0.06	1.59	3.79	5.39	1.47	1.47	2.94	—	6,807	6,807	0.27	0.06	0.03	6,833
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2022	0.50	0.42	4.18	3.48	0.01	0.18	0.25	0.43	0.17	0.10	0.26	—	629	629	0.03	0.01	0.05	631
2023	0.78	1.07	6.08	6.70	0.01	0.28	0.08	0.37	0.26	0.03	0.29	—	1,218	1,218	0.05	0.01	0.03	1,222
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2022	0.09	0.08	0.76	0.63	< 0.005	0.03	0.05	0.08	0.03	0.02	0.05	—	104	104	< 0.005	< 0.005	0.01	105
2023	0.14	0.20	1.11	1.22	< 0.005	0.05	0.02	0.07	0.05	0.01	0.05	—	202	202	0.01	< 0.005	< 0.005	202

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.94	1.99	2.06	19.5	0.04	0.03	1.23	1.26	0.03	0.22	0.25	0.46	4,040	4,040	0.21	0.16	17.3	4,111
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.77	1.81	2.44	15.9	0.04	0.03	1.23	1.26	0.03	0.22	0.25	0.46	3,685	3,686	0.23	0.18	0.45	3,745

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.76	1.81	2.28	15.9	0.04	0.03	1.23	1.26	0.03	0.22	0.25	0.46	3,759	3,759	0.22	0.17	7.45	3,823
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.32	0.33	0.42	2.89	0.01	0.01	0.22	0.23	0.01	0.04	0.05	0.08	622	622	0.04	0.03	1.23	633

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.94	1.75	2.06	19.5	0.04	0.03	1.23	1.26	0.03	0.22	0.25	—	4,040	4,040	0.17	0.16	17.3	4,109
Area	0.00	0.24	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Waste	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	1.94	1.99	2.06	19.5	0.04	0.03	1.23	1.26	0.03	0.22	0.25	0.46	4,040	4,040	0.21	0.16	17.3	4,111
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.77	1.57	2.44	15.9	0.04	0.03	1.23	1.26	0.03	0.22	0.25	—	3,685	3,685	0.18	0.18	0.45	3,744
Area	—	0.24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Waste	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00

Total	1.77	1.81	2.44	15.9	0.04	0.03	1.23	1.26	0.03	0.22	0.25	0.46	3,685	3,686	0.23	0.18	0.45	3,745
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.76	1.57	2.28	15.9	0.04	0.03	1.23	1.26	0.03	0.22	0.25	—	3,759	3,759	0.17	0.17	7.45	3,821
Area	0.00	0.24	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Waste	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	1.76	1.81	2.28	15.9	0.04	0.03	1.23	1.26	0.03	0.22	0.25	0.46	3,759	3,759	0.22	0.17	7.45	3,823
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.32	0.29	0.42	2.89	0.01	0.01	0.22	0.23	0.01	0.04	0.05	—	622	622	0.03	0.03	1.23	633
Area	0.00	0.04	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Waste	—	—	—	—	—	—	—	—	—	—	—	0.08	0.00	0.08	0.01	0.00	—	0.26
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	0.32	0.33	0.42	2.89	0.01	0.01	0.22	0.23	0.01	0.04	0.05	0.08	622	622	0.04	0.03	1.23	633

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.94	1.75	2.06	19.5	0.04	0.03	1.23	1.26	0.03	0.22	0.25	—	4,040	4,040	0.17	0.16	17.3	4,109
Area	0.00	0.24	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

Water	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Waste	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	1.94	1.99	2.06	19.5	0.04	0.03	1.23	1.26	0.03	0.22	0.25	0.46	4,040	4,040	0.21	0.16	17.3	4,111
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.77	1.57	2.44	15.9	0.04	0.03	1.23	1.26	0.03	0.22	0.25	—	3,685	3,685	0.18	0.18	0.45	3,744
Area	—	0.24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Waste	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	1.77	1.81	2.44	15.9	0.04	0.03	1.23	1.26	0.03	0.22	0.25	0.46	3,685	3,686	0.23	0.18	0.45	3,745
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.76	1.57	2.28	15.9	0.04	0.03	1.23	1.26	0.03	0.22	0.25	—	3,759	3,759	0.17	0.17	7.45	3,821
Area	0.00	0.24	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Waste	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	1.76	1.81	2.28	15.9	0.04	0.03	1.23	1.26	0.03	0.22	0.25	0.46	3,759	3,759	0.22	0.17	7.45	3,823
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.32	0.29	0.42	2.89	0.01	0.01	0.22	0.23	0.01	0.04	0.05	—	622	622	0.03	0.03	1.23	633
Area	0.00	0.04	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Waste	—	—	—	—	—	—	—	—	—	—	—	0.08	0.00	0.08	0.01	0.00	—	0.26

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	0.32	0.33	0.42	2.89	0.01	0.01	0.22	0.23	0.01	0.04	0.05	0.08	622	622	0.04	0.03	1.23	633

3. Construction Emissions Details

3.1. Demolition (2022) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.59	3.02	29.6	24.3	0.03	1.31	—	1.31	1.21	—	1.21	—	3,422	3,422	0.14	0.03	—	3,434
Demolition	—	—	—	—	—	—	0.08	0.08	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	0.17	1.62	1.33	< 0.005	0.07	—	0.07	0.07	—	0.07	—	187	187	0.01	< 0.005	—	188
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.30	0.24	< 0.005	0.01	—	0.01	0.01	—	0.01	—	31.0	31.0	< 0.005	< 0.005	—	31.1

Demolitio	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.06	0.08	0.83	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	160	160	0.01	0.01	0.02	162
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.23	0.07	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	102	102	0.01	0.02	0.01	107
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	8.99	8.99	< 0.005	< 0.005	0.02	9.12
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.57	5.57	< 0.005	< 0.005	< 0.005	5.86
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	1.49	1.49	< 0.005	< 0.005	< 0.005	1.51
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.92	0.92	< 0.005	< 0.005	< 0.005	0.97

3.2. Demolition (2022) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.59	3.02	29.6	24.3	0.03	1.31	—	1.31	1.21	—	1.21	—	3,422	3,422	0.14	0.03	—	3,434
Demolition	—	—	—	—	—	—	0.08	0.08	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	0.17	1.62	1.33	< 0.005	0.07	—	0.07	0.07	—	0.07	—	187	187	0.01	< 0.005	—	188
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.30	0.24	< 0.005	0.01	—	0.01	0.01	—	0.01	—	31.0	31.0	< 0.005	< 0.005	—	31.1
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.06	0.08	0.83	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	160	160	0.01	0.01	0.02	162
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.01	< 0.005	0.23	0.07	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	102	102	0.01	0.02	0.01	107
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	8.99	8.99	< 0.005	< 0.005	0.02	9.12
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.57	5.57	< 0.005	< 0.005	< 0.005	5.86
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	1.49	1.49	< 0.005	< 0.005	< 0.005	1.51
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.92	0.92	< 0.005	< 0.005	< 0.005	0.97

3.3. Grading (2022) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.68	3.93	40.5	32.3	0.06	1.75	—	1.75	1.61	—	1.61	—	6,594	6,594	0.27	0.05	—	6,616
Dust From Material Movement	—	—	—	—	—	—	3.59	3.59	—	1.42	1.42	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.29	0.25	2.54	2.02	< 0.005	0.11	—	0.11	0.10	—	0.10	—	413	413	0.02	< 0.005	—	414
Dust From Material Movement	—	—	—	—	—	—	0.22	0.22	—	0.09	0.09	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.46	0.37	< 0.005	0.02	—	0.02	0.02	—	0.02	—	68.4	68.4	< 0.005	< 0.005	—	68.6
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.08	0.10	1.11	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	213	213	0.01	0.01	0.03	216
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	13.7	13.7	< 0.005	< 0.005	0.03	13.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	2.27	2.27	< 0.005	< 0.005	< 0.005	2.30
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.4. Grading (2022) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.68	3.93	40.5	32.3	0.06	1.75	—	1.75	1.61	—	1.61	—	6,594	6,594	0.27	0.05	—	6,616
Dust From Material Movement	—	—	—	—	—	—	3.59	3.59	—	1.42	1.42	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	0.25	2.54	2.02	< 0.005	0.11	—	0.11	0.10	—	0.10	—	413	413	0.02	< 0.005	—	414
Dust From Material Movement	—	—	—	—	—	—	0.22	0.22	—	0.09	0.09	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.05	0.04	0.46	0.37	< 0.005	0.02	—	0.02	0.02	—	0.02	—	68.4	68.4	< 0.005	< 0.005	—	68.6
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.08	0.10	1.11	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	213	213	0.01	0.01	0.03	216
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	13.7	13.7	< 0.005	< 0.005	0.03	13.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	2.27	2.27	< 0.005	< 0.005	< 0.005	2.30
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.43	3.72	37.3	31.4	0.06	1.59	—	1.59	1.47	—	1.47	—	6,598	6,598	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	3.59	3.59	—	1.42	1.42	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.73	0.61	< 0.005	0.03	—	0.03	0.03	—	0.03	—	129	129	0.01	< 0.005	—	130
Dust From Material Movement	—	—	—	—	—	—	0.07	0.07	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.13	0.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	21.4	21.4	< 0.005	< 0.005	—	21.5
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.10	1.03	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	209	209	0.01	0.01	0.03	212
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	4.20	4.20	< 0.005	< 0.005	0.01	4.26
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.70	0.70	< 0.005	< 0.005	< 0.005	0.71
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.6. Grading (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.43	3.72	37.3	31.4	0.06	1.59	—	1.59	1.47	—	1.47	—	6,598	6,598	0.27	0.05	—	6,621

Dust From Material Movemen	—	—	—	—	—	—	3.59	3.59	—	1.42	1.42	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.73	0.61	< 0.005	0.03	—	0.03	0.03	—	0.03	—	129	129	0.01	< 0.005	—	130
Dust From Material Movemen	—	—	—	—	—	—	0.07	0.07	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.13	0.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	21.4	21.4	< 0.005	< 0.005	—	21.5
Dust From Material Movemen	—	—	—	—	—	—	0.01	0.01	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.10	1.03	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	209	209	0.01	0.01	0.03	212
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	4.20	4.20	< 0.005	< 0.005	0.01	4.26
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.70	0.70	< 0.005	< 0.005	< 0.005	0.71
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.50	1.26	11.8	13.2	0.02	0.55	—	0.55	0.51	—	0.51	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.50	1.26	11.8	13.2	0.02	0.55	—	0.55	0.51	—	0.51	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.62	0.52	4.85	5.41	0.01	0.23	—	0.23	0.21	—	0.21	—	985	985	0.04	0.01	—	989
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.89	0.99	< 0.005	0.04	—	0.04	0.04	—	0.04	—	163	163	0.01	< 0.005	—	164
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.8. Building Construction (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.50	1.26	11.8	13.2	0.02	0.55	—	0.55	0.51	—	0.51	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.50	1.26	11.8	13.2	0.02	0.55	—	0.55	0.51	—	0.51	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	0.52	4.85	5.41	0.01	0.23	—	0.23	0.21	—	0.21	—	985	985	0.04	0.01	—	989
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.89	0.99	< 0.005	0.04	—	0.04	0.04	—	0.04	—	163	163	0.01	< 0.005	—	164
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Paving (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.04	0.88	8.06	10.0	0.01	0.41	—	0.41	0.38	—	0.38	—	1,512	1,512	0.06	0.01	—	1,517
Paving	—	0.51	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.44	0.55	< 0.005	0.02	—	0.02	0.02	—	0.02	—	82.8	82.8	< 0.005	< 0.005	—	83.1
Paving	—	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.7	13.7	< 0.005	< 0.005	—	13.8
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	1.05	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	177	177	0.01	0.01	0.77	180
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	8.83	8.83	< 0.005	< 0.005	0.02	8.95
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	1.46	1.46	< 0.005	< 0.005	< 0.005	1.48
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.10. Paving (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.04	0.88	8.06	10.0	0.01	0.41	—	0.41	0.38	—	0.38	—	1,512	1,512	0.06	0.01	—	1,517
Paving	—	0.51	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.44	0.55	< 0.005	0.02	—	0.02	0.02	—	0.02	—	82.8	82.8	< 0.005	< 0.005	—	83.1
Paving	—	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.7	13.7	< 0.005	< 0.005	—	13.8
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	1.05	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	177	177	0.01	0.01	0.77	180
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	8.83	8.83	< 0.005	< 0.005	0.02	8.95
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	1.46	1.46	< 0.005	< 0.005	< 0.005	1.48
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Architectural Coating (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	0.93	1.15	< 0.005	0.04	—	0.04	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	7.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.32	7.32	< 0.005	< 0.005	—	7.34
Architectural Coatings	—	0.39	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.21	1.21	< 0.005	< 0.005	—	1.22
Architectural Coatings	—	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.12. Architectural Coating (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	0.93	1.15	< 0.005	0.04	—	0.04	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	7.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.32	7.32	< 0.005	< 0.005	—	7.34
Architectural Coatings	—	0.39	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.21	1.21	< 0.005	< 0.005	—	1.22
Architectural Coatings	—	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	1.94	1.75	2.06	19.5	0.04	0.03	0.21	0.24	0.03	0.07	0.09	—	4,040	4,040	0.17	0.16	17.3	4,109
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.94	1.75	2.06	19.5	0.04	0.03	0.21	0.24	0.03	0.07	0.09	—	4,040	4,040	0.17	0.16	17.3	4,109
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	1.77	1.57	2.44	15.9	0.04	0.03	0.21	0.24	0.03	0.07	0.09	—	3,685	3,685	0.18	0.18	0.45	3,744
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.77	1.57	2.44	15.9	0.04	0.03	0.21	0.24	0.03	0.07	0.09	—	3,685	3,685	0.18	0.18	0.45	3,744

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.32	0.29	0.42	2.89	0.01	0.01	0.04	0.04	0.01	0.01	0.02	—	622	622	0.03	0.03	1.23	633
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.32	0.29	0.42	2.89	0.01	0.01	0.04	0.04	0.01	0.01	0.02	—	622	622	0.03	0.03	1.23	633

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	1.94	1.75	2.06	19.5	0.04	0.03	0.21	0.24	0.03	0.07	0.09	—	4,040	4,040	0.17	0.16	17.3	4,109
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.94	1.75	2.06	19.5	0.04	0.03	0.21	0.24	0.03	0.07	0.09	—	4,040	4,040	0.17	0.16	17.3	4,109
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	1.77	1.57	2.44	15.9	0.04	0.03	0.21	0.24	0.03	0.07	0.09	—	3,685	3,685	0.18	0.18	0.45	3,744
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.77	1.57	2.44	15.9	0.04	0.03	0.21	0.24	0.03	0.07	0.09	—	3,685	3,685	0.18	0.18	0.45	3,744
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.32	0.29	0.42	2.89	0.01	0.01	0.04	0.04	0.01	0.01	0.02	—	622	622	0.03	0.03	1.23	633
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Total	0.32	0.29	0.42	2.89	0.01	0.01	0.04	0.04	0.01	0.01	0.02	—	622	622	0.03	0.03	1.23	633

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	7.21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landsca Equipment	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	7.41	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consum er Products	—	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architect ural Coatings	—	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architect ural Coatings	—	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consum er Products	—	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landsca pe Equipme nt	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.12	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural Coatings	—	7.21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	7.41	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.12	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005

4.4.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.08	0.00	0.08	0.01	0.00	—	0.26
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.08	0.00	0.08	0.01	0.00	—	0.26

4.5.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.46	0.00	0.46	0.05	0.00	—	1.59
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.08	0.00	0.08	0.01	0.00	—	0.26
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.08	0.00	0.08	0.01	0.00	—	0.26

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Remove	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	11/1/2022	11/29/2022	5.00	20.0	Demo of ~4 exisitng barns/sheds totaling ~2,250 sf demo.

Grading	Grading	11/30/2022	1/10/2023	5.00	30.0	—
Building Construction	Building Construction	1/11/2023	8/8/2023	5.00	150	—
Paving	Paving	7/5/2023	8/1/2023	5.00	20.0	—
Architectural Coating	Architectural Coating	7/19/2023	8/15/2023	5.00	20.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38

Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	14.3	LDA,LDT1,LDT2
Demolition	Vendor	—	8.80	HHDT,MHDT
Demolition	Hauling	1.30	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	—	8.80	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	0.00	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	—	8.80	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.00	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	14.3	LDA,LDT1,LDT2
Demolition	Vendor	—	8.80	HHDT,MHDT
Demolition	Hauling	1.30	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	—	8.80	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	0.00	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	—	8.80	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.00	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	20,740	6,913	10,193

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	2,250	—
Grading	0.00	0.00	90.0	0.00	—
Paving	0.00	0.00	0.00	0.00	3.90

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
City Park	0.00	0%
Other Asphalt Surfaces	3.90	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2022	0.00	204	0.03	< 0.005
2023	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
City Park	311	311	311	113,523	4,390	4,390	4,390	1,602,373
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
City Park	311	311	311	113,523	4,390	4,390	4,390	1,602,373
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	20,740	6,913	10,193

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
City Park	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
City Park	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
City Park	0.00	58.7
Other Asphalt Surfaces	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
City Park	0.00	58.7
Other Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
City Park	0.85	0.00
Other Asphalt Surfaces	0.00	0.00

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
City Park	0.85	0.00
Other Asphalt Surfaces	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	22.6	annual days of extreme heat
Extreme Precipitation	2.60	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	0	0	N/A
Extreme Precipitation	1	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack	N/A	N/A	N/A	N/A
Air Quality	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	1	1	3
Extreme Precipitation	1	1	1	2
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack	N/A	N/A	N/A	N/A

Air Quality	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	37.8
AQ-PM	20.3
AQ-DPM	16.3
Drinking Water	71.9
Lead Risk Housing	47.7
Pesticides	77.6
Toxic Releases	34.7
Traffic	25.7
Effect Indicators	—
CleanUp Sites	2.59
Groundwater	77.5
Haz Waste Facilities/Generators	50.1
Impaired Water Bodies	91.9
Solid Waste	35.7

Sensitive Population	—
Asthma	49.1
Cardio-vascular	68.3
Low Birth Weights	23.1
Socioeconomic Factor Indicators	—
Education	53.4
Housing	64.8
Linguistic	20.6
Poverty	66.3
Unemployment	73.4

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	28.32028744
Employed	8.571795201
Education	—
Bachelor's or higher	23.67509303
High school enrollment	100
Preschool enrollment	1.873476197
Transportation	—
Auto Access	59.70742974
Active commuting	77.19748492
Social	—
2-parent households	79.69973053
Voting	76.63287566

Neighborhood	—
Alcohol availability	42.64083152
Park access	7.211600154
Retail density	3.002694726
Supermarket access	11.29218529
Tree canopy	66.14910817
Housing	—
Homeownership	70.80713461
Housing habitability	43.47491338
Low-inc homeowner severe housing cost burden	24.72731939
Low-inc renter severe housing cost burden	40.31823431
Uncrowded housing	57.46182471
Health Outcomes	—
Insured adults	43.11561658
Arthritis	0.0
Asthma ER Admissions	63.9
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	9.0
Cognitively Disabled	7.9
Physically Disabled	3.6
Heart Attack ER Admissions	54.8
Mental Health Not Good	0.0

Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	94.3
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	92.2
Elderly	4.1
English Speaking	58.3
Foreign-born	22.7
Outdoor Workers	7.3
Climate Change Adaptive Capacity	—
Impervious Surface Cover	88.6
Traffic Density	31.3
Traffic Access	23.0
Other Indices	—
Hardship	67.7
Other Decision Support	—
2016 Voting	70.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	57.0
Healthy Places Index Score for Project Location (b)	28.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health and Equity Evaluation Scorecard not completed.

8. User Changes to Default Data

Screen	Justification
Land Use	~13.73 ac site: RV resort w/ 135 total guest sites [121 total RV sites & 14 tiny home cabins (~320 sf per cabin)], 1TSF shop, & 3.25TSF lodge (total bldgs = 8.73TSF - entered as rec bldg sf) & ~18,900 sy (~3.9ac) of paving (includes on-site roads/driveways, parking etc.). ~9.83 ac after reduction paving & assumed ~30% total site landscaping = 4.2 ac.
Construction: Construction Phases	Construction anticipated to begin early November 2022 & be completed by mid-August 2023. Demo of ~4 existing barns/sheds totaling ~2,250 sf (per GE imagery). CalEEMod default timing for building construction reduced by ~50%; however, only ~8,730 sf of buildings to be constructed. No changes were made to default equipment list for building construction.
Construction: Off-Road Equipment	CalEEMod default timing for building construction reduced by ~50%; however, only ~8,730 sf of buildings to be constructed. No changes were made to default equipment list for building construciton.
Operations: Vehicle Data	Per Traffic Study, 311 total trips at 2.7 trips/occupied guest space/day. To enter into CalEEMod rate converted to 311 trips/9.83 ac (acreage under City Park use) = 31.64 trips/ac/day.

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: Air District
Region: Sacramento Metropolitan AQMD
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Trips	Energy Consumption	Fuel Consumption	Fuel Consumption	Total Fuel Consumption	Total VMT	Total VMT	Miles Per Gallon	Vehicle Class
Sacramento Metropolitan AQMD	2022	HHDT	Aggregate	Aggregate	Gasoline	15.8395157	316.9170301	0	0.103342187	103.342187	169158.7596	320.4438886	923697.4368	**5.46**	**HHDT**
Sacramento Metropolitan AQMD	2022	HHDT	Aggregate	Aggregate	Diesel	9211.064996	98718.37699	0	159.5015533	159501.5533		879652.7329			
Sacramento Metropolitan AQMD	2022	HHDT	Aggregate	Aggregate	Natural Gas	660.1289342	3658.986279	0	9.553864063	9553.864063		43724.26005			
Sacramento Metropolitan AQMD	2022	LDA	Aggregate	Aggregate	Gasoline	498280.3185	2295902.336	0	643.5477493	643547.7493	653007.9907	17917435.6	19050176.42	**29.17**	**LDA**
Sacramento Metropolitan AQMD	2022	LDA	Aggregate	Aggregate	Diesel	1868.860029	7932.425719	0	1.262461784	1262.461784		53308.72144			
Sacramento Metropolitan AQMD	2022	LDA	Aggregate	Aggregate	Electricity	14583.21322	73218.89907	246769.317	0	0		639162.0831			
Sacramento Metropolitan AQMD	2022	LDA	Aggregate	Aggregate	Plug-in Hybrid	9892.133379	40903.97152	63575.6885	8.197779648	8197.779648		440270.0109			
Sacramento Metropolitan AQMD	2022	LDT1	Aggregate	Aggregate	Gasoline	53385.04527	234015.9091	0	71.19484196	71194.84196	71219.44262	1674043.998	1679010.336	**23.58**	**LDT1**
Sacramento Metropolitan AQMD	2022	LDT1	Aggregate	Aggregate	Diesel	24.93074253	74.48618894	0	0.010596697	10.596697		251.5706201			
Sacramento Metropolitan AQMD	2022	LDT1	Aggregate	Aggregate	Electricity	119.0603631	543.0985237	1506.219967	0	0		3901.290094			
Sacramento Metropolitan AQMD	2022	LDT1	Aggregate	Aggregate	Plug-in Hybrid	16.3753316	67.71199618	127.5683529	0.014003967	14.003967		813.4767866			
Sacramento Metropolitan AQMD	2022	LDT2	Aggregate	Aggregate	Gasoline	223889.1265	1039827.381	0	367.1506738	367150.6738	368736.0649	8219931.936	8303100.147	**22.52**	**LDT2**
Sacramento Metropolitan AQMD	2022	LDT2	Aggregate	Aggregate	Diesel	643.2108397	3071.967139	0	0.820903148	820.903148		25654.72061			
Sacramento Metropolitan AQMD	2022	LDT2	Aggregate	Aggregate	Electricity	406.5474969	2093.367302	5733.028344	0	0		14849.22997			
Sacramento Metropolitan AQMD	2022	LDT2	Aggregate	Aggregate	Plug-in Hybrid	887.6919946	3670.606398	6455.969768	0.764487958	764.487958		42664.26072			
Sacramento Metropolitan AQMD	2022	LHDT1	Aggregate	Aggregate	Gasoline	22657.6428	337565.1178	0	88.01829826	88018.29826	121529.8768	809635.6199	1341512.999	**11.04**	**LHDT1**
Sacramento Metropolitan AQMD	2022	LHDT1	Aggregate	Aggregate	Diesel	14920.58302	187682.1642	0	33.51157857	33511.57857		531877.3793			
Sacramento Metropolitan AQMD	2022	LHDT2	Aggregate	Aggregate	Gasoline	3110.113028	46336.05005	0	13.65366167	13653.66167	29278.61855	114469.261	317884.4968	**10.86**	**LHDT2**
Sacramento Metropolitan AQMD	2022	LHDT2	Aggregate	Aggregate	Diesel	5309.141632	66782.32283	0	15.62495688	15624.95688		203415.2358			
Sacramento Metropolitan AQMD	2022	MCY	Aggregate	Aggregate	Gasoline	26436.97466	52873.94932	0	3.621922666	3621.922666	3621.922666	143381.5512	143381.5512	**39.59**	**MCY**
Sacramento Metropolitan AQMD	2022	MDV	Aggregate	Aggregate	Gasoline	152620.7941	694373.2397	0	283.4881146	283488.1146	288070.6107	5185225.615	5326121.096	**18.49**	**MDV**
Sacramento Metropolitan AQMD	2022	MDV	Aggregate	Aggregate	Diesel	2494.887544	11860.78061	0	4.047686115	4047.686115		97017.11215			
Sacramento Metropolitan AQMD	2022	MDV	Aggregate	Aggregate	Electricity	423.6343502	2177.305295	5941.526054	0	0		15389.26401			
Sacramento Metropolitan AQMD	2022	MDV	Aggregate	Aggregate	Plug-in Hybrid	625.4154059	2586.092703	4159.156292	0.534809997	534.809997		28489.10515			
Sacramento Metropolitan AQMD	2022	MH	Aggregate	Aggregate	Gasoline	3202.750927	320.4032027	0	6.433644612	6433.644612	7492.82713	28371.38493	38335.56151	**5.12**	**MH**
Sacramento Metropolitan AQMD	2022	MH	Aggregate	Aggregate	Diesel	1099.118698	109.9118698	0	1.059182518	1059.182518		9964.176577			
Sacramento Metropolitan AQMD	2022	MHDT	Aggregate	Aggregate	Gasoline	2330.961606	46637.87981	0	23.95641811	23956.41811	101136.5364	108260.9139	741592.7997	**7.33**	**MHDT**
Sacramento Metropolitan AQMD	2022	MHDT	Aggregate	Aggregate	Diesel	14238.79442	144580.0278	0	75.50432395	75504.32395		621889.2205			
Sacramento Metropolitan AQMD	2022	MHDT	Aggregate	Aggregate	Natural Gas	225.5693724	1266.365789	0	1.67579429	1675.79429		11442.66527			
Sacramento Metropolitan AQMD	2022	OBUS	Aggregate	Aggregate	Gasoline	613.4980083	12274.86815	0	5.964508307	5964.508307	11502.20034	27746.98721	67810.63403	**5.90**	**OBUS**
Sacramento Metropolitan AQMD	2022	OBUS	Aggregate	Aggregate	Diesel	536.7408315	6028.662046	0	5.090966662	5090.966662		36779.92992			
Sacramento Metropolitan AQMD	2022	OBUS	Aggregate	Aggregate	Natural Gas	55.39255623	492.9937504	0	0.446725375	446.725375		3283.716895			
Sacramento Metropolitan AQMD	2022	SBUS	Aggregate	Aggregate	Gasoline	118.9085216	475.6340865	0	0.618948586	618.948586	3403.380554	6125.679483	28336.56764	**8.33**	**SBUS**
Sacramento Metropolitan AQMD	2022	SBUS	Aggregate	Aggregate	Diesel	966.2091657	13990.70872	0	2.708826489	2708.826489		21756.04649			
Sacramento Metropolitan AQMD	2022	SBUS	Aggregate	Aggregate	Natural Gas	16.99806936	246.1320443	0	0.075605479	75.605479		454.8416678			
Sacramento Metropolitan AQMD	2022	UBUS	Aggregate	Aggregate	Gasoline	169.4788394	677.9153574	0	2.736427313	2736.427313	8548.167945	12856.65656	44384.88691	**5.19**	**UBUS**
Sacramento Metropolitan AQMD	2022	UBUS	Aggregate	Aggregate	Diesel	6.407902334	25.63160933	0	0.032343806	32.343806		308.7276784			
Sacramento Metropolitan AQMD	2022	UBUS	Aggregate	Aggregate	Electricity	0.005112072	0.020448289	0.664323376	0	0		0.381084536			
Sacramento Metropolitan AQMD	2022	UBUS	Aggregate	Aggregate	Natural Gas	325.4459813	1301.783925	0	5.779396826	5779.396826		31219.12159			

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: Air District
Region: Sacramento Metropolitan AQMD
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Trips	Energy Consumption	Fuel Consumption	Fuel Consumption	Total Fuel Consumption	Total VMT	Total VMT	Miles Per Gallon	Vehicle Class
Sacramento Metropolitan AQMD	2023	HHDT	Aggregate	Aggregate	Gasoline	11.89239273	237.9429938	0	0.080301689	80.30168851	169521.3774	256.3291227	939703.64	**5.54**	**HHDT**
Sacramento Metropolitan AQMD	2023	HHDT	Aggregate	Aggregate	Diesel	9360.218103	101076.5038	0	159.5183976	159518.3976		892867.8378			
Sacramento Metropolitan AQMD	2023	HHDT	Aggregate	Aggregate	Electricity	6.794258438	85.15963113	707.8530941	0	0		381.4290193			
Sacramento Metropolitan AQMD	2023	HHDT	Aggregate	Aggregate	Natural Gas	699.511721	3867.572858	0	9.922678069	9922.678069		46198.04399			
Sacramento Metropolitan AQMD	2023	LDA	Aggregate	Aggregate	Gasoline	495444.1701	2281180.251	0	636.4251156	636425.1156	646740.6178	18039887.07	19417959	**30.02**	**LDA**
Sacramento Metropolitan AQMD	2023	LDA	Aggregate	Aggregate	Diesel	1769.287004	7436.325494	0	1.164752694	1164.752694		49567.53532			
Sacramento Metropolitan AQMD	2023	LDA	Aggregate	Aggregate	Electricity	18075.67872	90481.03884	318806.7366	0	0		825747.6269			
Sacramento Metropolitan AQMD	2023	LDA	Aggregate	Aggregate	Plug-in Hybrid	11238.82967	46472.56069	74384.17381	9.150749544	9150.749544		502756.7661			
Sacramento Metropolitan AQMD	2023	LDT1	Aggregate	Aggregate	Gasoline	51757.60145	226418.361	0	68.6872968	68687.2968	68721.07787	1638073.93	1644220.215	**23.93**	**LDT1**
Sacramento Metropolitan AQMD	2023	LDT1	Aggregate	Aggregate	Diesel	22.46667839	65.86888325	0	0.009284393	9.284392518		220.5179675			
Sacramento Metropolitan AQMD	2023	LDT1	Aggregate	Aggregate	Electricity	126.2892806	579.2987789	1716.902904	0	0		4446.98413			
Sacramento Metropolitan AQMD	2023	LDT1	Aggregate	Aggregate	Plug-in Hybrid	29.6247431	122.4983127	240.0714994	0.02449668	24.49668017		1478.782088			
Sacramento Metropolitan AQMD	2023	LDT2	Aggregate	Aggregate	Gasoline	228403.2253	1060056.933	0	370.8845517	370884.5517	372760.0516	8495404.827	8607823.364	**23.09**	**LDT2**
Sacramento Metropolitan AQMD	2023	LDT2	Aggregate	Aggregate	Diesel	679.0245062	3236.922363	0	0.856870801	856.8708014		27268.58614			
Sacramento Metropolitan AQMD	2023	LDT2	Aggregate	Aggregate	Electricity	723.2042486	3710.18171	10214.5602	0	0		26456.93417			
Sacramento Metropolitan AQMD	2023	LDT2	Aggregate	Aggregate	Plug-in Hybrid	1219.97628	5044.601919	9162.115691	1.018629091	1018.629091		58693.01697			
Sacramento Metropolitan AQMD	2023	LHDT1	Aggregate	Aggregate	Gasoline	22155.05196	330077.2632	0	85.58677233	85586.77233	118676.0503	799046.8465	1325798.903	**11.17**	**LHDT1**
Sacramento Metropolitan AQMD	2023	LHDT1	Aggregate	Aggregate	Diesel	14671.09562	184543.9266	0	33.089278	33089.278		526752.0562			
Sacramento Metropolitan AQMD	2023	LHDT2	Aggregate	Aggregate	Gasoline	3045.460441	45372.82283	0	13.22343861	13223.43861	28872.30933	112067.808	317224.493	**10.99**	**LHDT2**
Sacramento Metropolitan AQMD	2023	LHDT2	Aggregate	Aggregate	Diesel	5346.107267	67247.30402	0	15.64887072	15648.87072		205156.685			
Sacramento Metropolitan AQMD	2023	MCY	Aggregate	Aggregate	Gasoline	26514.78147	53029.56295	0	3.626193831	3626.193831	3626.193831	144289.6764	144289.6764	**39.79**	**MCY**
Sacramento Metropolitan AQMD	2023	MDV	Aggregate	Aggregate	Gasoline	152542.1845	693643.2016	0	281.2332992	281233.2992	285875.2116	5255571.978	5416236.285	**18.95**	**MDV**
Sacramento Metropolitan AQMD	2023	MDV	Aggregate	Aggregate	Diesel	2515.788667	11867.336	0	4.000657947	4000.657947		96735.43455			
Sacramento Metropolitan AQMD	2023	MDV	Aggregate	Aggregate	Electricity	785.5195593	4027.377177	11075.94497	0	0		28688.02388			
Sacramento Metropolitan AQMD	2023	MDV	Aggregate	Aggregate	Plug-in Hybrid	770.7745418	3187.15273	5314.836034	0.641254499	641.2544986		35240.84848			
Sacramento Metropolitan AQMD	2023	MH	Aggregate	Aggregate	Gasoline	3022.815755	302.4024881	0	6.118641374	6118.641374	7177.528779	26989.34608	36946.62947	**5.15**	**MH**
Sacramento Metropolitan AQMD	2023	MH	Aggregate	Aggregate	Diesel	1095.708158	109.5708158	0	1.058887405	1058.887405		9957.28339			
Sacramento Metropolitan AQMD	2023	MHDT	Aggregate	Aggregate	Gasoline	2215.29793	44323.68099	0	22.79801483	22798.01483	100634.5326	103973.1424	748195.8251	**7.43**	**MHDT**
Sacramento Metropolitan AQMD	2023	MHDT	Aggregate	Aggregate	Diesel	14375.06389	146854.1176	0	75.93728813	75937.28813		630971.87			
Sacramento Metropolitan AQMD	2023	MHDT	Aggregate	Aggregate	Electricity	8.044869893	83.03667697	213.6206899	0	0		193.3626218			
Sacramento Metropolitan AQMD	2023	MHDT	Aggregate	Aggregate	Natural Gas	259.8524097	1473.978092	0	1.899229643	1899.229643		13057.44998			
Sacramento Metropolitan AQMD	2023	OBUS	Aggregate	Aggregate	Gasoline	574.4716321	11494.02842	0	5.527012459	5527.012459	11100.8832	25896.30414	66244.29488	**5.97**	**OBUS**
Sacramento Metropolitan AQMD	2023	OBUS	Aggregate	Aggregate	Diesel	531.483629	5991.634748	0	5.088542468	5088.542468		36749.66756			
Sacramento Metropolitan AQMD	2023	OBUS	Aggregate	Aggregate	Natural Gas	58.10007363	517.0906553	0	0.485328274	485.328274		3598.323185			
Sacramento Metropolitan AQMD	2023	SBUS	Aggregate	Aggregate	Gasoline	120.9148204	483.6592817	0	0.63334159	633.3415898	3407.485027	6315.478693	28526.36685	**8.37**	**SBUS**
Sacramento Metropolitan AQMD	2023	SBUS	Aggregate	Aggregate	Diesel	972.1958834	14077.39639	0	2.694974062	2694.974062		21728.71122			
Sacramento Metropolitan AQMD	2023	SBUS	Aggregate	Aggregate	Electricity	0.344036454	4.981647857	4.206320993	0	0		3.992879275			
Sacramento Metropolitan AQMD	2023	SBUS	Aggregate	Aggregate	Natural Gas	18.01931563	260.9196903	0	0.079169375	79.16937549		478.184062			
Sacramento Metropolitan AQMD	2023	UBUS	Aggregate	Aggregate	Gasoline	174.4403396	697.7613583	0	2.816401635	2816.401635	2816.401635	13233.03572	45684.25636	**16.22**	**UBUS**
Sacramento Metropolitan AQMD	2023	UBUS	Aggregate	Aggregate	Diesel	6.407902334	25.63160933	0	0.032343806			308.7276784			
Sacramento Metropolitan AQMD	2023	UBUS	Aggregate	Aggregate	Electricity	0.005112072	0.020448289	0.664323376	0			0.381084536			
Sacramento Metropolitan AQMD	2023	UBUS	Aggregate	Aggregate	Natural Gas	335.1611675	1340.64467	0	5.624823038			32142.11187			

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Geotechnical Engineering Report

THE MEADOWS AT ISLETON RV PARK

301-401-501 Jackson Slough Road

Isleton, California

MPE No. 05890-01

MID PACIFIC ENGINEERING, INC.

April 6, 2022

April 6, 2022

Ms. Sandeep Lidder
The Meadows at Isleton, LLC
301 Jackson Slough Rd
Isleton, California 95641
Phone: (415) 691-9157
Email: info@themeadowsatisleton.com

Geotechnical Engineering Report
THE MEADOWS AT ISLETON RV PARK
301-401-501 Jackson Slough Road
Isleton, California
MPE No. 05890-01

Dear Ms. Lidder:

Attached herewith is the *Geotechnical Engineering Report* for The Meadows at Isleton RV Park located at the 301-401-501 Jackson Slough Road, Isleton, California.

This report was based upon a scope of services generally outlined in MPE Proposal No. 21-0532, dated December 29, 2021, and other written and verbal communications.

We appreciate this opportunity to provide Geologic and Geotechnical Engineering services for this project. If you have questions or comments concerning this report, please contact this firm at your convenience.

Respectfully submitted,
Mid Pacific Engineering, Inc.

Fred Yi, Ph.D., P.E., G.E., F. ASCE
Principal Engineer

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Geotechnical Engineering Report

THE MEADOWS AT ISLETON RV PARK

301-401-501 Jackson Slough Road
Isleton, California
MPE No. 05890-01
April 6, 2022

INTRODUCTION

Mid Pacific Engineering, Inc. (MPE) has completed a Geotechnical Engineering study for the site of the proposed *The Meadows at Isleton RV Park* project located at 301-401-501 Jackson Slough Road in Isleton, California. The purposes of this study have been to explore and evaluate the Geotechnical Engineering conditions at the subject site, including subsurface soil and groundwater conditions, and to provide appropriate Geotechnical Engineering recommendations for the design and construction of the proposed project.

Our work has been performed in general accordance with the scope of work included in our proposal to The Meadows at Isleton, LLC, dated December 29, 2021. The findings of our study, together with our conclusions and recommendations, are presented in this report.

SCOPE OF SERVICES

Our scope of services provided during this Geotechnical investigation included the following:

1. Site reconnaissance.
2. Review of available historic aerial photographs, topographic maps and groundwater information of the area.
3. Subsurface exploration, including the drilling and sampling of 8 test borings to maximum depths of approximately 11½ to 21½ feet below the existing ground surface (bgs).
4. Collection of bulk samples of near-surface soils.
5. Laboratory testing of selected soil samples.
6. Engineering analyses.

7. Preparation of this report.

To assist in the preparation of this proposal, a 50-scale *Master Plan of The Meadows RV Park*, prepared by Ron D. Beard & Associates, dated December 8, 2021, was furnished to us.

Recommendations regarding design and construction of the swimming pool are excluded from our work scope. We recommend that a qualified and experienced pool designer be retained to provide the appropriate design recommendations and construction specifications.

FIGURES AND ATTACHMENTS

Following figures and attachments are included in this report.

- Figure 1 – Vicinity Map.
- Figure 2 – Site Plan.
- Figures 3 through 10 – Logs of the test borings.
- Figure 11 – Unified Soil Classification System
- Figure 12 – General Notes.

Appended to this report are:

- Appendix A – General information regarding project concepts; exploratory methods used during our field investigation; and, laboratory test results not included on the boring logs.
- Appendix B – *Guide Earthwork Specifications* that may be used in the preparation of contract documents.

PROPOSED DEVELOPMENT

Based on the *Master Plan*, we understand the project will consist of a total of 135 RV sites, a 3,250 square feet great lodge, a 1,000 square feet shop and back of house laundry, and a rec pool. Associated development also includes check-in parking, auto parking, cart parking, splash pad, dog run, etc. The building structures are anticipated to be one-story, wood frame structures with interior concrete slab-on-grade floors. Light structural loads are anticipated. RV sites are proposed to be 35 feet x 50 feet each. The final pad construction is not clear yet, but it is anticipated the final RV pads would be compacted dirt pad with the option to develop the pads as concrete convenience pads, aggregate base pads, concrete paved pads with an aggregate subbase section, or asphalt paved pads with an aggregate subbase section. Underground utilities to support each site are also anticipated.

Civil plans were not available at the time we prepared this report; therefore, based on existing site topography, we have assumed maximum excavations and fills on the order of zero to two feet for development of the planned improvements.

This report was prepared based on the provided project *Master Plan*. When final site plans are available, or if the project plans change, Mid Pacific Engineering should be afforded the opportunity to review the plans and revise and/or update our conclusions and recommendations as necessary.

FINDINGS

SITE DESCRIPTION

The irregular-shaped project site is approximately 12 acres in size and is located west of Jackson Slough Road in the City of Isleton, California. The center of the proposed improvements is located at approximately latitude 38.1589° north and longitude 121.6178° west. The site is bounded to the southeast by Jackson Slough Road, to the northeast by vacant lot and single-family residences, to the northwest by farmland, and to the southwest by a single-family residence beyond which is farmland. Topography across the site is relatively level. Based on review of the Google Earth Pro images, the surface elevation across the site is approximately between -8 and -4 feet msl. The elevation at the center of the property is approximately -7 feet msl.

At the time of our investigation on March 11, 2022, the site of the proposed project was partially vacant, ungraded, and covered by fallow ground, with sparse brush, grasses and weeds. Roughly 50 percent of the property was being used for a campground and had various livestock stables. Along the Eastern side of the property that backs up to Jackson Boulevard, a noticeable amount of debris appeared to have piled up over years of people dumping or abandoning items along the side of the roadway. Overhead powerlines were observed at the entrance to the property at the Jackson Boulevard and Andrus Circle intersection.

Artificial (undocumented) fill approximately 1 to 2 feet in height was noticed on west approximately a half of the site. An approximately boundary line between the artificial fill and native is shown in Figure 2.

SITE HISTORY

Based on our review of available Google Earth aerial photographs from 1985 through 2021, and review of aerial photographs from HistoricAerials.com taken from 1957 through 2018 the project site has experienced significant changes through this time period.

Review of an aerial photograph taken in 1957 indicates the site primarily supported fallow undeveloped land. Jackson Slough Road are observed in the aerial photograph. The site seems remained similar to 1957 until2002. A surficial pad appeared in the middle of the site on the images taken in 2003 and 2004. The surficial pad was not visible on the aerial photo taken on July 2004. The site remained relatively unchanged to 2021.

According to the website of The Meadows of Isleton, the site "once was an asparagus farm for Heinz, the property was left neglected for over 25 years" and the land was converted to a lavender farm as it is now.

SITE GEOLOGY

BASED ON OUR REVIEW OF *GEOLOGIC MAP OF THE SACRAMENTO QUADRANGLE, CALIFORNIA*, COMPILED BY WAGNER ET AL. AND PUBLISHED BY THE CALIFORNIA DIVISION OF MINES AND GEOLOGY (1981), THE PROJECT

SITE IS ANTICIPATED TO BE UNDERLAIN BY QUATERNARY AGE INTERTIDAL DEPOSITS (PEATY MUD) (MAP SYMBOL: Q_i) CONSISTING OF BAY MUD.

SUBSURFACE SOIL CONDITIONS

The soil conditions encountered by our exploration were varied near surface between our test borings and relatively uniform within the site. Undocumented artificial fill comprised of medium dense sandy silt that extended to depths of 1½ to 2½ feet below existing site grades (bgs) in borings D1, D2, D3, D5 and D6. The fill soils were underlain by very soft to soft bay mud classified as clayey organic silt that extended to the maximum depth explored of 21½ feet below existing grades. The bay mud seems underconsolidated with "push" to depths as deep as 16 feet bgs. Our laboratory tests on representative samples indicate approximately 95 percent of the soils passing #200 sieve with 26 percent of clay particles (particle size less than the 0.002 millimeters). The organic content was measured as 10.9 percent. Higher organic contents are anticipated.

For more detail regarding the soil conditions at a specific location, please refer to the Logs of Soil Borings on Figures 4 through 8.

GROUNDWATER

Groundwater was encountered in 6 of our 10 borings drilled on March 11, 2022, at depths between 4 to 9 feet bgs. To supplement our groundwater information, we reviewed groundwater elevation data obtained from GeoTracker[1]. Our review indicates that the groundwater within the area ranges from 2½ to 10 feet below existing ground surface (bgs).

[1] https://geotracker.waterboards.ca.gov/

CONCLUSIONS

GENERAL

On the basis of our research and field and laboratory investigations, it is the opinion of this firm that construction of the proposed improvement is feasible from a geotechnical standpoint, provided the recommendations contained in this report are implemented during project design and construction.

SEISMIC SITE CLASS

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7-16.

The Geologic Map of the Sacramento Quadrangle, California (1981) compiled by Wagner et al. and published by the California Division of Mines and Geology, indicates the project site is underlain by Quaternary age Intertidal deposits (Peaty mud) (Map Symbol: Q_i). Based on review of *A Site-Conditions Map for California Based on Geology and Shear-Wave Velocity* (C.J. Wills, et al., December 2000), the bay mud in the Sacramento region has been identified as a material meeting Site Classification E.

It is our opinion, based on the geology of the site and the soil conditions encountered within our soil borings (assuming similar soil conditions continues below the maximum depth of our borings to a depth of 100 feet), that the soils at this site should be designated as Site Class E in determining seismic design forces for this project in accordance with Table 1613A.3.2 of the 2019 CBC.

SEISMIC DESIGN PARAMETERS

The 2019 CBC Seismic Design Parameters have been generated using The Applied Technology Council (ATC) Seismic Design Maps Tool (https://hazards.atcouncil.org). This web-based software application calculates seismic design parameters in accordance with ASCE 7-16 and 2019 CBC. The results indicate a mapped S1 value of 0.359. Per Section 11.4.8, a site-specific ground motion study should be performed in accordance with Section 21.2 of ASCE 7-16 for Site Class D sites with S1 value greater than or equal 0.2.

Section 11.4.8 of ASCE 7-16 includes an exception from such analysis for specific structures on Site Class E sites.

> *Structures on Site Class E sites with S1 greater than or equal to 0.2, provided that T is less than or equal to T_s and the equivalent static force procedure is used for design*[2].

The commentary for Section 11 of ASCE 7-16 (Page 534 of Section C11.4.8 of ASCE 7-16) states that this exception "*permits ELF design of short-period structures (T ≤Ts) at Site Class E sites for values of SS greater than or equal to 0.2 g.*" Based on our understanding of the proposed structures, it is our assumption that the exception in Section 11.4.8 applies to the proposed structure. However, the structural engineer should verify the applicability of this exception.

Based on this exception, the spectral response accelerations presented below were calculated using the site coefficients (F_a and F_v) from Tables 1613.2.3(1) and 16132.3(2) presented in Section 16.4.4 of the 2019 CBC.

Table 1 - 2019 CBC/ASCE 7-16 Seismic Design Parameters

Description	Value
Site Location	Latitude: 38.1589° / Longitude: -121.6178°
Site Classification	E (Soft Clay Soil)
Mapped MCE_R ground motion [1)]	S_S =0.972 and S_1 = 0.0.359

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2 T = the fundamental period of the structure, s
$T_S = S_{D1}/S_{DS}$.

Description	Value
Site Coefficients	F_a = 1.211 and F_v = 2.564 [2)]
Site-modified spectral acceleration	S_{MS} = 1.177 and S_{M1} = 0.920 [2)]
Numeric seismic design value	S_{DS} = 0.785 and S_{D1} = 0.614 [2)]
Site modified peak ground acceleration	PGA_M = 0.563 g
Mode de-aggregated Magnitude [3)]	6.88
Closest Distance, r_{Rup} [3)]	6.31 km

1) These values were obtained using on-line seismic design maps and tools recommended by the USGS (https://hazards.atcouncil.org/) accessed at 3/29/2022.
2) 2019 CBC Table 1613.2.3(2)
3) This value was obtained using on-line Unified Hazard Tool by the USGS (https://earthquake.usgs.gov/hazards/interactive/) for return period of 2% in 50 years accessed at 3/29/2022.

Site-specific ground response and ground motion hazard analyses, and/or time history analyses were not part of our work scope.

Typically, a site-specific ground motion study will generate less conservative coefficients and acceleration values which may reduce construction costs. We recommend consulting with a structural engineer to evaluate the need for such study and its potential impact on construction costs. MPE should be contacted if a site-specific ground motion study is desired.

LIQUEFACTION POTENTIAL

Liquefaction is a soil strength and stiffness loss phenomenon that typically occurs in loose, saturated cohesionless soils as a result of strong ground shaking during earthquakes. The potential for liquefaction at a site is usually determined based on the results of a subsurface geotechnical investigation and the groundwater conditions beneath the site. Hazards to buildings associated with liquefaction include bearing capacity failure, lateral spreading, and differential settlement of soils below foundations, which can contribute to structural damage or collapse.

Due to the clayey nature of the soils encountered, the potential of soil liquefaction is considered low. However, the very soft to soft clayey organic silt encountered may experience cyclic softening. The full analysis of cyclic softening and the magnitude and effects settlements of such is beyond the scope of work of this report.

Expansive Soils

Laboratory testing indicated that the native on-site clayey organic silt soils possess a medium potential for expansion (expansion index, EI = 60) when tested in accordance with the ASTM D4829 test method (see Figure A5). In our opinion, these clayey soils will experience volume changes with varying soil moisture contents and are capable of exerting moderate expansion pressures upon foundations and concrete slabs-on-grade, including exterior flatwork.

Specific recommendations to reduce the effects of expansive soils, including lime treatment are presented in this report. Completely stopping or mitigating all soil related movement will be extremely costly and potentially unfeasible. The recommendations contained in this report are intended to reduce, but not eliminate movement of the clay soils. The owner should expect to see some soil related movement throughout the life of the structures.

Foundation Support

The results of our field and laboratory work indicate that the undisturbed native soils are underconsolidated and in very soft to soft states and of relatively low strength and are anticipated to be highly compressible under loading, resulting in potentially large and unpredictable settlements. In our opinion, these soils are not considered capable of supporting the proposed building structures. The proposed structures will likely require the use of a deep foundation system or ground improvement to provide adequate building support and minimize the effects of total and differential settlements on the structures.

Based on our experience in the area and on sites with similar soils, it is our opinion that the proposed great lodge building and shop building could be supported on deep foundation in conjunction with structural slab that is designed to transfer structural loads to the deeper soils. Based on the site conditions and the relatively shallow depth to groundwater, systems such as a helical anchor system, rammed aggregate piers, Drilled Displacement Columns

(DDC), soil mixing techniques, or driven piles would be feasible methods of improving support conditions at this site. A feasible system for foundation support would consist of a rigid, reinforced concrete structural slab supported upon helical anchors. Helical anchors consist of an extendable deep foundation system with helical bearing plates welded to a central steel shaft. The load is transferred from the shaft to the soil through the helical bearing plates. The further recommendations of our report are specific to the use of helical anchors to support a structural slab foundation.

Support of the structural slab and subgrades supporting flatwork will require sub-excavation and recompaction of the near-surface soils in accordance with the recommendations of this report.

Our work also indicates that engineered fill, properly placed, and compacted in accordance with the recommendations of this report, will be capable of supporting the proposed surface improvements (pavements, RV pads, etc.). Our office should review the final grading plans to identify any other areas that may require additional over-excavation.

Suitability of On-site Soils for Use as Fill

In our opinion, the on-site artificial fill soils are considered suitable for use as engineered fill provided the materials are free of roots, organic materials, rubble, demolition debris, other deleterious debris, over-sized particles, and are at a suitable moisture content to achieve the desired degree of compaction. Removal of organics and debris from the on-site fill soils may require laborers handpicking the fill materials.

On-site native soils have very high organic contents and high moisture contents, and are potentially expansive, and are therefore not considered suitable as use as engineered fill material for construction of building pads. We anticipate these soils will be difficult to work with during grading operations due to their high moisture and organic contents.

We will recommend that building pads be constructed of on-site or imported non-expansive soils.

EXCAVATION CONDITIONS

Based on the subsurface conditions encountered in our field investigation, it is our opinion the site should be readily excavatable with conventional earthmoving and trenching equipment typically used in the area.

The very soft soils encountered in our borings are prone to squeezing during excavations. Excavations should be sloped, braced, or shored in accordance with current Cal/OSHA regulations. The contractor must provide an adequately constructed and braced shoring system in accordance with federal, state, and local safety regulations for individuals working in an excavation that may expose them to the danger of moving ground.

Excavated materials should not be stockpiled directly adjacent to an open trench to prevent surcharge loading of the trench sidewalls. Excessive truck and equipment traffic should be avoided near open trenches. If material is stored or heavy equipment is operated near an excavation, stronger shoring would be needed to resist the extra pressure due to the superimposed loads.

Our laboratory testing indicated that the unconfined compression strength of the on-site native soils is less than 0.5 ton per square feet (tsf). Soils are classified as Type C soils in accordance with OSHPA. Temporarily sloped excavations should be constructed no steeper than one and a half horizontal to one vertical (1½:1).

GROUNDWATER

Groundwater was encountered at 4 to 9 feet below current site grades in most of our borings. Shallow groundwater will likely be present in all shallow excavations, including utilities and foundations. Further, the shallow groundwater will result in free water within trenches as well as wet and over optimum soil conditions regardless of the time of year. The contractors must take this into account during their evaluation of schedule and budget for the project. The contractor should evaluate the necessity of dewatering (see DEWATERING section).

The near-surface soils also may be in a near or over-saturated condition during and for a significant time following the rainy season due to rainwater being unable to penetrate through the low permeability soils below existing site grade. Earthwork operations attempted following the onset of the rainy season and prior to prolonged drying will be hampered by high soil moisture contents. Heavy, prolonged rainfall events will promote high soil moisture contents and increase the potential for trapped water over impermeable soil layers that could further affect grading operations. If grading operations are to proceed shortly after the rainy season, and before prolonged periods of warm dry weather, the near-surface soils and soils to be used as engineered fill including trench backfill may be at moisture contents where significant and prolonged aeration or lime-treatment may be required to dry the soils to a moisture content where the specified degree of compaction can be achieved. The contractor should anticipate the additional time and effort necessary to achieve a compactable moisture content.

SEASONAL WATER

During the wet season, infiltrating surface runoff water can create saturated surface conditions where drainage is inhibited. Grading operations attempted following the onset of winter rains and prior to prolonged drying periods will be hampered by high soil moisture contents. Such soils, intended for use as engineered fill, will require considerable aeration and/or drying to reach a moisture content that will permit the soils to be properly compacted.

SOIL CORROSION POTENTIAL

Two representative soil samples were submitted to Sunland Analytical to determine soil pH, minimum resistivity, chloride and sulfate concentrations to help evaluate potential for corrosive attack upon reinforced concrete and exposed buried metal. The results of the corrosivity testing are summarized in Table 2.

Table 2 - Soil Corrosivity Testing

Analyte	Test Method	Sample Identification	
		D1 (0-1')	D2 (2-3')
Soil pH	CA DOT 643 Modified [1)]	6.04	6.01
Minimum Resistivity	CA DOT 643 Modified [1)]	1,740 Ω-cm [2)]	910 Ω-cm
Chloride	CA DOT 417	19.4 ppm [3)]	117.7 ppm
Sulfate	CA DOT 422	12.8 ppm	96.1 ppm

1) = Small cell method
2) Ω-cm = Ohm-centimeters
3) ppm = Parts per million

Reinforced Concrete Foundations

The California Department of Transportation Corrosion Technology Section, Office of Materials and Foundations, Corrosion Guidelines Version 3.0, March 2018, considers a site to be corrosive to foundation elements if one or more of the following conditions exists for the representative soil and/or water samples taken:

- a minimum resistivity value for soil of less 1,100 ohm-cm
- *Chloride concentration is 500 ppm or greater,*
- *sulfate concentration is 1500 ppm or greater, or*
- *the pH is 5.5 or less.*

Based on these criteria, the on-site soils do not satisfy the minimum resistivity value requirement and therefore are considered corrosive to steel reinforcement properly embedded within Portland cement concrete for the samples tested.

Table 19.3.1.1 – Exposure Categories and Classes, American Concrete Institute (ACI) 318-19, Section 19.3, as referenced in Section 1904.1 of the 2019 CBC, indicates the severity of sulfate exposure for the samples tested is *not a concern*. Ordinary Type I-II Portland cement is considered suitable for use on this project, assuming a minimum concrete cover is maintained over the reinforcement.

Underground Metallic Pipelines

According to Pierre R. Roberge[3], the minimum resistivity values of the onsite soils are considered potentially "extremely corrosive" to ferrous metals including ductile/cast iron, steel, and dielectric coated steel.

MPE does not practice corrosion engineering. Therefore, to further define the soil corrosion potential at the site, a competent corrosion engineer could be consulted to determine the need for cathodic protection or grounding systems.

RECOMMENDATIONS

The recommendations presented below are appropriate for typical construction in the late spring through fall months. The on-site soils likely will be saturated by rainfall in the winter and early spring months and will not be compactable without drying by aeration or the addition of lime (or a similar product) to dry the soils. Should the construction schedule require work during wet conditions, additional recommendations can be provided, as conditions dictate.

At the time of this report, no grading plans were available. Our office should be afforded the opportunity to review the final plans and specifications to evaluate the applicability of our recommendations and verify that the intent of our recommendations has been implemented in those documents.

Based on existing site topography, we anticipate maximum excavations and fills on the order of two feet for development of the planned improvements, with potentially deeper excavations anticipated. The use of structural slab foundations supported by helical anchors, or other support systems, as recommended in this report, may help minimize the amount of excavation required. The recommendations contained in this report are based upon this assumption.

[3] R. Roberge (2006), Corrosion Basics: An Introduction, 2nd Edition

SITE CLEARING

Initially, construction areas should be cleared of vegetation, rubble, demolition debris, trees, and other deleterious materials to expose firm and stable soil conditions as identified by our on-site representative.

Where practical, the clearing should extend a minimum of five feet beyond the limits of the proposed structural areas. Existing underground utilities, if encountered, located within the proposed structural areas should be completely removed and/or rerouted as necessary. Utilities located outside the building areas should be properly abandoned (i.e., fully grouted provided the abandoned utility is situated at least 2½ feet below the final subgrade level to reduce the potential for localized "hard spots"). All trees/large brush designated for removal should include the rootballs and roots ½-inch or larger in size.

The remaining areas should be stripped of surface vegetation and organically contaminated topsoil; strippings may be stockpiled for later use or disposed of off-site. If used, on-site strippings may be placed in landscaped areas, provided they are kept at least five feet from the building, and other structural areas, moisture conditioned and compacted. Strippings should not be used in landscaped berms that will support either soundwalls or retaining walls, if considered, or concrete flatwork.

Areas of trees or large bushes should be cross-ripped to a depth of at least 12 inches and all exposed remnants removed. Adequate removal of debris and tree roots may require laborers and handpicking to clean the subgrade soils to the satisfaction of our on-site representative.

All depressions resulting from the removal of such items, as well as all loose, disturbed, or saturated soils in areas of clearing operations or tree removal should be cleaned out to firm, undisturbed soil, as determined by our representative and should be restored to grade with engineered fill compacted in accordance with the recommendations of this report. It is considered essential that our representative be notified prior to site clearing operations to schedule periodic site visits. It is important that excavations resulting from clearing operations be left as shallow dish-shaped depressions for proper location and to allow proper access with compaction equipment during grading operations. If this is not the case, deeper processing will be required.

SITE PREPARATION AND SUB-EXCAVATION

Following site clearing activities, as a minimum, we recommend the building pad areas and the areas extending at least five feet beyond exterior foundation lines, appurtenances or other areas supporting at-grade structures (including pavements, flatwork, etc.), be sub-excavated to a depth that completely removes all artificial fills. This subexcavation could be on order of 2½ feet. The bottom of the sub-excavations should be scarified to a depth of at least 12 inches, moisture conditioned to at least two percent over the optimum moisture content and compacted to at least 90 percent relative compaction of the ASTM D1557 maximum dry density.

All underground structures and remnants of former construction encountered during the sub-excavation activities will require adequate removal during construction activities.

It is very important that our representative be present during grading operations to verify adequate removal of any undocumented fills and subsurface concrete structures and/or remnants and determine the need for additional sub-excavation based on exposed conditions. Sub-excavations deeper than the recommended minimum depths may be needed to fully expose firm and stable, undisturbed native soils.

During grading operations, the exposed subgrades should be evaluated by our representative. Any other loose, disturbed, soft or otherwise unstable materials should be removed to expose a firm base for the support of the fill prior to restoring the areas back to the design grades.

All areas designated to receive fill, remain at-grade, or achieved by excavation should be scarified to a depth of at least 12 inches, thoroughly moisture conditioned to at least two percent over the optimum moisture content and compacted to at least90 percent relative compaction of the ASTM D1557 maximum dry density. Thorough and uniform compaction of soils is crucial to the support of the planned structures. Therefore, full time observation and testing by the Geotechnical Engineer's representative is recommended during site preparation and compaction.

Compaction operations should be undertaken with an appropriate heavy, self-propelled, sheepsfoot compactor and should be performed in the presence of our representative who will evaluate the performance of the subgrade under compactive load and identify loose or unstable soils that could require additional excavation and/or compaction. This is an essential requirement. Loose, soft, or unstable soils, as identified by our representative in the field, should be cleaned out to firm, undisturbed and stable soils, as determined by our representative, and should be restored to grade with engineered fill compacted in accordance with the recommendations of this report. Difficulty in achieving subgrade compaction or unusual soil instability may be indications of loose fill associated with past subsurface items. Should these conditions exist, the materials should be excavated to check for subsurface structures and the excavations backfilled with engineered fill.

The approximate area of undocumented fills is shown on Figure 2. We recommend construction bid documents contain a unit price (price per cubic yard) for all excess excavations due to variations in the depth and lateral extent of undocumented fills, potential removal of concrete structures and potentially loose, soft, or unsuitable materials and replacement with engineered fill.

ENGINEERED FILL CONSTRUCTION

The on-site artificial fill soils are considered suitable for use as engineered fill provided the materials are free of roots, organic materials, rubble, demolition debris, other deleterious debris, over-sized particles, and are at a suitable moisture content to achieve the desired degree of compaction. Removal of organics and debris from the on-site soils may require laborers handpicking the fill materials. Rocks greater than 3 inches should be excluded from engineered fills. Expansive clays, if exposed during grading, should not be utilized in the upper 12 inches of fill supporting driveway, flatwork, or structures.

Import fill materials, if required, should be granular in nature and well graded, soils or aggregates with a plasticity index not exceeding 15, an expansion index not exceeding 20 and a maximum particle size of 3 inches. Crushed rock and pea gravel (and such materials) are not suitable as engineered fill. Imported soils should be sampled, tested, and approved by our office prior to being transported to the site. Import fill materials also must be free of known contamination and the contractor should provide appropriate documentation that demonstrates to the satisfaction of the project environmental consultant that imported materials are not contaminated.

Engineered fill composed of native or imported materials should be placed in horizontal lifts not exceeding 6 inches in compacted thickness. Each layer should be thoroughly moisture conditioned to at least two percent over the optimum moisture content and uniformly compacted to at least 90 percent of relative compaction of the ASTM D1557 maximum dry density for on-site native soils and to at least the optimum moisture content and uniformly compacted to at least 90 percent of the ASTM D1557 maximum dry density for imported materials. Additional passes with the compactor shall be added, as required by the Geotechnical Engineer, to achieve a firm, stable and unyielding subgrade condition. Compactive effort should be applied uniformly across the full width of the fill. Fills should extend at least 5 feet horizontally beyond the perimeter of buildings, walkways and pavements, and other planned structures.

The upper 18 inches of final building pad and exterior flatwork subgrades should consist of approved imported *non-expansive* soil or imported Class 2 aggregate base and be brought to at least the optimum moisture content (non-expansive materials) and uniformly compacted to not less than 90 percent of the maximum dry density, regardless of whether final grade is achieved by excavation, filling or left at existing grade.

The upper six inches of final exterior flatwork subgrades supporting vehicle loadings, and all pavement subgrades, should be uniformly moisture conditioned to at least the optimum moisture content, processed, and uniformly compacted to at least 95 percent of the maximum dry density, regardless of whether final grade is completed by excavation, filling, or left at existing grade. Final subgrade preparation and compaction should be performed just prior to placement of aggregate base and must be stable under construction traffic (proof-rolled).

Earthwork operations should be accomplished in accordance with the recommendations contained within this report and the attached Earthwork Specifications. We consider it essential that our representative be present on a regular basis throughout site clearing and preparation, grading, and fill placement and compaction operations to verify compliance with these recommendations and the project specifications.

UTILITY TRENCH BACKFILL

Utility trench backfill should be mechanically compacted in maximum six-inch lifts. Trench backfill should be brought to uniform moisture content to at least 2 percent over the optimum moisture content and uniformly compacted to at least 90 percent of relative compaction of the ASTM D1557 maximum dry density. The upper six inches of trenches in pavement areas should be brought to at least the optimum moisture content and compacted to at least 95 percent of the maximum dry density. Jetting of trench backfill as a means of compaction is not acceptable. We recommend that native soil be used as trench backfill within the perimeter of building foundations to help minimize soil moisture variations beneath the structures. The native soil backfill should extend at least three feet horizontally beyond perimeter foundation lines. Utility trenches within the building perimeters should be backfilled with compactable material matching the upper 12 inches of building subgrade material.

We recommend that underground utilities within the limits of pavement areas be constructed prior to chemical stabilization (if performed) to provide uniform support for pavements. It has been our experience that excavations through the treated grades and backfilling can create variable support conditions which can, over time, result in cracking of the pavement surface at the interface between treated and untreated subgrades. In the case where utility excavations are performed through the treated grade, we recommend that the upper 12 inches (or to the depth of treatment) of utility trench backfill within pavement areas consist of Class 2 aggregate base compacted to at least 95 percent of the ASTM D1557 maximum dry density, at a moisture content of at least the optimum conditions, to promote uniform support and better simulate the support characteristics of the treated grade. This is recommended regardless of whether the treated grades are for enhanced support (reduced section) or drying up.

Clayey soils should not be used within the upper 12 inches of trench backfill, where non expansive fill is required.

We recommend that underground utility trenches that are aligned nearly parallel with foundations be at least 3 feet from the outer edge of foundations, wherever possible. As a general rule, trenches should not encroach into the zone extending outward at a 1:1 inclination below the foundations. Additionally, trenches near foundations should not remain open longer than 72 hours to prevent drying and potential shrinkage cracks. The intent of these recommendations is to prevent loss of both lateral and vertical support of foundations, resulting in possible settlement.

Pipe bedding, shading and trench backfill and compaction within municipal streets should conform to jurisdictional requirements.

Preliminary Stabilization Recommendations

The soils removed from excavations, and/or those exposed within pavement subgrades may be in an over optimum or wet moisture condition, and too wet or unstable to properly compact depending on the time of year and weather conditions. If such conditions are exposed, additional stabilization recommendations may be needed to allow trench backfill and/or pavement subgrade construction to proceed.

The following are preliminary options to help facilitate grading operations where the exposed soils are too wet and unstable to properly compact. Final recommendations should be provided by the Geotechnical Engineer retained to provide construction testing services at the time of grading based on the actual field conditions at the time and the area to be stabilized.

Aeration

The first option would be to aerate the wet soils to dry them back to a compactable moisture content. This would involve near continuous scarification and aeration of the upper 12 to 18 inches of soils subgrades, or frequent mixing of the soil stockpiles for backfilling, and exposure to the sun and wind for an extended period of time, to provide a better opportunity for drying. Factors influencing the usefulness and applicability of aeration include the depth of saturation and instability, prevailing weather conditions, and construction schedule constraints.

If the construction schedule does not allow for aeration, then two additional alternatives may be considered.

Removal and Replacement

Another acceptable alternative may be to completely remove the saturated/unstable soils to expose a firm base and replace them to design soil subgrade elevation with properly moisture conditioned, granular materials (such as Class 2 aggregate base (AB)) placed and properly compacted as engineered fill. This option is best suited to shallow, isolated instabilities where a firm base can be reached within 6 to 12 inches of final subgrade elevations. Prior to stabilization, the areas of instability should be identified and marked in the field. The actual lateral extent and depth of excavation needed for stabilization will depend upon the observed soil conditions at the time of excavation and may vary across the subgrade; therefore, unit prices should be included to account for variations in the extent of excavations.

Mechanical Stabilization (Geogrid)

An alternative to complete removal of the unstable soils, and in areas where a firm base is not easily reached at shallow depths, could be to excavate as a minimum, an additional 12 to 18 inches of soils below the soil subgrade elevation, place a geogrid soil reinforcement (Tensar BX1100 or better) over the exposed soils and backfill to the design grades with compacted Class 2 aggregate base. Actual depth of subexcavation will depend upon exposed stability conditions, and deeper excavations and possible additional layers of geogrid and aggregate base could be needed to stabilize areas. During excavation, it is essential that the Geotechnical Engineer be present to help identify isolated areas of obviously deeper deposits of wet and very unstable soils that may require deeper sub-excavation, prior to placing geogrid. This method is most applicable to isolated areas of instability.

Chemical Stabilization

Pavement Subgrades

Another alternative would be chemically stabilizing the wet soils by the additional of lime to dry them to a compactable moisture content. Lime treatment can be an effective way to reduce the moisture content of near-saturated or unstable soils to facilitate grading operations. Lime treatment likely will only be economical for treatment of large areas. Lime treated soils will not support landscaping and should be removed from within all planter areas and replaced with suitable landscape soils. Typically, lime treatment should be at least 12 inches thick; however, deeper mixing depths (16 to 18 inches) could be needed in areas of very wet and deeper instabilities. The actual amount of product (spread rate) and mixing depth needed for stabilization can only be determined at the time of construction based upon the prevailing site and soil moisture conditions. The contractor should include an add/deduct unit price for lime to account for variations in the quantities of product used.

In our experience lime, Portland cement or a combination of such products have been used to stabilize subgrades, depending on soil types, and soil moisture and stability conditions; therefore; before a decision is made to use any product or combination of products a qualified stabilization contractor must be retained and assist in determining the most effective treatment. It is crucial that the selected stabilization contractor determine the actual product and amount of product to add and the proper mixing depth to achieve the desired results.

Due to wet weather, construction activities and equipment traffic, and the potential for variable subgrade conditions, some isolated areas of instability may be exposed following treatment requiring remedial work and repairs. Such areas may require sub-excavation and use of layers of geogrid and additional thicknesses of aggregate base, or slurry backfill, to stabilize the final grade prior to further pavement construction. Construction equipment and vehicle traffic over the treated subgrade, prior to a proper and adequate curing period, will tend to de-stabilize the grades.

Special care and consideration should be given to those areas where shallow utilities are present. The depth of stabilization may be limited in those areas, depending on the depth of utilities, and since the full depth of treatment may not be achieved, some instabilities may remain, requiring additional stabilization. In the case where shallow utilities are present and/or for isolated areas that are difficult to heal, use of a 2-sack sand-cement slurry may be considered. Selection of a sand-cement slurry mix should consider whether future excavations will be needed. The supplier should be consulted for additional information on anticipated slurry mix strengths.

Trench Backfill Spoils

For stabilizing trench spoils that are too wet, quicklime should be thoroughly mixed into the stockpiles with an excavator with an appropriate mixing bucket, or similar construction equipment. It is up to the Contractor's means and methods to adequately mix the quicklime with the soils to minimize pockets of free (unmixed) quicklime. The amount of quicklime will greatly depend on the site conditions and moisture content of the soils at the time of treatment. Based on our experience with similar soils, mixing rates on the order of 1 to 3 percent of the soil dry unit weight may be required to adequate dry the soils back to compactable moisture contents, where soils are in a near-saturated condition. The Contractor should work with our representative to determine the amount of quicklime needed to dry back the soils to a moisture content where the desired degree of compaction and stability can be achieved.

Initial mixing of lime should be followed by remixing, preferably the next day. Additional remixing operations should be performed to provide a uniform soil-lime mixture. We recommend that lime-treated backfill soils are allowed a minimum of one day to react prior to being used as trench backfill.

DEWATERING

Groundwater was encountered at depth of between 4 and 9 feet bgs. Depending on the season, shallower groundwater is anticipated. Groundwater could be an issue during construction. The contractor should evaluate the necessity of dewatering. Dewatering should be based on the means and method of the contractor.

FOUNDATION DESIGN

We are providing design soil values for the analysis of the foundations, and suggested minimums for dimensions, but only from a Geotechnical Engineering perspective. The project Structural Engineer should determine final foundation design width and depth dimensions and reinforcing requirements, based on their specific structural design which should include an appropriate factor of safety applied to the overall design. Based on the site conditions and subsurface soils encountered, it is our opinion that conventional shallow foundations are not applicable to support the proposed building structures. In order to provide support to the proposed structure, deep foundation in conjunction with structural slab is considered appropriate for this site.

Helical Anchors

We recommend coordinating with a qualified design-build installation contractor early in the design process to verify anticipated anchor capacities at the site based on their experience with similar soil conditions as well as to coordinate shaft sizes, helix configurations, and hardware requirements for the required capacities.

Helical anchors could be designed using an ultimate cohesive strength of 250 pound per square-feet (psf) for frictional capacity. Due to the very soft clayey organic silt soils, tip resistance should not be considered in the anchor capacity design. The Structural Engineer should verify the size and adequacy of the center shaft based on the anticipated structural loadings as well as the structural connections of anchors to foundations and anchor spacings based on allowable slab spans. The number of anchors and anchor spacing will depend on the structural loadings and should be determined by the Structural Engineer. Final depth of each anchor as well as the size and capacity of the center shaft and the size and number of helixes per shaft will depend on the required structural capacity and the depth at which the required torque is achieved that produces the design axial anchor capacity. Appropriate factors of safety should be applied when developing the design anchor capacities. We recommend factors of safety of at least 3 for dead load, 2 for dead plus live load and 1.5 for total load conditions including seismic and wind forces.

Helical anchors should extend to, and engage, the medium stiff layer encountered in our deepest boring (D1) at depths below about 20 feet. Based on our work, anchor depths may vary depending on the variations in soil conditions encountered across the site and lead section used. If the design length of helical anchors is longer than maximum boring depth, additional field investigation may be necessary to confirm the soil conditions of the deeper layers.

Load testing of the helical anchors must be performed to verify the maximum and allowable bearing capacities, settlements, and factors of safety.

Structural Slab

A structural slab should be used in conjunction with helical anchor foundation and should be designed to transfer all structural loads and flooring loads to the helical anchors. Structural slab could be a thick reinforced concrete mat or concrete slabs on grade combined with grade beams. No bearing resistance from the underlying soils should be expected in the design of the structural slab.

We recommended the upper 18 inches of final building pad subgrades consist of on-site or imported non-expansive soil or imported Class 2 aggregate base. As an alternate to this recommendation, structural slab could be directly supported on top of on-site native expansive soils provided it is designed for expansion. In this case, we recommend an expansion pressure of 150 psf to be used in the design. Alternately, a layer of compressible geofoam may be used underneath the concrete mat or grade beam. The thickness of the geofoam depends on the material property selected and should not be less than 6 inches.

Ground Improvement

As an alternative to supporting building structures on helical anchor and structural slab system, the proposed building structures could be supported on recompacted native soils provided one of the following ground improvement methods are utilized.

- Rammed aggregate piers

- Soil mixing techniques
- Other valid ground improvement methods

Ground improvement methods are proprietary systems designed by licensed contractors who could provide further information regarding support options. If ground improvement method is selected, the owner should consult with the licensed contractor for details.

The owner should compare the cost of deep foundation and ground improvement. Foundation recommendations with ground improvement are beyond the scope of work of this report and should be provided by ground improvement contractor and reviewed by Geotechnical Engineer of Record of this project.

FLOOR SLAB MOISTURE PENETRATION RESISTANCE

It should be assumed that all slabs in living areas, as well as those intended for moisture-sensitive floor coverings or materials, require protection against moisture or moisture vapor penetration. Standard practice includes a minimum four inch thick crushed rock gravel layer overlain by a durable vapor retarder membrane (at least 10-mils thick) overlain by an optional thin sand layer. However, the vapor retarder offers only a limited, first line of defense against soil-related moisture. Consideration should be given to using a thicker, higher quality membrane for additional moisture protection such as a 15-mil thick Stego vapor barrier or other product. The membrane should be installed so that there are no holes or uncovered areas. All seams should overlap and be sealed with manufacturer-approved tape, continuous at the laps to create vapor tight conditions. All perimeter edges of the membrane, such as pipe penetrations, interior and exterior footings, joints, etc., should be sealed or caulked per manufacturer’s recommendations. Recommendations contained in this report concerning foundation and floor slab design are presented as *minimum* requirements, only from the geotechnical engineering standpoint.

It is emphasized that the use of a membrane below the slab will not "moisture proof" the slab, nor does it assure that slab moisture transmission levels will be low enough to prevent damage to floor coverings or other building components. If increased protection against moisture vapor penetration of slabs is desired, a concrete moisture protection specialist should be consulted. It is commonly accepted that maintaining the lowest practical water-cement ratio in the slab concrete is one of the most effective ways to reduce future moisture vapor penetration of the completed slabs.

Floor slab construction over the past 25 years or more has included placement of a thin layer of sand or pea gravel over the vapor retarder membrane. The intent of the sand or pea gravel is to aid in the proper curing of the slab concrete and is not a Geotechnical issue. However, recent debate over excessive moisture vapor emissions from floor slabs includes concern for water trapped within the layer. As a consequence, we consider the use of the sand or pea gravel layer as optional. The concrete curing benefits should be weighed against efforts to reduce slab moisture vapor transmission. Use of the either the sand or pea gravel layer should be the decision of the project builder and the other members of the design team based on prior experience with the materials, desired level of performance and constructability. In any case where a curing layer is used over the membrane, the full thickness and integrity of the slab concrete must be maintained. If the slab concrete is placed directly on the membrane, additional considerations should be given to providing proper and uniform curing of the slab to minimize cracking.

Exterior Flatwork (Non-Pavement Areas)

The upper 18 inches of exterior flatwork subgrades should consist of approved imported non-expansive granular soils or Class 2 aggregate base (AB). All engineered fill placed under flatwork including the non-expansive fills and AB should be compacted to at least 90 percent of the maximum ASTM D1557 dry unit weight and at least the optimum moisture content (for imported materials). A leveling course of crushed gravel may be placed for support of the concrete; however, the gravel should not exceed six inches in thickness.

Expansion joints should be provided to allow for minor vertical movement of the flatwork. Exterior flatwork should be constructed independent of perimeter building foundations and isolated column foundations by the placement of a layer of felt material between the flatwork and the foundation.

Consideration should be given to thickening the outer edges of sidewalks to at least twice the slab thickness to provide better edge support and to help reduce variations in moisture content beneath the slabs. Thorough moisture conditioning of subgrade soils (to an over optimum moisture content) is important to reduce the risk of non-uniform moisture withdrawal from the concrete and the possibility of plastic shrinkage cracks. Where clay soils are present, the moisture content of the subgrade soil prior to concrete placement should be at least 3 to 5 percent above optimum. Where soil grades adjacent to flatwork are left fallow or landscaped with drip irrigation systems, some seasonal movement of the flatwork should be expected. Practices recommended by the Portland Cement Association (PCA) for proper placement and curing of concrete, as well as for joint spacing and construction, should be followed during exterior concrete slab construction.

PRELIMINARY PAVEMENT DESIGN

Asphalt Concrete Pavements

Traffic indices were not specified for this project. The following pavement sections presented below have been calculated based on the traffic indices, results of Resistance ("R") value testing, and procedures contained within Chapters 600 to 670 of the *California Highway Design Manual 6th Edition. The project civil engineer should determine the appropriate traffic index based on anticipated traffic conditions. Additional pavement sections can be provided upon request.* Our laboratory test results indicate an R-value of less than 5 for native soils and 89 for native soil mixed with 4% lime (by dry weight) (Figure A4). According to Caltrans, for R-value of less than 5, R-value of 5 could be used in the design. According to Sacramento County[4], with an "R" value of 5, the following minimum structural sections shall be used:

[4] Sacramento County, 2018 Improvement Standards (https://engineering.saccounty.gov/Pages/ImprovementStandards.aspx)

Table 3a – Flexible Pavement Design (Untreated Subgrade)

Street Type and Anticipated On-Site Traffic Conditions	Traffic Index (TI)	Pavement Subgrade (R-value = 5)	
		Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
Residential streets [a] and automobile traffic and parking areas	5.0	3	10
Streets with bus routes or high truck traffic & all cul-de-sacs [b] and RV traffic	6.5	4	14

[a] Sacramento County 32' and 38' Right-of Way

[b] Sacramento County 48' and 60' Right-of-Way

According to Caltrans, for R-value of higher than 50, R-value of 50 should be used in the design. For lime treated native soils, the structural sections are as follows:

Table 3b – Flexible Pavement Design (Lime Treated Subgrade)

Street Type and Anticipated On-Site Traffic Conditions	Traffic Index (TI)	Pavement Subgrade (R-value = 50)	
		Asphalt Concrete (inches) [1)]	Class 2 Aggregate Base (inches)
Residential streets [a] and automobile traffic and parking areas	5.0	3	4½
Streets with bus routes or high truck traffic & all cul-de-sacs [b] and RV traffic aisles	6.5	4	6
1) A safety factor of 0.20 for the G.E. of the A.C. is included as per Caltrans.			

[a] Sacramento County 32' and 38' Right-of Way

[b] Sacramento County 48' and 60' Right-of-Way

Recommended structural sections were calculated based on TIs and our preliminary sampling and testing. MPE does not practice traffic engineering. The project Civil Engineer should determine the appropriate traffic index based on anticipated traffic conditions. We can provide additional section thicknesses for other Traffic Indices, as needed.

We emphasize that the performance of pavements is critically dependent upon adequate and uniform compaction of the subgrade soils, including utility trench backfill within the limits of the pavements. It has been our experience that pavement failures may occur where a non-uniform or disturbed subgrade soil condition are created. Subgrade disturbances can be resulted if pavement subgrade preparation is performed prior to underground utility construction and/or if a significant time period passes between subgrade preparation and placement of aggregate base. Therefore, we recommend that pavement subgrade preparation, i.e., scarification, moisture conditioning and compaction, be performed just prior to aggregate base placement.

The upper six inches of final pavement subgrades should be uniformly moisture conditioned to at least the optimum moisture content and compacted to at least 95 percent relative compaction and should be completed within 48 hours prior to the placement of the aggregate base layer. Pavement subgrades should be proof-rolled with a loaded water truck and must be stable under construction traffic prior to placement of aggregate base.

All aggregate base should be compacted to at least 95 percent of the maximum dry density. Following compaction, the aggregate base should be proof rolled with a loaded water truck. Any areas of observed instability should be recompacted as necessary to achieve the compaction and stability requirements above.

Portland Cement Concrete Pavements

In the summer heat, high axle loads coupled with shear stresses induced by sharply turning tire movements can lead to failure in asphalt concrete pavements. Therefore, we recommend that consideration be given to using a Portland cement concrete (PCC) section in areas subjected to concentrated heavy wheel loading, such as entry driveways, areas subjected to lawn mowing equipment, truck maneuvering areas, and in front of trash enclosures. At the time this report was prepared, the need for, and locations of, PCC pavements had not yet been determined. Therefore, when more information is available regarding uses, loading and potential subgrade conditions, we should review the information and provide specific thicknesses as applicable.

For preliminary purposes, we recommend the following Portland cement concrete (PCC) pavement designs for untreated and lime treated subgrade. This design is based upon the ACI "Guide for Design and Construction of Concrete Parking Lots" (ACI 330R-08).

Table 4 – Rigid Pavement Design

Design Area	Recommended Section	
	Untreated Subgrade	**Lime Treated Subgrade**
Car Parking and Access Lanes ADTT = 1 (Category A, TI=5)	5½" PCC/12" AB	4½" PCC/6" AB
Truck Parking Areas ADTT = 25 (Category B, TI=7.5)	7" PCC/12" AB	5½" PCC/6" AB
ADTT = Average Daily Truck Traffic. AB = Aggregate base		

The recommended concrete sections are based on a design life of 20 years, with integral curbs or thickened edges. In addition, the above structural sections are predicated upon proper compaction of the utility trench backfills and the subgrade soils, with the upper six inches of subgrade soils brought to a uniform relative compaction of 95 percent (ASTM D1557). These sections are preliminary and subject to revision based on review of additional information regarding loadings and traffic frequencies.

We suggest the concrete slabs be constructed with thickened edges in accordance with American Concrete Institute (ACI) design standards. Final reinforcing should be determined by the project design engineer; however, as a guide minimum, reinforcing for crack control, if desired, should consist of No. 4 reinforcing bars placed on maximum 24-inch centers each way throughout the slab. Reinforcement must be located at mid-slab depth to be effective. Construction of Portland cement concrete pavements should be performed in accordance with applicable American Concrete Institute (ACI) or PCA standards. Portland cement concrete utilized in pavements should attain a compressive strength of at least 3500 psi at 28 days.

Preliminary Lime Treatment of Pavement Subgrade Soils

Based on our laboratory testing, the native soils are anticipated to react well with the addition of quicklime (high-calcium or dolomitic) and could enhance the support characteristics of the subgrade and allow for a reduction in the aggregate base section. Chemical treatment of subgrade soils as part of the pavement section should be performed in accordance with Section 24 of the Caltrans *Standard Specifications*.

For preliminary estimating purposes only, we recommend a minimum spread rate of at least 4½ pounds of quicklime per square foot of mixing depth (at least 12 inches). Lime-treated subgrades should be compacted to not less than 95 percent of the ASTM D1557 maximum dry density, at a moisture content of at least two percent above the optimum moisture content. Deeper mixing depths (16 to 18 inches) and proportionately higher spread rates could be used for a higher level of support and performance.

The actual amount of product (spread rate) and mixing depth needed for stabilization can only be determined at the time of construction based upon the prevailing site, soil and moisture conditions.

It should be noted that the surface and near-surface soils across the site are variable; therefore, it will be important that the subgrade soils be tested and evaluated after initial grading to determine the most appropriate treatment options based on the exposed soil conditions. An experienced soil stabilization contractor should be retained to help facilitate selecting the most appropriate products for treatment.

If chemical treatment alternates are selected for use at this site, additional testing should be performed prior to (and during) construction to verify that the design parameters are achieved prior to final design and also in the field during construction. Samples of the laboratory and field-mixed soil and lime should be tested for minimum unconfined compressive strength of 300 pounds per square inch (psi) when tested in accordance with California Test 373 and a minimum Resistance value of 50 when tested in accordance with California Test 301.

RV PARKING AREAS

The final grading of the RV parking areas is not available at the time of the preparation of this report, and it had not been determined as to whether the RV parking areas would be paved or left unpaved. If the RV parking area will be paved, structural sections provided in *Asphalt Concrete Pavements* or *Portland Cement Concrete Pavements* section could be utilized.

If left unpaved we offer the following recommendations. In order to stabilize the subgrade soil and provide vehicle support, the upper 18 inches of RV parking subgrades should consist of Class 2 aggregate base. All engineered fill placed under RV parking areas and the Class 2 aggregate base should be compacted to at least 95 percent of the maximum ASTM D1557 dry unit weight and at least the optimum moisture content (for imported materials). A layer of biaxial geogrid (Tensar BX1100 or better) should then be placed on top of compacted surface before receiving Class 2 aggregate base layer fill mentioned above. The geogrid layer should extend a minimum 5 feet beyond the RV parking boundaries.

In any case, site preparation, compaction and fill construction should be performed as recommended above.

As with any unpaved surface, proper drainage is essential to the performance. The surface should be graded and maintained such that ponding of water at the surface (and adjacent subgrades) does not occur. Ponding of water over the surface or improper drainage will weaken and reduce the support of the aggregate section and underlying soils. Unpaved surfaces will require increased maintenance over their life, and depending on the amount vehicle traffic, loadings and uses, the surfaces could require frequent and/or routine maintenance, including re-grading and recompaction of AB, as well as additional aggregates to fill ruts.

Pavement Drainage

Efficient drainage of all surface water to avoid infiltration and saturation of the supporting aggregate base and subgrade soils is important to pavement performance. The pavement surface and adjacent grades should be graded to prevent water ponding and provide positive drainage away from the pavements. Ponding of water adjacent to the pavements or improper drainage will weaken and reduce the support of the aggregate section and/or underlying soils and result in pavement distress and a shortened life. Consideration may be given to using full-depth curbs between landscaped areas and pavements to serve as a cut off for water that could migrate into the pavement base materials or subgrade soils. Geotextile water barriers also could be used to prevent migration of water into pavement base materials, if extruded curbs are used. Proprietary geotextile moisture barriers and curb details should be reviewed and approved by our office prior to construction. Weep holes are recommended in drop inlets (where applicable) to allow accumulating water moving through the aggregate base to drain from beneath the pavements.

Earthwork construction within the limits of the pavements should be performed in accordance with the recommendations contained within this report. Materials used for pavement construction should conform to the appropriate sections of the Caltrans *Standard Specifications* and applicable City *Standards*, latest editions.

SITE DRAINAGE

Site drainage should be accomplished to provide positive drainage of surface water away from the buildings and prevent ponding of water adjacent to foundations. The grade adjacent to the structures should be sloped away from foundations at a minimum 2 percent. Proper control of surface water drainage is essential to the performance of foundations, and slabs-on-grade. We recommend using full-roof gutters, with downspouts from roof drains connected to rigid non-perforated piping directed to an appropriate drainage point away from the structures or discharging onto paved surfaces leading away from the house and foundations. Concentrated storm water discharge collected from roof downspouts or surface drains should not be allowed to drain on unprotected slopes adjacent to structures. The ground should be graded to drain positively away from all pavement and building structures. Ponding of surface water should be avoided near foundations and pavements. Landscape berms, if planned, should not be constructed in such a manner as to promote drainage toward buildings.

All excavation and fill slopes should be protected from concentrated storm water run-off to minimize potential erosion. Control of water over the slopes may be accomplished by constructing V-ditches near the top of the slope, or by grading the area behind the top of the slope to drain away from the slope. Ponding of surface water at the top of the slope or allowing sheet flow of water over the top of a slope should be avoided.

CONSTRUCTION TESTING AND OBSERVATION

Site preparation should be accomplished in accordance with the recommendations of this report and the Earthwork Specifications. Representatives of Mid Pacific Engineering, Inc. should be afforded the opportunity to be present during site preparation and all grading operations to observe and test the fills to verify compliance with our recommendations and the job specifications.

In the event that MPE is not retained to provide geotechnical engineering observations and testing services during construction, the Geotechnical Engineer retained to provide this service should indicate in writing that they agree with the recommendations of this report, prepare supplemental recommendations, as necessary.

A final report by the "Geotechnical Engineer" should be prepared upon completion of the project indicating compliance with or deviations from this report and the project plans and specifications. Please be aware that the title Geotechnical Engineer is restricted in the State of California to a Civil Engineer authorized by the State of California to use the title "Geotechnical Engineer".

FUTURE SERVICES

We recommend that our firm be afforded the opportunity to review the final plans and specifications to verify that the intent of our recommendations has been implemented in those documents.

LIMITATIONS

Our recommendations are based upon the information provided regarding the proposed construction, combined with our analysis of site conditions revealed by the field exploration and laboratory testing programs. We have used our best engineering judgment based upon the information provided and the data generated from our investigation. This report has been prepared in accordance with generally accepted standards of practice existing in northern California at the time of the report. No warranty, either express or implied, is provided.

If the proposed construction is modified or re-sited; or, if it is found during construction that subsurface conditions differ from those we encountered at the boring locations, we should be afforded the opportunity to review the new information or changed conditions to determine if our conclusions and recommendations must be modified. Mid Pacific Engineering, Inc., should be retained to review the final plans and specifications to verify that the intent of our recommendations has been implemented in those documents.

We emphasize that this report is applicable only to the proposed construction and the investigated site and should not be utilized for construction on any other site. The conclusions and recommendations of this report are considered valid for a period of two years. If design is not completed and construction has not started within two years of the date of this report, the report must be reviewed and updated, as necessary.

CLOSURE

We appreciate this opportunity to be of service and trust this report provides the information desired at this time. Should questions arise, please do not hesitate to contact this office.

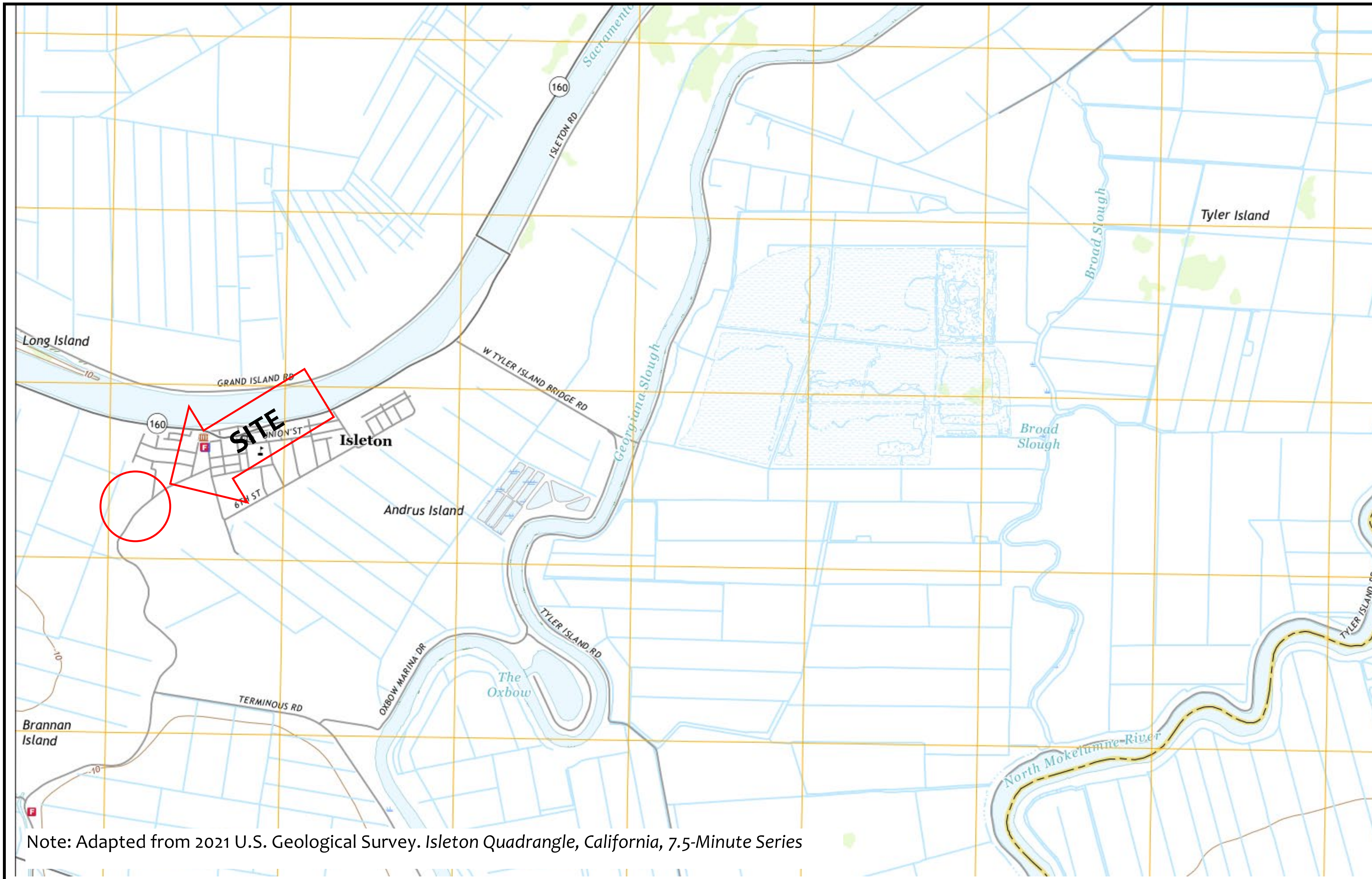
Mid Pacific Engineering, Inc.

REGISTERED PROFESSIONAL ENGINEER
FRED F. YI
No. 2967
Exp. 6/30/23
GEOTECHNICAL
STATE OF CALIFORNIA

Fred Yi, Ph.D., P.E., G.E., F. ASCE
Principal Engineer

DCS:rvw

FIGURES



MPE
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VICINITY MAP

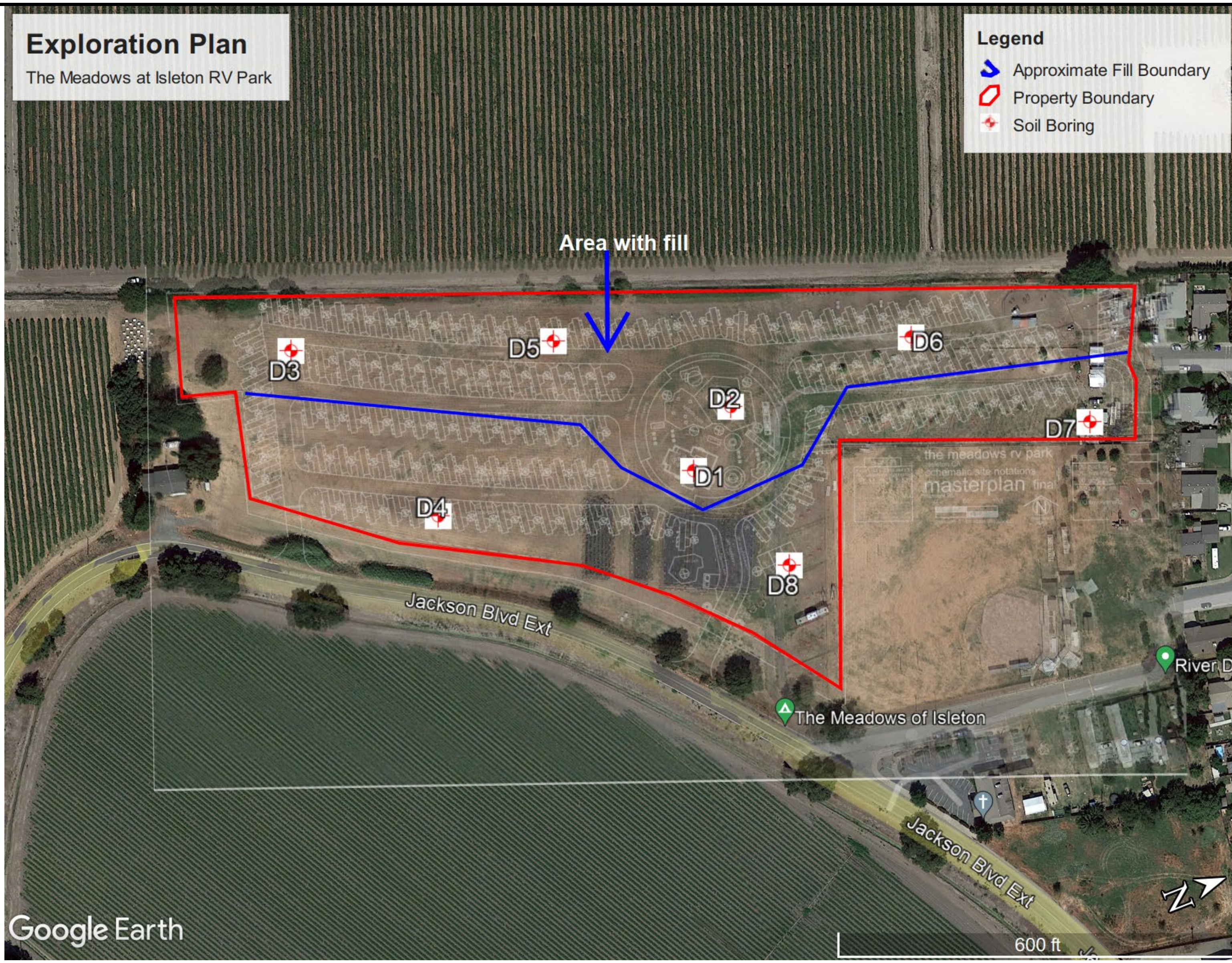
THE MEADOWS AT ISLETON RV PARK

301-401-501 Jackson Slough Road
Isleton, California

FIGURE 1

Date:04/22

MPE No. 05890-01



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SITE INVESTIGATION MAP

THE MEADOWS AT ISLETON RV PARK

301-401-501 Jackson Slough Road

Isleton, California

FIGURE 2

Date: 04/22

MPE No. 05890-01

EXPLORATORY BORING LOG NO. D1

Date Drilled:	3/11/2022	Logged by:	CG	Checked by:	Fred Yi
Driller:	H1 Drilling	Drill Rig:	CME 75 Drill Rig Soilild Flight	Auger Type:	Solid Flight Auger
Borehole Dia. (in):	6	Hammer Type:	Auto	Hammer Weight (lb):	140
Drop Distance (in):	30	SPT O.D./I.D. (in):	2.00/1.38	M. CAL O.D./I.D. (in):	2.50/2.00
Surface Elevation (ft):		Latitude:		Longitude:	

ELEVATION (ft)	DEPTH (ft)	LITHOLOGY	ENGINEERING CLASSIFICATION AND DESCRIPTION	REMARKS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/6"	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	FIELD/LAB TESTS
	0		(ML) Sandy silt, fine, brown, medium dense, moist	Fill						
							3 5 5			
	2		(OH) Clayey organic silt, dark brown, very soft, wet	Native						
							1 1 3	58	57.5	
	5		wet							
							Push Push 1			
							Push Push Push	48	87.9	O.C.=11%
	10									
							Push Push Push			
	15		(OH) Clayey organic silt, light grey, very soft, very wet				Push Push 1			
	20		(OH) Clayey organic silt, with sand, dark grey, medium stiff, very wet				4 3 4			
			GROUNDWATER AT 9 FT, NO BEDROCK NO REFUSAL, NO CAVING BACKFILLED WITH NEAT CEMENT							
	25									

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The Meadows at Isleton RV Park					
Location:	301-401-501 Jackson Slough Rd, Isleton, CA 95641				
Client:	The Meadows at Isleton, LLC				
Project No.:	05890-01	Boring No.:	D1	Figure:	3

EXPLORATORY BORING LOG NO. D2

Date Drilled: 3/11/2022	Logged by: CG	Checked by: Fred Yi
Driller: H1 Drilling	Drill Rig: CME 75 Drill Rig Soilild Flight	Auger Type: Solid Flight Auger
Borehole Dia. (in): 6	Hammer Type: Auto	Hammer Weight (lb): 140
Drop Distance (in): 30	SPT O.D./I.D. (in): 2.00/1.38	M. CAL O.D./I.D. (in): 2.50/2.00
Surface Elevation (ft):	Latitude:	Longitude:

ELEVATION (ft)	DEPTH (ft)	LITHOLOGY	ENGINEERING CLASSIFICATION AND DESCRIPTION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	FIELD/LAB TESTS
	0		(ML) Sandy silt, brown, medium dense	Fill						
					X	X	3 5 6			RV= 89 (4% lime)
			(OH) Clayey organic silt, brown, very soft, wet	Native	X		Push Push 1			
	5				X		Push Push Push			
					X		Push Push Push	51	79.9	
	10				X		Push Push Push			
	15		(OH) Clayey organic silt, with sand, light grey, medium stiff, very wet		X		1 2 3			
			GROUNDWATER AT 6.5 FT, NO BEDROCK NO REFUSAL, NO CAVING BACKFILLED WITH NEAT CEMENT							
	20									
	25									

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The Meadows at Isleton RV Park			
Location:	301-401-501 Jackson Slough Rd, Isleton, CA 95641		
Client:	The Meadows at Isleton, LLC		
Project No.: 05890-01	Boring No.: D2	Figure:	4

EXPLORATORY BORING LOG NO. D3

Date Drilled: 3/11/2022	Logged by: CG	Checked by: Fred Yi
Driller: H1 Drilling	Drill Rig: CME 75 Drill Rig Soilild Flight	Auger Type: Solid Flight Auger
Borehole Dia. (in): 6	Hammer Type: Auto	Hammer Weight (lb): 140
Drop Distance (in): 30	SPT O.D./I.D. (in): 2.00/1.38	M. CAL O.D./I.D. (in): 2.50/2.00
Surface Elevation (ft):	Latitude:	Longitude:

ELEVATION (ft)	DEPTH (ft)	LITHOLOGY	ENGINEERING CLASSIFICATION AND DESCRIPTION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	FIELD/LAB TESTS
	0–2.5		(ML) Sandy silt, light brown, very soft, moist	Fill	X		3 4 6			
	2.5–10		(OH) Clayey organic silt, with sand, dark brown / light brown, medium stiff wet	Native	X X		4 4 5 3 3 3			
	10–11.5		(OH) Clayey organic silt, dark brown / black, very soft, wet		X		Push Push Push			
			NO GROUNDWATER, NO BEDROCK NO REFUSAL, NO CAVING BACKFILLED WITH NEAT CEMENT							

Depth scale (ft): 5, 10, 15, 20, 25

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The Meadows at Isleton RV Park					
Location:	301-401-501 Jackson Slough Rd, Isleton, CA 95641				
Client:	The Meadows at Isleton, LLC				
Project No.:	05890-01	Boring No.:	D3	Figure:	5

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EXPLORATORY BORING LOG NO. D4

Date Drilled:	3/11/2022	Logged by:	CG	Checked by:	Fred Yi
Driller:	H1 Drilling	Drill Rig:	CME 75 Drill Rig Soilild Flight	Auger Type:	Solid Flight Auger
Borehole Dia. (in):	6	Hammer Type:	Auto	Hammer Weight (lb):	140
Drop Distance (in):	30	SPT O.D./I.D. (in):	2.00/1.38	M. CAL O.D./I.D. (in):	2.50/2.00
Surface Elevation (ft):		Latitude:		Longitude:	

ELEVATION (ft)	DEPTH (ft)	LITHOLOGY	ENGINEERING CLASSIFICATION AND DESCRIPTION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	FIELD/LAB TESTS
			(OH) Clayey organic silt, light / orangish brown, wet	Native	X		4 2 2			
			(OH) Clayey organic silt, with sand, light brown / dark brown, soft, wet		X		4 3 Push			
	5		(OH) Clayey organic silt, with sand, medium stiff, wet		X		4 6 2			
	10		(OH) Clayey organic silt, black, very soft, wet		X		1 Push Push			
			NO GROUNDWATER, NO BEDROCK NO REFUSAL, NO CAVING BACKFILLED WITH NEAT CEMENT							
	15									
	20									
	25									

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The Meadows at Isleton RV Park					
Location:	301-401-501 Jackson Slough Rd, Isleton, CA 95641				
Client:	The Meadows at Isleton, LLC				
Project No.:	05890-01	Boring No.:	D4	Figure:	6

EXPLORATORY BORING LOG NO. D5

Date Drilled: 3/11/2022	Logged by: CG	Checked by: Fred Yi
Driller: H1 Drilling	Drill Rig: CME 75 Drill Rig Soilild Flight	Auger Type: Solid Flight Auger
Borehole Dia. (in): 6	Hammer Type: Auto	Hammer Weight (lb): 140
Drop Distance (in): 30	SPT O.D./I.D. (in): 2.00/1.38	M. CAL O.D./I.D. (in): 2.50/2.00
Surface Elevation (ft):	Latitude:	Longitude:

ELEVATION (ft)	DEPTH (ft)	LITHOLOGY	ENGINEERING CLASSIFICATION AND DESCRIPTION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	FIELD/LAB TESTS
			(ML) Sandy silt, dark brown / light brown, medium dense, moist	Fill	X		7 7 4			
			(OH) Clayey organic silt, dark brown, very soft, wet	Native	X		3 2 1			
	5		very soft, very wet		X		1 Push Push			
	10		very soft, very wet		X		Push Push Push			
			GROUNDWATER AT 5.5 FT, NO BEDROCK NO REFUSAL, NO CAVING BACKFILLED WITH NEAT CEMENT							
	15									
	20									
	25									

MID PACIFIC ENGINEERING, INC.

The Meadows at Isleton RV Park					
Location:	301-401-501 Jackson Slough Rd, Isleton, CA 95641				
Client:	The Meadows at Isleton, LLC				
Project No.:	05890-01	Boring No.:	D5	Figure:	7

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Prepared at 3/29/2022 10:07:43 AM

EXPLORATORY BORING LOG NO. D6

Date Drilled: 3/11/2022	Logged by: CG	Checked by: Fred Yi
Driller: H1 Drilling	Drill Rig: CME 75 Drill Rig Soilild Flight	Auger Type: Solid Flight Auger
Borehole Dia. (in): 6	Hammer Type: Auto	Hammer Weight (lb): 140
Drop Distance (in): 30	SPT O.D./I.D. (in): 2.00/1.38	M. CAL O.D./I.D. (in): 2.50/2.00
Surface Elevation (ft):	Latitude:	Longitude:

ELEVATION (ft)	DEPTH (ft)	LITHOLOGY	ENGINEERING CLASSIFICATION AND DESCRIPTION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	FIELD/LAB TESTS
			(ML) Clayey silt, with silty clay, light brown, dark brown, soft, slightly moist	Fill						
			(OH) Clayey organic silt, light brown	Native			5 7 3			
			dark brown, very soft, wet				4 1 Push			
	5						1 1 Push			
	10		dark brown, grey, very soft, very wet				Push Push Push			
			GROUNDWATER AT 9 FT, NO BEDROCK NO REFUSAL, NO CAVING BACKFILLED WITH NEAT CEMENT							
	15									
	20									
	25									

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The Meadows at Isleton RV Park					
Location:	301-401-501 Jackson Slough Rd, Isleton, CA 95641				
Client:	The Meadows at Isleton, LLC				
Project No.:	05890-01	Boring No.:	D6	Figure:	8

EXPLORATORY BORING LOG NO. D7

Date Drilled: 3/11/2022	Logged by: CG	Checked by: Fred Yi
Driller: H1 Drilling	Drill Rig: CME 75 Drill Rig Soilild Flight	Auger Type: Solid Flight Auger
Borehole Dia. (in): 6	Hammer Type: Auto	Hammer Weight (lb): 140
Drop Distance (in): 30	SPT O.D./I.D. (in): 2.00/1.38	M. CAL O.D./I.D. (in): 2.50/2.00
Surface Elevation (ft):	Latitude:	Longitude:

ELEVATION (ft)	DEPTH (ft)	LITHOLOGY	ENGINEERING CLASSIFICATION AND DESCRIPTION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	FIELD/LAB TESTS
			(OH) Clayey organic silt, light brown, soft, wet	Native						
			(OH) Clayey organic silt, light brown, soft, wet				3 3 3			
	5		(OH) Clayey organic silt, dark, blackish brown, very soft, wet				5 Push Push 1 Push Push			
	10		(OH) Clayey organic silt, dark grey, very soft, very wet				Push Push Push			
			GROUNDWATER AT 4 FT, NO BEDROCK NO REFUSAL, NO CAVING BACKFILLED WITH NEAT CEMENT							
	15									
	20									
	25									

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The Meadows at Isleton RV Park

Location:	301-401-501 Jackson Slough Rd, Isleton, CA 95641				
Client:	The Meadows at Isleton, LLC				
Project No.:	05890-01	Boring No.:	D7	Figure:	9

EXPLORATORY BORING LOG NO. D8

Date Drilled: 3/11/2022	Logged by: CG	Checked by: Fred Yi
Driller: H1 Drilling	Drill Rig: CME 75 Drill Rig Soilild Flight	Auger Type: Solid Flight Auger
Borehole Dia. (in): 6	Hammer Type: Auto	Hammer Weight (lb): 140
Drop Distance (in): 30	SPT O.D./I.D. (in): 2.00/1.38	M. CAL O.D./I.D. (in): 2.50/2.00
Surface Elevation (ft):	Latitude:	Longitude:

ELEVATION (ft)	DEPTH (ft)	LITHOLOGY	ENGINEERING CLASSIFICATION AND DESCRIPTION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	FIELD/LAB TESTS
			(OH) Clayey organic silt, light brown, moist	Native						
			(OH) Clayey organic silt, with sand, light brown, reddish, stiff, wet		☐		6 5 8			
			medium stiff, wet							
			(OH) Clayey organic silt, with sand, dark brown, blackish							
	5		medium stiff, wet	▼	☐		3 3 3			
	10		very soft, very wet		☐		Push Push Push			
			GROUNDWATER AT 5 FT, NO BEDROCK NO REFUSAL, NO CAVING BACKFILLED WITH NEAT CEMENT							
	15									
	20									
	25									

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The Meadows at Isleton RV Park			
Location:	301-401-501 Jackson Slough Rd, Isleton, CA 95641		
Client:	The Meadows at Isleton, LLC		
Project No.: 05890-01	Boring No.: D8	Figure: 10	

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UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

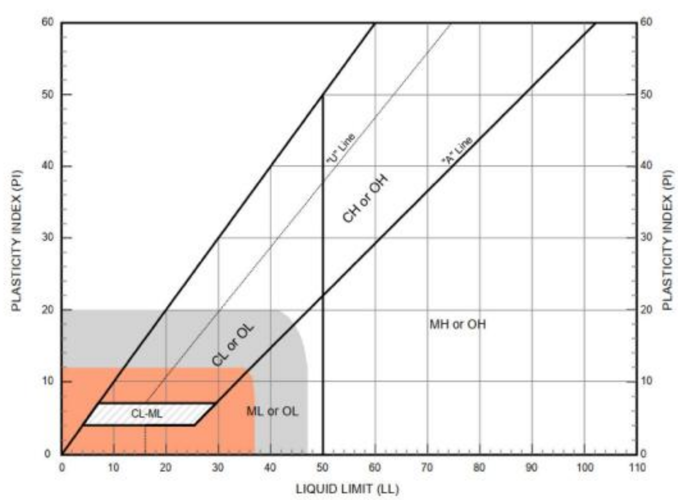
COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)			
Clean Gravels (Less than 5% fines)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)		
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
Clean Sands (Less than 5% fines)			
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size		SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines More than 12% fines		
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

LABORATORY CLASSIFICATION CRITERIA

Important Note: Soil classifications provided in the boring logs are primarily based on field and laboratory visual classification with modifications when laboratory test results are available.

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_u = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or PI less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with PI greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_u = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or PI less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
GC	Atterberg limits above "A" line with PI greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:
Less than 5 percent .... GW, GP, SW, SP
More than 12 percent .... GM, GC, SM, SC
5 to 12 percent .... Borderline cases requiring dual symbols



MID PACIFIC ENGINEERING, INC.

The Meadows at Isleton RV Park					
Location:	301-401-501 Jackson Slough Rd, Isleton, CA 95641				
Client:	The Meadows at Isleton, LLC				
Project No.:	05890-01	Boring No.:	USCS	Figure:	11

GENERAL NOTES

SAMPLING / WATER LEVEL				FIELD & LABOPRATORY TESTS	
	Standard Penetration Tests		Shelby tube sampler	N Standard Penetration Test Resistance (Blows/ft) Dist. Disturbed sample N.R. No recovery of sample PP Pocket Penetrometer DCP Dynamic Cone Penetrometer P200 Pass #200 screen wash SA Sieve Analysis (Gradation) Hydro. Hydrometer Analysis Att. Atterberg limits	PI Plasticity Index EI Expansive Index MDC Maximum Density - Optimum Moisture Curves UC Unconfined Compression Test DS Direct Shear Test TX Triaxial Compression Test Consol. Consolidation RV R-Value (CT 301) K Permeability Test Cor. Chemical/Corrosivity Tests SE Sand Equivalent
	Modified California Sampler (6" Tube)				
	Modified California Sampler (1" Rings)		Water encountered during drilling		
	Bulk Samples		Water encountered after drilling		

SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve classified as boulders, cobbles, gravel, or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve typically classified as silts if they are slightly plastic or non-plastic or clays if they are plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined based on their in-place relative density and fine-grained soils based on their consistency.

COORDINATES AND ELEVATION

Latitude and Longitude are approximately determined using a cellphone or hand-held GPS device. The accuracy of such devices is variable. Surface elevation was approximately determined from topographic maps of the area or Google Earth [1]. Typically, surface elevation data was not based on actual topographical survey. 1) Copyright of Google.

ENGINEERING PROPERTIES FROM SPT BLOWS [2]

SAND & GRAVEL [1]			SILT & CLAY [1]		
Number of SPT Blows (N_{60})	Descriptive Relative Density	Approximate Relative Density (%)	Number of SPT Blows (N_{60})	Approximate Soil Consistency	Unconfined Compressive Strength, q_u (tsf)
0 – 4	Very Loose	0 – 15	< 2	Very Soft	Less than 0.25
4 – 10	Loose	15 – 35	2 – 4	Soft	0.25 – 0.50
10 – 30	Medium Dense	35 – 65	4 – 8	Medium Stiff	0.50 – 1.00
30 – 50	Dense	65 – 85	8 – 15	Stiff	1.00 – 2.00
> 50	Very Dense	85 – 100	15 – 30	Very Stiff	2.00 – 4.00
1) Terzaghi and Peck (1996), Soil Mechanics in Engineering Practice, 3rd Ed			> 30	Hard	More than 4.00

2) Number of blows of 140 lb hammer falling 30 inches to drive a 2-inch O.D. (1-3/8-inch I.D.) split-barrel sampler the last 12 inches of an 18-inch drive (ASTM-1586 standard penetration test).

RELATIVE PROPORTIONS OF SAND AND GRAVEL		RELATIVE PORTIONS OF FINES	
Descriptive Term(s) of other Constituents	Percent of Dry Weight	Descriptive Term(s) of other Constituents	Percent of Dry Weight
Trace	< 15	Trace	< 5
With	15 – 29	With	5 – 12
Modifier	> 30	Modifier	> 12
GRAIN SIZE TERMINOLOGY		**PLASTICITY DESCRIPTION**	
Major Component of Sample	Particle Size	Term	Plasticity Index
Silt or Clay	Passing #200 sieve (0.075mm)	Non-plastic	0
Sand	#4 to #200 sieve (4.75mm to 0.075mm	Low	1 – 10
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)	Medium	11 – 30
Cobbles	12 in. to 3 in. (300mm to 75mm)	High	> 30
Boulders	Over 12 in. (300 mm)		

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The Meadows at Isleton RV Park					
Location:	301-401-501 Jackson Slough Rd, Isleton, CA 95641				
Client:	The Meadows at Isleton, LLC				
Project No.:	05890-01	Boring No.:	NOTES	Figure:	12

APPENDICES

APPENDIX A

APPENDIX A

A. GENERAL INFORMATION

The performance of a *Geotechnical Engineering* investigation for the proposed The Meadows at Isleton RV Park to be located at 301-401-501 Jackson in Isleton, California, was authorized by Ms. Sandeep Lidder on February 24, 2022. The authorization was for an investigation as described in our proposal dated December 29, 2021, sent to our client, The Meadows at Isleton, LLC, whose mailing address is 301 Jackson Slough Rd, Isleton, California 95641; telephone (415) 691-9157; email address info@themeadowsatisleton.com.

In performing this investigation, we referred to the following documents:

- 50-scale Master Plan of The Meadows RV Park, prepared by Ron D. Beard & Associates, dated December 8, 2021.

B. FIELD EXPLORATION

Eight soil borings were drilled on March 11, 2022, at the approximate locations indicated on Figure 2, utilizing a CME 75 truck-mounted drill rig equipped with six-inch diameter, solid-stem helical flight augers. The borings were drilled to maximum depths of approximately 11½ to 21½ feet below existing site grades.

At various intervals, relatively undisturbed soil samples were recovered with a 2½-inch O.D., 2-inch I.D. Modified California sampler (ASTM D3550) driven by an automatic 140-pound hammer freely falling 30 inches. The number of blows of the hammer required to drive the 18-inch-long sampler each 6-inch interval was recorded with the sum of the blows required to drive the sampler the lower 12-inch interval being designated the penetration resistance or "blow count" for that particular drive.

The samples obtained with the modified California sampler were retained in 2-inch diameter by 6-inch long, thin-walled tubes contained within the sampler.

Immediately after recovery, the field engineer visually classified the soil in the tubes and the ends of the tubes were sealed to preserve the natural moisture contents. Disturbed bulk samples of the surface materials also were obtained at various locations and depths. Soil samples were taken to our laboratory for additional classification (ASTM D2488) and selection of samples for testing.

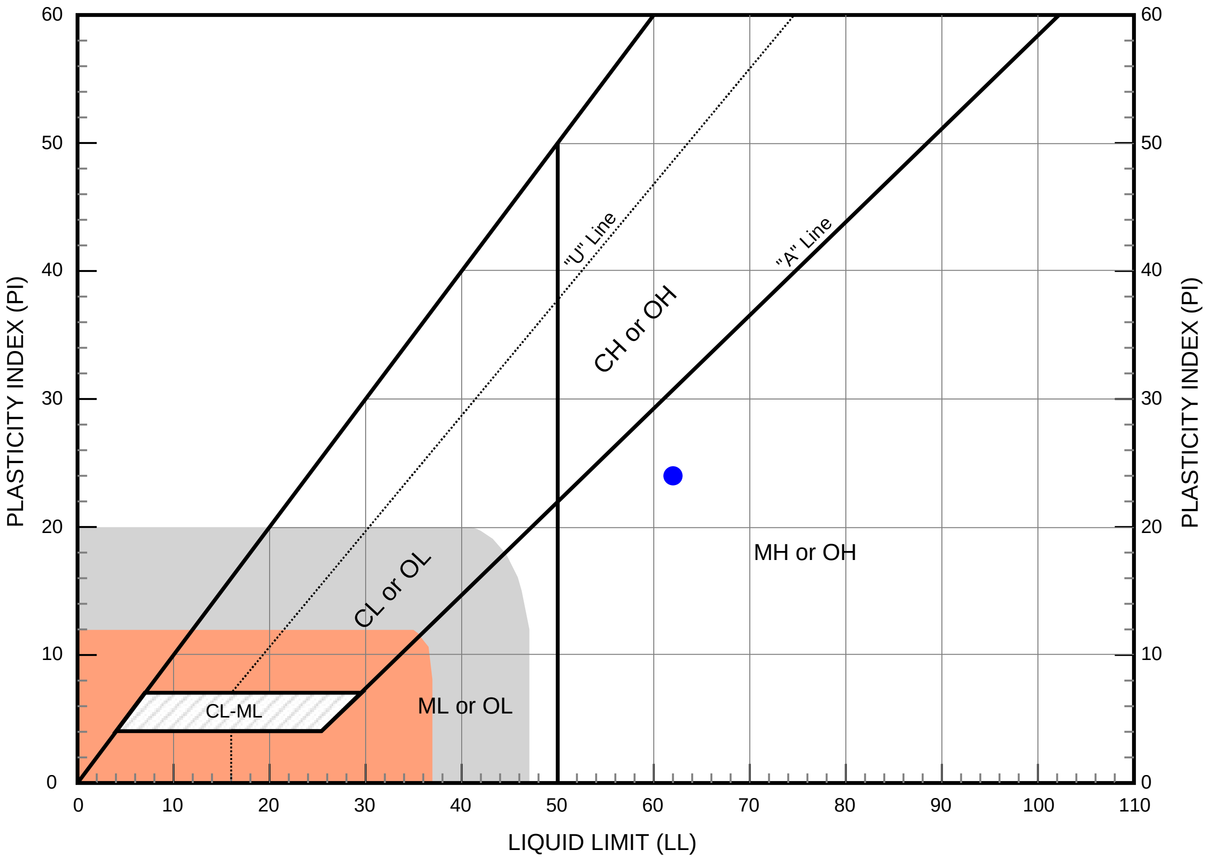
The Logs of Soil Borings, Figures 3 through 10, contain descriptions of the soils encountered in each boring. A Boring Legend explaining the Unified Soil Classification System and the symbols used on the logs is contained on Figure 11. A General Notes is included in Figure 12.

C. LABORATORY TESTING

Representative samples of soils including relatively undisturbed samples and bulk samples are selected by project engineer and assigned for laboratory testing. Laboratory tests performed for this project are as follows:

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil by Mass
- ASTM D2937 Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method
- ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- ASTM D1140 Standard Test Methods for Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing
- ASTM D7928 Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis
- ASTM D2166 / D2166M - 16 Standard Test Method for Unconfined Compressive Strength of Cohesive Soil
- ASTM D4829 Standard Test Method for Expansion Index of Soils
- ASTM D2844 Standard Test Method for Resistance R-Value and Expansion Pressure of Compacted Soils
- Soil Resistivity and Chemical Analysis testing in accordance with No. 643 (Modified Small Cell), CT 532, CT 422, and CT 417, etc.

The results of these tests are included on the boring logs at the depth each sample was obtained and/or attached figures. Corrosivity testing was performed by our subconsultant Sunland Analytical in Rancho Cordova, California.



	Boring No.	Depth (ft)	USCS Classification	PL	LL	PI
●	D2	2 - 3	Organic Clay	38	62	24

MID PACIFIC ENGINEERING, INC.

PLASTICITY CHART (ASTM D4318)

Project:	THE MEADOWS AT ISLETON RV PARK		
Location:	301-401-501 Jackson Slough Road, Isleton, California		
Project No.:	05890-01	Engineer:	
Figure:	A-1		

HYDROMETER TEST RESULTS

(ASTM D422)

Sample Number	Depth (ft)	Particles Passing the No. 200	Clay Particles Passing 0.002µm)
D2	2 - 3	94.9%	26.2%

MPE
MID PACIFIC ENGINEERING, INC.

HYDROMETER TEST RESULTS

THE MEADOWS AT ISLETON RV PARK
301-401-501 Jackson Slough Road
Isleton, California

FIGURE A2

Date: 04/22

MPE No. 05890-01

UNCONFINED COMPRESSION TEST RESULTS

(ASTM D2166)

Sample Number	Depth (ft)	Unconfined Strength (psi)	Undrained Shear Strength (psi)
D1-2II	3.5	4.2	2.1

RESISTANCE VALUE TEST RESULTS

(California Test 301)

Material Description: Dark Brown, Clayey Organic Silt (OH) with 4% Lime in Dry Weight

Location: D2 (2 to 3 feet)

Specimen No.	Dry Unit Weight (pcf)	Moisture at Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (psi)	R-Value
1	86.4	28.7	193	87	83
2	86.3	27.2	350	104	91
3	88.6	26.4	510	234	90

Resistance-value @ 300 psi = 89

MPE
MID PACIFIC ENGINEERING, INC.

RESISTANCE VALUE TEST RESULTS

THE MEADOWS AT ISLETON RV PARK

301-401-501 Jackson Slough Road
Isleton, California

FIGURE A4

Date: 04/22

MPE No. 05890-01

EXPANSION INDEX TEST RESULTS

(ASTM D4829-03)

(UBC 18-2)

Sample Number	Material Description	Pre-Test Moisture (%)	Post-Test Moisture (%)	Dry Density (pcf)	Expansion Index
D2 (2 – 3')	Clayey Organic Silt (OH)	23.3	41.3	79	60

CLASSIFICATION OF EXPANSIVE SOIL

EXPANSION INDEX	POTENTIAL EXPANSION
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
Above 130	Very High

MPE
MID PACIFIC ENGINEERING, INC.

EXPANSION INDEX TEST RESULTS

THE MEADOWS AT ISLETON RV PARK

301-401-501 Jackson Slough Road

Isleton, California

FIGURE A5

Date: 04/22

MPE No. 05890-01

APPENDIX B

REDDING OFFICE
530-246-9499 ph

SACRAMENTO OFFICE
916-927-7000 ph

APPENDIX B

GUIDE EARTHWORK SPECIFICATIONS

THE MEADOWS AT ISLETON RV PARK

301-401-501 Jackson

Isleton, California

MPE No. 05890-01

PART 1: GENERAL

1.1 SCOPE

A. General Description

This item shall include clearing of all surface and subsurface structures including undocumented fills, stockpiles, vaults, pits, underground piping, septic systems, pavements, concrete slabs, foundations, fences, surface debris including all asphalt concrete rubble, concrete rubble, trees, shrubbery and associated items; preparation of surfaces to be filled, filling, spreading, compaction, observation and testing of the fill; and all subsidiary work necessary to complete the grading of the building area to conform with the lines, grades and slopes as shown on the accepted Drawings.

B. Related Work Specified Elsewhere

1. Trenching and backfilling for sanitary sewer system: Section ______.
2. Trenching and backfilling for storm drain system: Section ______.
3. Trenching and backfilling for underground water, natural gas, and electric supplies: Section ______.

C. Geotechnical Engineer

Where specific reference is made to "Geotechnical Engineer" this designation shall be understood to include either him or his representative.

1.2 PROTECTION

A. Adequate protection measures shall be provided to protect workers and passers-by at the site. Streets and adjacent property shall be fully protected throughout the operations.

B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on or near the construction site.

D. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

E. Surface drainage provisions shall be made during the period of construction in a manner to avoid creating a nuisance to adjacent areas.

F. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance.

1.3 GEOTECHNICAL REPORT

A. A Geotechnical Engineering Report (MPE No. 05890-01; dated April 6, 2022) has been prepared for this site by Mid Pacific Engineering, Inc., Geotechnical Engineers. A copy is available for review at the office of Mid Pacific Engineering, Inc., 840 Embarcadero Drive, Suite 20, Sacramento, California 95605.

B. The information contained in this report was obtained for design purposes only. The Contractor is responsible for any conclusions he/she may draw from this report; should the Contractor prefer not to assume such risk, he/she should employ their own experts to analyze available information and/or to make additional borings upon which to base their conclusions, all at no cost to the Owner.

1.4 EXISTING SITE CONDITIONS

The Contractor shall be acquainted with all site conditions. If unshown active utilities are encountered during the work, the Architect shall be promptly notified for instructions. Failure to notify will make the Contractor liable for damage to these utilities arising from Contractor's operations subsequent to the discovery of such unshown utilities.

1.5 SEASONAL LIMITS

Fill material shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rains, fill operations shall not be resumed until field tests indicate that the moisture contents of the subgrade and fill materials are satisfactory.

PART 2: PRODUCTS

2.1 MATERIALS

A. All fill shall be of approved local materials from required excavations, supplemented by imported fill, if necessary. Approved local materials are defined as local soils free from significant quantities of rubble, rubbish and vegetation, and having been tested and approved by the Geotechnical Engineer prior to use. Clods, rocks or hard lumps exceeding three inches (3") in final size shall not be allowed in the upper two feet (2') of any fill supporting pavements and structures. The upper twelve inches (12") of all pad subgrades shall consist of on-site or imported non-expansive, granular soils, aggregate base, or properly lime-treated native soils. Expansive clays shall not be used as fill within the upper twelve inches (12") of the building pad.

B. Imported fill materials shall be approved by the Geotechnical Engineer; they shall meet the above requirements. If select non-expansive soils are to be used for fill they shall have plasticity indices not exceeding fifteen (15), when tested in accordance with ASTM D4318; shall have a maximum expansion index not exceeding twenty (20) when tested in accordance with ASTM D4829; *and*, shall be of three-inch (3") maximum particle size. Import fill shall be clean of contamination with appropriate documentation. All imported materials shall be approved by the Geotechnical Engineer prior to being transported to the site.

C. Water for use in subgrade stabilization shall be clean and potable and shall be added during mixing, and remixing and compaction operations.

D. Asphalt concrete, aggregate base, aggregate sub-base, and other paving products shall comply with the appropriate provisions of the *State of California (Caltrans) Standard Specifications*, latest editions.

PART 3: EXECUTION

3.1 LAYOUT AND PREPARATION

Lay out all work, establish grades, locate existing underground utilities, set markers and stakes, set up and maintain barricades and protection of utilities--all prior to beginning actual earthwork operations.

3.2 CLEARING, GRUBBING AND PREPARING BUILDING PADS AND PAVEMENT AREAS

A. The site shall be cleared of existing surface and subsurface structures, rubble, debris, trees and brush, and underground piping to be relocated or abandoned including backfill, rubbish, rubble, and other deleterious materials. Deeper scarification and/or cross-ripping, to depths of twelve inches (12"), shall be performed as directed by the Geotechnical Engineer, based on the exposed conditions. Exposed remnants, rubble and debris shall be removed from the subgrades. Hand picking of exposed roots, rubble and debris shall be performed by the Contractor to adequately clear the grades and soils to be used as fill. Subsurface utilities to be relocated or abandoned shall be removed from within and to at least five feet beyond the perimeter of the proposed structural areas; remaining piping beyond the structure that is not removed shall be plugged. Trees and shrubs designated to be removed shall include the entire rootball and all roots larger than one-half inch (½") in diameter. Excavations and depressions resulting from the removal of such items, as well as any existing excavations or loose soil deposits, as determined by the Geotechnical Engineer, shall be cleaned out to firm, undisturbed soil and backfilled with suitable materials placed and compacted as engineered fills in accordance with these specifications.

B. Following site clearing operations, the building pad areas and foundation lines and areas of artificial fills within at-grade improvements shall be subexcavated to the depths and widths as recommended in the Geotechnical Engineering Report. The exposed subgrade shall be scarified to a depth of twelve inches (12") until it is free from ruts, hummocks, remnant of previous structures, or uneven features, moisture conditioned to at least two percent above the optimum moisture content, and thoroughly and uniformly compacted to ninety percent (90%) of the maximum dry density as determined by ASTM D1557. Sub-excavations shall be backfilled with engineered fill as recommended in the Geotechnical Engineering Report.

C. The remainder of the building pad and structural area subgrades shall be scarified to at least twelve inches (12"), moisture conditioned to at least two percent above the optimum moisture content, and thoroughly and uniformly compacted to ninety percent (90%) of the maximum dry density.

D. Subgrade preparation and compaction shall extend at least five feet (5') beyond the proposed structure lines, or as required by the Geotechnical Engineer based on the exposed soil and site conditions.

E. When the moisture content of the subgrade is below that required to achieve the specified density, and that minimum content recommended in the geotechnical report, water shall be added until the proper moisture content is achieved.

F. When the moisture content of the subgrade is too high to permit the specified compaction to be achieved, the subgrade shall be aerated by blading or other methods until the moisture content is satisfactory for compaction.

G. After the foundations for fill have been cleared, plowed or scarified, they shall be disced or bladed until uniform and free from large clods, brought to the proper moisture content and compacted to not less than eighty eight percent (88%) of the maximum dry density as determined by the ASTM D1557 Compaction Test. Soil compaction shall be performed using a heavy, self-propelled sheepsfoot compactor.

H. Compaction operations shall be performed in the presence of the Geotechnical Engineer who will evaluate the performance of the materials under compactive load. Unstable soil deposits, as determined by the Geotechnical Engineer, shall be excavated to expose a firm base and grades restored with engineered fill in accordance with these specifications.

3.3 PLACING, SPREADING AND COMPACTING FILL MATERIAL

A. Engineered fills shall be placed in layers which when compacted shall not exceed six inches (6") in thickness. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to promote uniformity of material in each layer.

B. When the moisture content of the fill material is below that required to achieve the specified density, and that minimum content recommended in the geotechnical report, water shall be added until the proper moisture content is achieved.

C. When the moisture content of the fill material is too high to permit the specified degree of compaction to be achieved, the fill material shall be aerated by blading or other methods until the moisture content is satisfactory.

D. After each layer has been placed, mixed and spread evenly, soils shall be thoroughly compacted to at least ninety percent (90%) of the ASTM D1557 maximum dry density. Engineered fills placed outside of the structure lines and outside of foundation areas shall be compacted to at least ninety percent (90%) of the ASTM D1557 maximum dry density. Additional passes with the compactor shall be added, as required by the Geotechnical Engineer, to achieve a firm, stable and unyielding subgrade condition. Compactive effort should be applied uniformly across the full width of fill construction. Soils compaction shall be performed using a heavy, self-propelled sheepsfoot compactor, to the satisfaction of our on-site representative. Each layer shall be compacted over its entire area until the desired density has been obtained.

E. Each layer of engineered fill placed to backfill excavations or placed adjacent to sloping ground shall be properly benched at least 12 inches into the side slopes ad as recommended by the Geotechnical Engineer.

F. The filling operations shall be continued until the fills have been brought to the finished slopes and grades as shown on the accepted Drawings.

3.4 FINAL SUBGRADE PREPARATION

A. The upper twelve inches (12") of pads, and exterior flatwork subgrades shall consist of on-site or imported non-expansive, granular soils, aggregate base, or lime-treated native clayey soils. Final building pad and flatwork subgrades slabs shall be brought to a uniform moisture content of at least the optimum, and shall be uniformly compacted to at least ninety-five percent (95%) relative compaction

B. For untreated pavement subgrades, the upper six inches (6") of final subgrades supporting pavement sections shall be brought to a uniform moisture content of at least the optimum moisture content and shall be uniformly compacted to at least ninety-five percent (95%) relative compaction, regardless of whether final subgrade elevations are attained by filling, excavation, or are left at existing grades. Pavement subgrades shall be proof-rolled in the presence of the Geotechnical Engineer prior to placement of aggregate base and shall be stable under construction equipment traffic.

3.6 TRENCH BACKFILL

Utility trench backfill shall be placed in lifts of no more than six inches (6") in compacted thickness. Utility trenches within the building perimeter should be backfilled with compactable material matching the upper 12 inches of building subgrade material. Each lift shall be compacted to at least ninety percent (90%) compaction, as defined by ASTM D1557. The upper six inches (6") of backfill within pavement areas shall be compacted to at least ninety-five percent (95%) compaction.

3.7 TESTING AND OBSERVATION

A. Grading operations shall be observed by the Geotechnical Engineer, serving as the representative of the Owner.

B. Field density tests shall be made by the Geotechnical Engineer after compaction of each layer of fill. Additional layers of fill shall not be spread until the field density tests indicate that the minimum specified density has been obtained.

C. Earthwork shall not be performed without the notification or approval of the Geotechnical Engineer. The Contractor shall notify the Geotechnical Engineer at least two (2) working days prior to commencement of any aspect of the site earthwork.

D. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, the Contractor shall make the necessary readjustments until all work is deemed satisfactory, as determined by the Geotechnical Engineer and the Project Design Engineer. No deviation from the specifications shall be made except upon written approval of the Geotechnical Engineer or Project Design Engineer.

/

ENVIRONMENTAL PLANNING
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Meadows of Isleton RV Park Project

Cultural Resources Survey

Prepared For: RMM Environmental Planning Inc.

Prepared By: Tremaine & Associates

October 2022

Cultural Resources Survey for the Meadows at Isleton Project

Tremaine & Associates, Inc. conducted a cultural resources investigation for the above-mentioned project on behalf of the City of Isleton. It was required as part of a Conditional Use Permit to identify potential environmental impacts per CEQA regulations. The work included a records search, literature review, and pedestrian survey.

Project Location

The project involves the construction of a new luxury RV resort within the City of Isleton. The project is in a rural region of western Sacramento County, about 30 miles south of Sacramento and approximately12 miles west of Interstate 5 at 301-501 Jackson Slough Road (**Figure 1**). It is situated within the Isleton 7.5-minute U.S. Geographical Survey (USGS) topographic quadrangle, Township 4 North, Range 3 East, section 26.

Project Description and Area of Potential Effect

The Area of Potential Effects (APE) encompasses approximately 14.6 acres west of Jackson Slough Road southwest of downtown Isleton on Brannan Island. The Meadows at Isleton is a proposed project to construct a 135-site RV park, including a 3,250-square foot lodge with other on-site amenities such as a swimming pool, playground, and various other recreational space.

Records Search and Literature Review Summary

On March 30, 2022, a records search was conducted by staff at the North Central Information Center (NCIC) located at Sacramento State University to research previous sites and surveys within a ¼-mile radius of the APE (**Appendix A**, NCIC File No. SAC-22-71).

Previously Recorded Resources
One previously recorded cultural resource was identified within the project area (P-34-5225) and one cultural resource was identified within a ¼-mile radius (P-34-5111). The first is a Tribal Cultural Landscape (TCL identified by the Nisenan as *Hoyo Sayo/Tah Sayo* (UAIC) and the Plains Miwok as *Waka-ce/Waka-Ly* (Wilton Rancheria). It is a narrow corridor, 55 miles in length, that follows both banks of the Lower Sacramento River from the confluence with the Mokelumne River at Collinsville, north to the confluence with the Feather River at Verona. The primary characteristics of this landscape are waterways, tule habitat, fisheries, and other wildlife. No mapped features of this landscape fall within the boundaries of the project area.

The second resource, P-34-5111, is a section of the Southern Pacific Company Railroad situated over 600 feet southeast of the APE. It was recorded in 1992 by Dames & Moore and consists of two historic era railroad berms connected by a railroad bridge across Georgiana Slough. There are wooden pilings scattered ties, railroad spikes, and other materials associated with the train tracks and bridge.

Additional Nearby Resource

The Isleton Mound site is situated approximately 0.35 miles northeast of the project area in downtown Isleton. The location of the site is centered around the Hotel Del Rio at 209 Second Street in Isleton, at the landside toe of the levee flanking the Sacramento River. A plaque on the main façade of this building, dedicated by E Clampus Vitus in 2005, states that during construction [in 1948] an old Indian burial ground was discovered. Historic newspaper articles from the early 1900s note that in addition to human remains, a large number of shell beads, abalone shell ornaments, and a charred fish net fragments were observed.

Previously Conducted Studies

One previous cultural resource study has been conducted within the project area, covering approximately 95% of the parcel. It was an archaeological survey completed by Stantec Consulting in 2005 (Larkin 2005). The survey area covered 14 acres within and surrounding the current project area. No resources were observed during this survey.

Additionally, 16 studies were previously conducted within a ¼-mile radius (Bell 2006; Boyer 1990; Derr 1997; Haas & Vargas 2019; ICF International 2012; Jensen 2002; Johnson 1975; Leach-Palm et al. 2008; Maniery 1991; Martinez et al. 2008; Parus Consulting & Ayres Associates 2008; Peterson & Peterson 1994; Sanchez 2018; Shapiro & Syda 1997; Werner 1998; Westphal 2016) (**Appendix A**).

TREMAINE reviewed additional sources held in their in-house library as well as online sources including:

• California Place Names (Gudde 2010)
• Historic Spots in California (Hoover et al. 2002)
• Handbook of North American Indians, Volume 8 (Wilson and Towne 1978)
• Handbook of Indians of California (Kroeber 1925)
• California Archaeology (Moratto 1984)
• California Prehistory (Jones and Klar 2007)

A series of historic maps ranging from 1857 to 1991 were reviewed in **Table 1** below:

Table 1. *Historic and Topographic Maps and Historic Aerial Reviewed*

Date	Map Name	Description
1885	Official Map of Sacramento County, California	Shows lots owned Township 4 North, Range 3 East. Hart F. Smith owns the entirety of the land within the project area and another 600 acres. Does not show Jackson Slough Road or the historic road heading south just west of the project area. Map encompasses the project area.
1908	Sacramento River Survey Map	Does not show the present-day Jackson Slough Road. Shows an historic road heading south just west of the project area as well as historic waterways. Shows the Smith Estate as a large, cultivated area west of the project area including the location of the Cannery. Covers the area surrounding Isleton and encompasses the entirety of the project area.
1910	USGS Isleton 30-minute Topographic Map (1:31,680)	Shows the alignment of present-day Jackson Slough Road. Shows an historic road to the west of the project area heading south as well as historic topography and locations of structures. Covers the wider project area and encompasses the entirety of the project area.
1952	USGS Isleton Topographic Map (1:24,000)	Shows the alignment of present-day Jackson Slough Road. Historic unnamed road is no longer plotted. Shows waterways as well as topography. Plots structure locations to the east outside of the project area. Covers the wider area and encompasses the entirety of the project area.
1957 1978	Historic Aerial	Shows the project area covered entirely by open farmland bordered by Jackson Slough Road to the east and a dirt road to the west. Narrow dirt tracks head east-west through the project area. One present day structure is observed in the southeast corner of the project area.
1965	Geologic Map of California: Sacramento Sheet (1:250,000)	Shows the project area located within the recent Quaternary Great Valley stream channel deposits. Shows modern roads including Highway 5 but does not show structure locations. Encompasses the entirety of the project area.
1978	USGS Isleton 7.5-Minute Topographic Quadrangle (1:24,000)	Shows modern location of Jackson Slough Road including dirt roads and structure locations. Project area is shown as open space with a structure in the southeast section. Shows a small portion of Colusa County and encompasses the entire project area.

Jackson Slough Road appears in its present-day alignment as far back as 1910. It was likely built on the eastern levee bordering Jackson Slough prior to reclamation efforts. The western edge of Jackson Slough appears to have run axially through the project parcel. Historic aerials between 1957 and 1978 show the project area being continuously used as farmland. No structures are observed within the project area until the 1957 aerial which shows a present-day structure in the southeastern corner of the project area.

Native American Consultation

The City of Isleton will conduct all consultation with Native American tribes pursuant to Senate Bill 18 of 2004 (Government Code §65352) and AB 52 of 2014 (Public Resources Code §21080.3.1 et seq.). Consultation efforts will be documented to meet state requirements. Letters complying with draft Senate Bill 18 and Assembly Bill 52 will be sent to tribal contacts

Background

The physiographic setting and distribution of nearby natural resources provide a basis for assessing the suitability of the project area to host cultural resources. Its potential for containing *buried* archaeological deposits is also weighed based on knowledge regarding the local geology and soils. These factors are considered below:

Environmental Setting

The project area is situated on the west side of former Jackson Slough, a small distributary of the Sacramento River, that once extended southerly, dividing Andrus and Brannan islands. It lies within the west central portion of the Sacramento-San Joaquin Delta (Delta). At the mid-nineteenth century, these islands were no more than slightly rimmed saucers of freshwater wetlands resting on deep beds of peat, lying within a fretwork of winding river channels and inter-connecting sloughs that were washed twice daily by the tides (Thompson 2006).

This landscape also featured scattered remnants of glacial-age Aeolian dunes or sand mounds that rose above the marsh plains. Native Californians, long attracted to these high spots which offered refuge during times of frequent flooding, commonly built their villages at such locations. Most of the plants and animals associated with the surrounding mosaic of habitats were economically, as well as ritually, important to them.

Natural levees and mounds in the area characteristically hosted riparian forests of Fremont cottonwood, California sycamore, valley oak, California box elder, white alder, Goodding's black willow, red willow, mule fat shrub, buttonbush, Virgin's bower vine, Pacific dewberry, hoary nettle, poison oak, and California wild grape (Thompson 1961; Vaghti & Greco 2007). The wetlands of the interior were dominated by tall dense stands of common tule and cattail, along with various species of sedges, rushes, and other bulrushes (Kuchler 1977; Mayer & Laudenslayer 1988).

Historically, large game animals living in the Sacramento-San Joaquin Valley included black-tailed deer, tule elk, pronghorn, and grizzly bears. Among the carnivores were/are coyotes, gray foxes, raccoons, ringtails, weasels, badgers, skunks, bobcats, and mountain lions (Grinnell et al. 1937; Zeiner et al. 1990b). The Delta, more specifically, supported a diverse and dynamic communities of native wildlife, including an abundance of beavers, river otters, and mink. It was, and continues to be, home to a variety of ducks and geese, as well as other waterfowl, among which are grebes, pelicans, cormorants, bittern, egrets, herons, rails, coots, and cranes (Cogswell 1977).

Littoral fish, inhabiting the shallow ponds, blind channels, and backwaters of the marsh included tule perch and the now extinct thicktail chub (Robinson et al. 2014). Other Native inland fish inhabiting the streams, sloughs, lakes, ponds, and wetlands of the region included rainbow trout, hitch, Sacramento blackfish, hardhead, speckled dace, Sacramento pike-minnow, and suckers (Moyle 2002). The Chinook salmon runs here were once among the largest on the Pacific Coast (Yoshiyama et al. 2001). Sturgeon, another anadromous fish species of note, were/are also present within the Sacramento River (Moyle 2002).

Geology & Soils

The project area is situated within recent Quaternary Great Valley stream channel deposits (Strand & Koenig 1965). The layers of stream channel deposits are composed of accumulated silts and clay, primarily derived from flooding of the Sacramento River, its tributaries, and other creeks and streams.

Soils mapped within the APE include: Sailboat, Valpac, and Columbia series (NCSS 2003). The eastern section of the APE lies within the Columbia series (40%). The northern section of the APE contains the Sailboat series (40%). The western section of the APE contains the Valpac series (20%). Note: All three series are known to contain buried paleosols (**Figure 2**).

The Columbia series is a coarse loam primarily suited for irrigated crop land, consisting of very deep, moderately well drained soils formed in alluvium from mixed sources, reaching a depth of up to 59 inches. A paleosol is described situated at a depth of 55 to 59 inches (4.5 to 5 feet).

The Sailboat series is a fine loam primarily suited for irrigated crop land or orchards, consisting of very deep, somewhat poorly drained soils formed in alluvium from mixed sources, reaching a depth of up to 62 inches. A paleosol is described situated at a depth of 28 to 34 inches (2.3 to 2.8 feet).

The Valpac series is a fine loam primarily suited for irrigated crop land or orchards, consisting of very deep, somewhat poorly drained soils formed in alluvium derived from mixed rocks, reaching a depth of up to 61 inches. A paleosol is described situated at a depth of 35 to 41 inches (3 to 3.4 feet).

This is consistent with conclusions of Meyer and Rosenthal (2008) who note that older floodplains of the Late Holocene, especially along the axis of the Sacramento Valley, are likely to be buried beneath younger alluvium. During the Middle Archaic, following an initial period of deposition about 7550 years ago, fans and floodplains are said to have stabilized. This period of landscape stability is indicated by buried soils found in alluvial landforms throughout central California (Rosenthal et al. 2007:152). It is during the Late Middle Archaic that a distinct riverine pattern of adaptation began, reflecting the emergence of logistically organized subsistence practices and increasing residential stability began along river corridors. At roughly this time, small seed reliance appears to have increased in the Central Valley (Whitaker and Wohlgemuth 2021:360).

Prehistory & Ethnohistory

The regional and local prehistory, ethnography, and history is summarized into a framework of five temporal periods: Paleo-Indian; Lower Archaic; Middle Archaic; Upper Archaic; and Emergent. Overviews of the prehistory of the Delta and vicinity are provided in several sources (cf., Bennyhoff 1994; Milliken et al. 2007; Moratto 1984; Rosenthal et al. 2007) below. These, together with the environmental background, provide a context within which to further assess the cultural sensitivity of the project location.

<u>Paleo-Indian Period (12,000 to 8,000 B.P.)</u>

Humans are noted first present in the Central Valley and Coast Range regions of California during this period. What little is known is drawn from sparse and widely scattered isolated finds of Clovis-like large, fluted spear or atlatl points suggesting an emphasis on the hunting of large game such as mammoths and bison by small groups of highly mobile peoples (Fredrickson 1973; Jones and Klar 2007; Moratto 1984). Over the millennium, however, most of the evidence for their existence has been eroded away, redeposited, or deeply buried under accumulated gravels and silts (Moratto 1984; Meyer and Rosenthal 1997). Consequently, prehistory in Central California largely has focused upon the latter half of the Holocene (i.e., the last 5,000 years) for which the archaeological record is more abundantly documented.

<u>Lower Archaic Periods (8,000 to 5,000 B.P.)</u>

Like the previous period, the Lower Archaic is not well characterized. In the lower San Joaquin Valley, Meyer and Rosenthal (1997) discovered a buried component in the Kellogg Creek drainage, at the foot of Mount Diablo, 12 to 14 feet below surface. It contained a sparse, diverse cultural assemblage, including traces of freshwater mussel, low to moderate densities of faunal material (primarily artiodactyls and small mammals), handstones, millingslabs, large cobble-core tools, and large projectile points and biface fragments. This assemblage suggests long-term, periodic use of the region. Lower Archaic components have also been found at the Marsh Creek site in the same vicinity (Meyer and Rosenthal 2009) and at the Sacramento City Hall site (Tremaine 2008).

<u>Middle Archaic Period (5,000 to 2,200 B.P.)</u>

The dominant subsistence activity during the Middle Archaic, according to Heizer (1949) was hunting. His conclusions were based upon relative proportions of stone tools present in assemblages dating to this period, including large concave base, and stemmed projectile points. Net weights, bone fishhooks, and bone spear tips provide evidence for fishing (Bennyhoff 1950; Gifford 1940; Ragir 1972). Burials from this period, in the Sacramento – San Joaquin Delta Region, tend to be extended, oriented towards the west, and often contain grave goods such as baked clay balls, charmstones, shell beads, and exotic minerals. More recent interpretations of the Middle Archaic note plant resources were important, along with freshwater fish (cf., Papers in Corey 2009; Milliken et al. 2007; Rosenthal et al. 2007; Schulz 1981).

Upper Archaic Period (2,200 to 1,000 B.P.)

Sites associated with the Upper Archaic Period contain substantial deposits of midden with shell, mammal and fish bone, charcoal, milling tools, and other artifacts. The number of mortars and pestles increase during this time, suggesting a greater reliance on acorn and seeds. A greater density of obsidian artifacts and shell beads suggest a greater complexity of exchange networks and social stratification (cf., papers in Hughes 1994; Milliken et al. 2007; Rosenthal et al 2007). During this period, however, fewer grave goods are found, generally being more utilitarian in nature than ornamental. Burials tend to be placed flexed positions with varied orientations (Fredrickson 1974).

Emergent Period (1,000 B.P. – 300 B.P.)

The Emergent Period dates between 1,000 B.P. and the arrival of the Spanish in Central California (i.e., 1770s). This period involves a dramatic change in the general economy, with large village sites situated on high ground, increased evidence of acorn harvesting and processing (Basgall 1987), introduction and use of the bow and arrow indicated by small projectile points, and use of clamshell disc beads as the primary medium of monetized exchange (cf., papers in Hughes 1994; Milliken et al. 2007; Rosenthal et al. 2007). During the latter part of the period (i.e., within the last 500 years), cremation became a common mortuary practice. Associated grave goods were often burned as well. Sites from the latter portion of this period sometimes contain items of Euro-American manufacture, such as glass trade beads or worked bottle glass.

Ethnographic Context

The project area is situated within the historic territory of the Plains Miwok. Like other Central California groups, Plains Miwok lifeways were greatly impacted by contact with Euro-Americans through missionization, outbreaks of disease, hostilities, as well as displacement by gold seekers, ranchers, and farmers. By the time ethnographers began to collect information, only a handful of people were left who knew anything about them prior to Contact. Much of what we know comes from the work of Bennyhoff (1977), who studied mission records, maps, and diaries, and interviewed the few remaining descendants. Levy's (1978) overview provides additional ethnographic data, as do Aginsky (1943), Barrett and Gifford (1933), Cook (1955a, 1955b), Kroeber (1925), and Schenck (1926). It is uncertain which tribelet occupied Brannon Island. Merriam (1907) suggests that the *Ochakumne* occupied the islands between San Joaquin and Sacramento Rivers

Regional History
The Spanish began exploring California' the interior about 1772 with expeditions to the Sacramento San Joaquin Delta (Cook 1960; Cutter 1950; Dillon 1982; McGowan1961; Schenck 1926; and Thompson 1957). Soon thereafter, the Franciscans from Catholic missions established in the Bay Area began recruiting Native Americans.

In 1821, Mexicans gained control of Alta California after fighting a war of independence from Spain. The new republic soon passed legislation permitting the privatization of land and began grants of large tracts to individuals upon the condition that these lands be ranched or cultivated and improved. John Sutter, a Swiss emigrant arriving in 1839, was granted land in the lower Sacramento Valley for the purposes of developing and stabilizing California's inland frontier.

In 1848, Mexico ceded California to the United States at the end of the Mexican American War, stipulating that the existing property rights of Mexican citizens be honored in the Treaty of Hidalgo. With the discovery of gold in 1848 and California's admission to the Union in 1850, rapid and profound change came to the region.

Local History
The 1885 Sacramento County plat map shows that the area within and surrounding the project area was owned by Hart Fellows Smith (1832-1902) (**Figure 3**). Smith is reported to have owned land on the northeastern corner of Brannan Island – all of Swamp Land District No. 74 – as far back as 1869, perhaps even earlier, as he was known to have nearly reclaimed all this land on his own by 1870 (Sacramento Daily Union 1870, 1871, 1872a). Smith also built, maintained, and reinforced a dam across the mouth of Jackson Slough and built a levee in his district, reported to be 30 feet wide and 6 feet tall (Sacramento Daily Union 1872b).

Smith primarily used his property as farmland and orchards, barley, Bartlett pears, peaches, and various vegetables, even sending a sample of string beans to the Great Exposition in Paris (Sacramento Daily Union 1874, 1899, 1919). In the later years of his life, Smith began to lease out some his acreage to other individuals including 300 acres to be used for planting asparagus with the intention of starting a cannery on his property, as part of his wider company holdings (Sacramento Daily Union 1897).

Hart F. Smith Jr. (1887-1928) appears to have also been very involved in the community as he was reported to be one of the trustees of Brannan Island and part of a committee in 1904 to raise the levees of Brannan Island and other surrounding islands

(Colusa Daily Sun 1904; Sacramento Daily Union 1907). According to the Sacramento River Survey map, by 1908, the Smith estate had expanded, taking up much of the riverfront land and included a Cannery, a barn, three wells, and a few other buildings. While the asparagus and canning business was still going strong in 1919, Smith Jr. – as the administrator of his father's company – decided to sell off most of the company's acreage, a total of 406 acres, with plans for a new cannery on the property (Plumas

Independent 1919a; Sacramento Daily Union 1919a). The Hart F. Smith Ranch Company was eventually bought by the Western Canning Company for a total of $223,000 (Sacramento Daily Union 1919b), the Hart F. Smith. Company dissolved in 1921 (Sacramento Daily Union 1921).

Field Methods

Justin Cairns (M.A., 9 years of experience) conducted a mixed-strategy pedestrian survey on March 27, 2022. The survey consisted of five-to-ten-meter parallel transects with closer observation in areas of exceptional visibility, such as vehicular disturbances, plowed areas, animal trails, and rodent excavation. Ground visibility, overall, was very poor, with most of the surface area consisting of raised crop beds covered in plastic (**Figure 4**).

The dirt and gravel driveway entering the project area showed some visibility with extremely compact dark brown soil made up of alluvial sediment with organic peat and clay components. The southern perimeter is the APE was bordered by a large ditch with vineyards present on the opposite side. The middle of the APE contained the raised crop beds filled with imported soil. The northern end of the APE contained a campground with a few campers present, a camp manager's house, garden plots, and some livestock. Overall, the vegetation had been mowed short but was very thick. Previous ground disturbances within the APE were shallow and related to farming and camping activities.

Study Findings & Conclusions

The project falls within a Tribal Cultural Landscape identified by the Nisenan as *Hoyo Sayo/Tah Sayo* and by the Plains Miwok as *Waka-ce/Waka-Ly*. It does not, however, contain any of the primary characteristics that make up this landscape (e.g., waterways, tule habitat, fisheries, and other wildlife). As such, the project will not significantly impact it.

While no evidence of prehistoric or historic deposits was found within the APE, there remains a moderate to high possibility that buried resources are present for the following reasons: (1) the project is situated in a favorable location along the west bank of former Jackson Slough near the confluence of the Sacramento River; and (2) the National Cooperative Soil Survey shows the project is situated on soils that contain buried paleosols between 2.3 and 5.0 feet deep. Meyer and Rosenthal (2008) have concluded that residential habitation sites began to emerge along the river corridors of the Sacramento Valley during the Late Middle Archaic period. These focused on suitable landforms such as levee and over-bank deposits. Paleosols on such landforms suggest long term stable conditions (i.e., long enough for soils to develop). Materials associated with human habitation are often found preserved in these deposits which have since been blanketed by later floodplain deposits (Rosenthal et al. 2007:152). Recently, TREMAINE found such a buried site situated on the backside of the Sacramento River levee in Walnut Grove containing mineralized burials.

Ground disturbances associated with the proposed project have the potential to impact buried cultural resources. As such, we recommend that subsurface testing for presence-absence be conducted before construction. Methods would include a non-invasive geophysical survey to rapidly collect near-surface electromagnetic data, essentially to map the buried landscape and potentially identify areas of former habitation. This work would be followed up with a minimally invasive subsurface sampling using a Geoprobe to determine/ground-truth presence/absence of prehistoric cultural materials and limit the need for an archaeological monitor during construction. If pre-construction testing of the subsurface is not conducted, then archaeological monitoring should be conducted during all ground disturbing activities. In addition, cultural resources sensitivity training should be provided to construction crews to ensure protection should resources be encountered.

Standard environmental regulations seek to protect cultural resources whenever possible. If cultural materials are encountered during construction, work shall stop in the area until a qualified archaeologist can evaluate the nature and significance of any find. In the event human remains or associated funerary objects are encountered during construction, all work will cease within the vicinity of the discovery. In accordance with the California Environmental Quality Act (CEQA) (Section 1064.5) and the California Health and Safety Code (Section 7050.5), the appropriate county coroner shall be contacted immediately. If the human remains are determined to be Native American, the coroner will notify the NAHC, who will notify and appoint a Most Likely Descendent (MLD). The MLD will work with a qualified archaeologist to decide the proper treatment of the human remains and any associated funerary objects.

If you have any questions or concerns, please don't hesitate to contact us.

Sincerely,

Elizabeth Fernandez

Attachments:
Figure 1. Project Location & Area of Potential Effects Map
Figure 2. 1910 USGS Topographic Map with Mapped Soils and Site Locations
Figure 3. Historic Land Ownership within the Project Area
Figure 4. Field Survey Overview Photos & Site Conditions
Appendix A. Records Search Result

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MEADOWS OF ISLETON RV RESORT NOISE IMPACT ANALYSIS

City of Isleton

September 9, 2022

ganddini

Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
Air Quality ● Global Climate Change ● Health Risk Assessment

MEADOWS OF ISLETON RV RESORT NOISE IMPACT ANALYSIS

City of Isleton

September 9, 2022

prepared by
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Project No. 19542

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EXECUTIVE SUMMARY

The project site is located west of Jackson Slough Road in the southwest corner of the City of Isleton, California. The project site is part of a working farm that currently offers 20 campsites.

The proposed project involves development of a recreational vehicle (RV) park with up to 135 RV and tiny home sites.

Construction Impacts

On-Site Construction

Modeled unmitigated construction noise levels reached 66.1 dBA L_{eq} at the nearest residential property line to the south, 64.4 dBA L_{eq} at the nearest residential property line to the north, 73.1 dBA L_{eq} at the nearest baseball field/park property line to the northeast, and 67.1 dBA L_{eq} at the nearest church property line to the northeast of the project site.

The City's Municipal Code Section 6.44.010 permits construction related activities between the hours of 7:00 AM to 6:00 PM. Project construction will not occur outside of the hours outlined as "exempt" in the City of Isleton Municipal Code Section 6.44.010 (as follows) and therefore, will not result in or generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance.

Impacts would be less than significant, and no mitigation is required.

In addition to adherence to the City of Isleton Municipal Code which limits the construction hours of operation, the project applicant will include the following Best Management Practices (BMPs) on project plans and in contract specifications to further reduce construction noise emanating from the proposed project:

Construction Noise - Best Management Practices

1. All construction equipment, fixed or mobile, will be equipped with properly operating and maintained mufflers, consistent with manufacturer standards.

2. All stationary construction equipment will be placed so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

3. As applicable, shut off all equipment when not in use.

4. To the degree possible, equipment staging will be located in areas that create the greatest distance between construction-related noise and vibration sources and sensitive receptors surrounding the project site.

5. Jackhammers, pneumatic equipment, and all other portable stationary noise sources will be directed away from existing residences east of the project site. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between equipment and the nearest off-site residences. The shielding should be without holes and cracks.

6. No amplified music and/or voice will be allowed on the project site.

7. Haul truck deliveries will not occur outside of the hours presented as exempt for construction per City's Municipal Code Section 6.44.010.

Off-Site Construction

Construction truck trips would occur throughout the construction period. Given the project site's proximity to the Highway 12, it is anticipated that worker, vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps traveling south on Jackson Slough Road.

According to the Federal Highway Administration (FHWA), the traffic volumes need to be doubled in order to increase noise levels by 3 dBA CNEL. The estimated existing average daily trips along Jackson Slough Road in the vicinity of the project site is approximately 1,250 average daily vehicle trips.[1] As shown in the CalEEMod output files provided in the Air Quality, Global Climate Change, and Energy Impact Analysis prepared for the proposed project (Ganddini Group, 2022) the greatest number of construction-related vehicle trips per day would be during grading at up to 20 worker vehicle trips per day. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

<u>Traffic Impacts to the Proposed Project</u>

The City of Isleton has identified noise levels of up to 65 dBA CNEL as "normally acceptable" and of up to 70 dBA CNEL as "conditionally acceptable" for multi-family land uses and/or transient lodging land uses.

Future noise levels are expected to reach 67 dBA CNEL at the RV/Tiny home lot closest to the road-right-of way and will fall into the "conditionally acceptable" category. According to the footnotes in the City's Community Noise Threshold Table, proposed land uses that fall into the "conditionally acceptable" category should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice. No mitigation is required.

<u>Project Operational Noise</u>

To determine if project traffic would result in a substantial increase in ambient noise levels, noise associated with project generated vehicle trips were modeled for the existing and existing plus project conditions utilizing FHWA Traffic Noise Prediction Model FHWA-RD-77-108 methodology. Project generated vehicle trips are anticipated to increase roadway noise by less than one (1) dBA CNEL. Therefore, a change in noise level would not be noticeable and would be considered less than significant.

Project operational noise is expected to range between 40 and 42 dBA L_{eq} at existing single-family homes and up to 47 dBA L_{eq} at the Isleton Community Baseball Field. The applicable daytime noise level that project operation is not to exceed is a 30-minute daytime L_{eq} of 55 dBA (between the hours of 7:00 AM and 10:00 PM). In addition, at residential receptors, the applicable nighttime noise level that project operation is not to exceed is a L_{eq} of 45 dBA during nighttime hours (10:00 PM to 7:00 AM). Project operational noise is not expected to exceed City of Isleton noise standards. This impact would be less than significant, and no mitigation is required.

Furthermore, existing ambient noise levels in the project vicinity range between 43.1 and 48.3 dBA L_{eq}. Project operations would reach up to 42 dBA L_{eq} at existing single-family homes and up to 47 dBA L_{eq} at the Isleton Community Baseball Field. Therefore, considering noise levels add logarithmically, the proposed project would result in increases of ambient noise levels between 0.7 to 1.7 dBA L_{eq} at adjacent residential properties and up to 4.6 dBA L_{eq} at the Isleton Community Baseball Field during operation. Project operation would not result in substantial increases in ambient noise levels at the nearest sensitive receptors. Given that the project would

[1] Existing average daily traffic volumes for Jackson Slough Road provided in the Meadows of Isleton RV Resort Traffic and Vehicle Miles Traveled Assessment (Ganddini Group, Inc., August 2022).

not result in a violation of City standards at a sensitive receptor, increases in the ambient noise levels due to project operation would be less than significant. No mitigation is required.

Groundborne Vibration Impacts

A peak particle velocity (PPV) level of 0.3 in/sec is generally accepted as the threshold at which there is a risk to "architectural" damage to older residential structures and a PPV level of 0.5 in/sec as the threshold at which there is a risk to "architectural" damage to modern industrial/commercial buildings (California Department of Transportation, 2020). The closest residential structures are located approximately 9 feet to the north and 10 feet to the south of the project site boundaries. If a vibratory roller is used within 20 feet of an existing residential structure or if a large bulldozer is used within 12 feet of an existing residential structure, there will be some potential for this equipment to result in architectural damage and significant impacts. Therefore, construction related groundborne vibration has the potential to exceed the residential threshold of 0.3 PPV in/sec at residential structures to the north and south of the project site boundaries. The project will implement a best management practice that limits the use of a vibratory roller within 20 feet or large bulldozer within 12 feet of the existing residential structures to the north and south of the project site. In addition, commercial structures are located as close as approximately 208 feet to the east and 226 feet to the northeast of the project site boundaries. The commercial threshold of 0.5 in/sec PPV would not be exceeded at off-site commercial structures. With implementation of best management practices, temporary vibration levels associated with project construction would be less than significant.

Annoyance - Groundborne vibration becomes strongly perceptible to sensitive receptors at a level of 0.1 in/sec PPV. Operation of a vibratory roller may result in groundborne vibration levels of up to 0.1 at a distance of 41 feet and a large bulldozer at a distance of 23 feet. The threshold could theoretically be exceeded at existing residential receptors to the north and south of the project site, and residents may be temporarily annoyed. However, perceptibility of construction vibration would be temporary and would only occur while vibratory equipment is utilized within 41 feet of the existing structures. The best management practice discussed above for potential architectural damage impacts would lessen potential annoyance related impacts. Furthermore, this impact would only occur during daytime hours and will be temporary. This impact would be less than significant.

Groundborne Vibration - Best Management Practice

1. A best management practice limiting the use of a vibratory roller within 20 feet and large bulldozer within 12 feet of the existing residential structures to the north and south of the project site will be implemented to avoid significant impacts.

1. INTRODUCTION

This section describes the purpose of this noise impact analysis, project location, proposed development, and study area. Figure 1 shows the project location map and Figure 2 illustrates the project site plan.

PURPOSE AND OBJECTIVES

The purpose of this report is to provide an assessment of the noise impacts resulting from development of the proposed Meadows of Isleton RV Resort project and to identify mitigation measures that may be necessary to reduce those impacts. The noise issues related to the proposed land use and development have been evaluated in light of applicable federal, state and local policies, including those of the City of Isleton.

Although this is a technical report, every effort has been made to write the report clearly and concisely. To assist the reader with those terms unique to noise analysis, a list of acronyms and a glossary of terms have been provided in Appendix A and Appendix B of this report, respectively.

PROJECT LOCATION

The project site is located west of Jackson Slough Road in the southwest corner of the City of Isleton, California. The project site is part of a working farm that currently offers 20 campsites. A vicinity map showing the project location is provided on Figure 1.

PROJECT DESCRIPTION

The proposed project involves development of a recreational vehicle (RV) park with up to 135 RV and tiny home sites. Figure 2 illustrates the project site plan.

Figure 1
Project Location Map

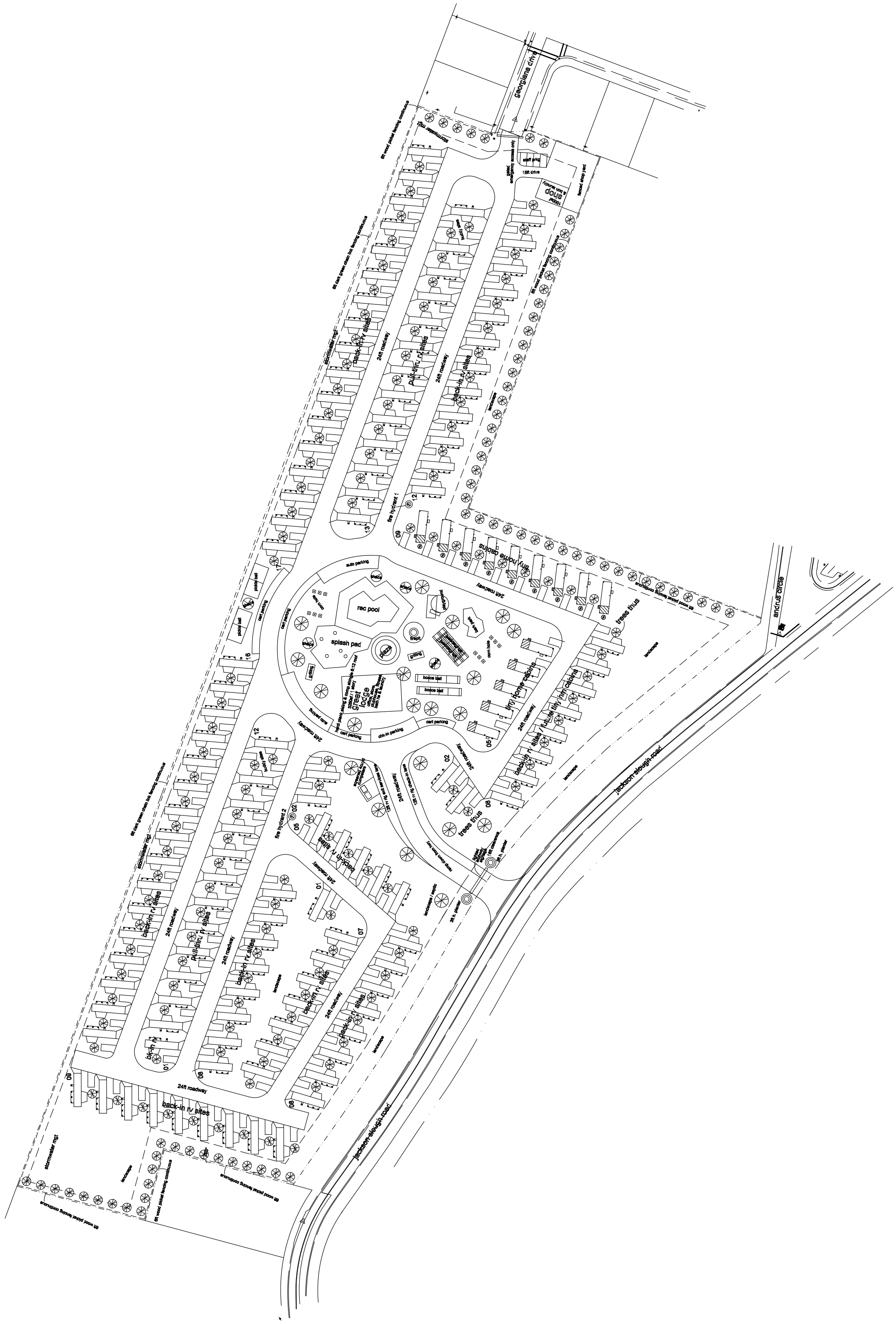

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Figure 2
Site Plan

2. NOISE AND VIBRATION FUNDAMENTALS

NOISE FUNDAMENTALS

Sound is a pressure wave created by a moving or vibrating source that travels through an elastic medium such as air. Noise is defined as unwanted or objectionable sound. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and in extreme circumstances, hearing impairment.

Commonly used noise terms are presented in Appendix B. The unit of measurement used to describe a noise level is the decibel (dB). The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A-weighted measurements are written dB(A) or dBA.

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound from point sources, such as air conditioning condensers, radiates uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD). Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

Decibels are measured on a logarithmic scale, which quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as a doubled traffic volume, would increase the noise levels by 3 dBA; halving of the energy would result in a 3 dBA decrease. Figure 3 shows the relationship of various noise levels to commonly experienced noise events.

Average noise levels over a period of minutes or hours are usually expressed as dBA L_{eq}, or the equivalent noise level for that period of time. For example, $L_{eq(3\text{-}hr)}$ would represent a 3-hour average. When no period is specified, a one-hour average is assumed.

Noise standards for land use compatibility are stated in terms of the Community Noise Equivalent Level (CNEL) and the Day-Night Average Noise Level (DNL). CNEL is a 24-hour weighted average measure of community noise. CNEL is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours. DNL is a very similar 24-hour average measure that weights only the nighttime hours.

It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA; that a change of 5 dBA is readily perceptible, and that an increase (decrease) of 10 dBA sounds twice (half) as loud. This definition is recommended by the California Department of Transportation's Technical Noise Supplement to the Traffic Noise Analysis Protocol (2013).

VIBRATION FUNDAMENTALS

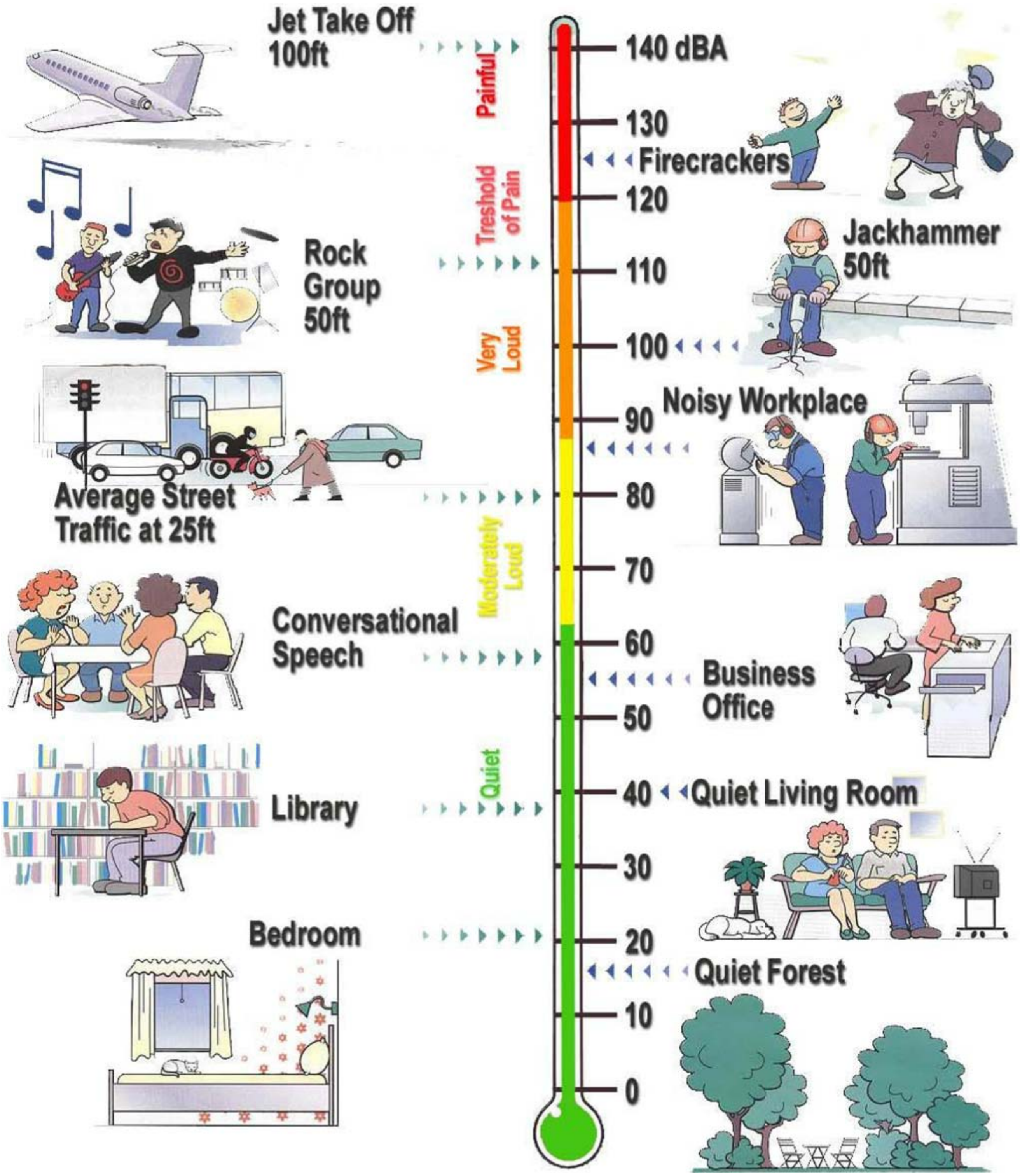
The way in which vibration is transmitted through the earth is called propagation. Propagation of earthborn vibrations is complicated and difficult to predict because of the endless variations in the soil through which waves travel. There are three main types of vibration propagation: surface, compression and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water.

Compression waves, or P-waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. Shear waves, or S-waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse or "side-to-side and perpendicular to the direction of propagation".

As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level striking a given point is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and void spaces. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

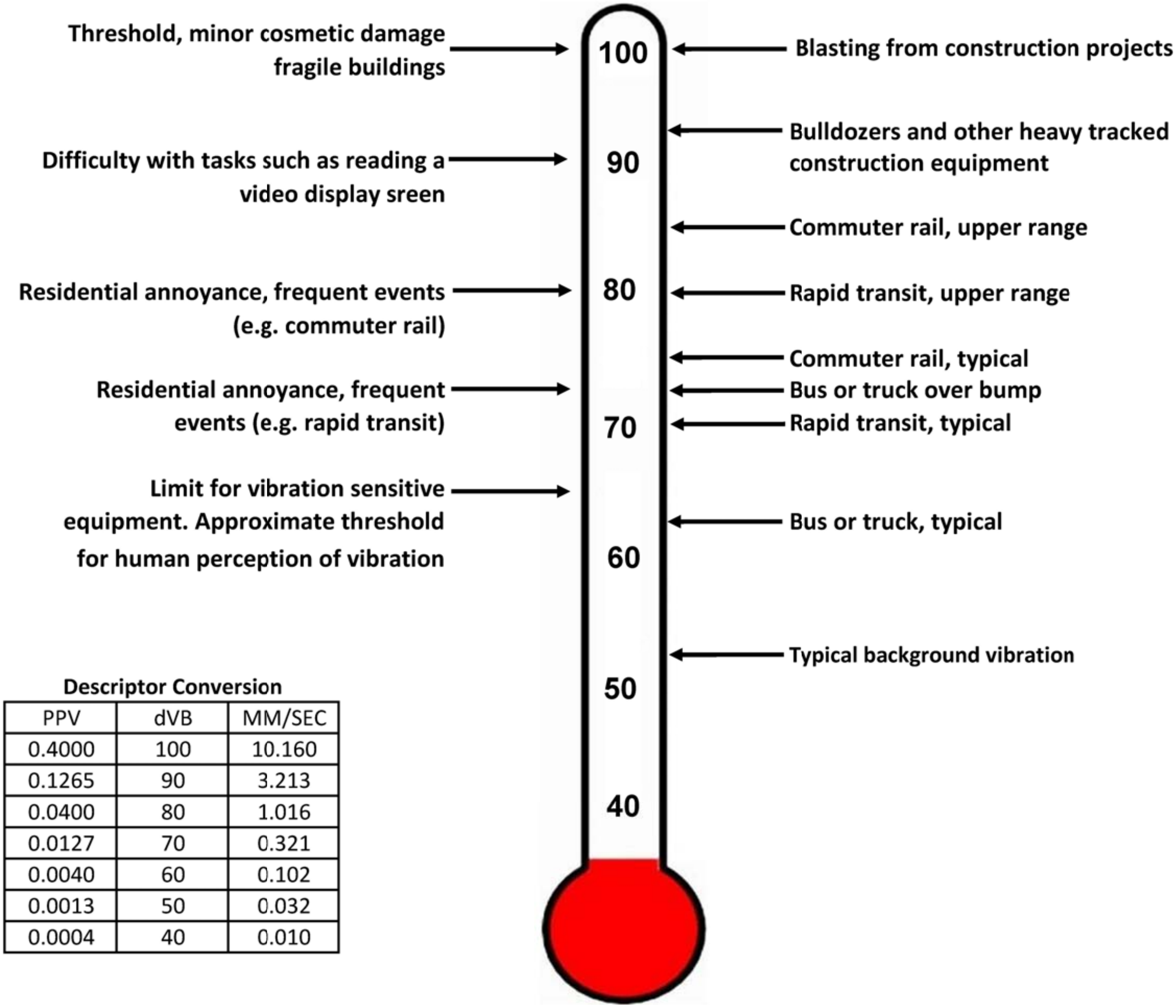
Vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal in inches per second. The RMS of a signal is the average of the squared amplitude of the signal in vibration decibels (VdB), ref one micro-inch per second. The Federal Railroad Administration uses the abbreviation "VdB" for vibration decibels to reduce the potential for confusion with sound decibel.

PPV is appropriate for evaluating the potential of building damage and VdB is commonly used to evaluate human response. Decibel notation acts to compress the range of numbers required in measuring vibration. Similar to the noise descriptors, L_{eq} and L_{max} can be used to describe the average vibration and the maximum vibration level observed during a single vibration measurement interval. Figure 4 illustrates common vibration sources and the human and structural responses to ground-borne vibration. As shown in the figure, the threshold of perception for human response is approximately 65 VdB; however, human response to vibration is not usually substantial unless the vibration exceeds 70 VdB. Vibration tolerance limits for sensitive instruments such as magnetic resonance imaging (MRI) or electron microscopes could be much lower than the human vibration perception threshold.



Source: Bruel & Kjaer 2001

Figure 3
Weighted Sound Levels in Common Environments



Descriptor Conversion

PPV	dVB	MM/SEC
0.4000	100	10.160
0.1265	90	3.213
0.0400	80	1.016
0.0127	70	0.321
0.0040	60	0.102
0.0013	50	0.032
0.0004	40	0.010

Source: FRA, 2012. Federal Railroad Administration High-Speed Ground Transportation Noise and Vibration Impact Assessment. Office of Railroad Policy Development, Washington, D.C. DOT/FRA/ORD-12/15. September.

Figure 4
Typical Levels of Groundborne Vibration

3. EXISTING NOISE ENVIRONMENT

EXISTING LAND USES AND SENSITIVE RECEPTORS

The project site is bordered by single-family residential uses and Isleton Community Baseball Field to the north, Jackson Boulevard Extension and Isleton Community Baseball Field to the east, a single-family residence and agricultural land to the south, and agricultural land to the west.

The State of California defines sensitive receptors as those land uses that require serenity or are otherwise adversely affected by noise events or conditions. Schools, libraries, churches, hospitals, single and multiple-family residential, including transient lodging, motels and hotel uses make up the majority of these areas. Sensitive land uses that may be affected by project noise include the include the existing single-family detached residential uses located adjacent to the north and south of the project site boundaries; Isleton Community Baseball Field located adjacent to the northeast corner of the project site boundaries; and the church use located approximately 80 feet to the northeast (along Andrus Circle) of the project site boundaries.

AMBIENT NOISE MEASUREMENTS

An American National Standards Institute (ANSI Section S1.4 2014 Class 1) Larson Davis model LxT sound level meter was used to document existing ambient noise levels. In order to document existing ambient noise levels in the project area, four (4) 15-minute daytime noise measurements were taken between 2:13 PM and 4:00 PM on August 16, 2022. Field worksheets and noise measurement output data are included in Appendix C.

As shown in Figure 5, the noise meter was placed at the following locations:

- STNM1: represents the existing noise environment of the single-family residence located adjacent to the south of the project site's southern boundary on the western side of Jackson Slough Road (16242 Jackson Slough Road, Isleton). The noise meter was placed near the southeastern corner of the project site adjacent to the residence's northern property line and just west of Jackson Slough Road.

- STNM2: represents the existing noise environment of the church use to the northeast of the project site located at the northeastern corner of the intersection of Andrus Circle and Jackson Boulevard Extension (215 Jackson Boulevard Extension, Isleton). The noise meter was placed along the eastern side of Andrus Circle just north of the parking lot associated with the church use.

- STNM3: represents the existing noise environment of Isleton Community Baseball Field located adjacent to the northeastern corner of the project site (Isleton Community Baseball Field, Andrus Ctr, Isleton). The noise meter was placed near the western boundary of the baseball field in close proximity to the project site's northeastern boundary.

- STNM4: represents the existing noise environment of the single-family residential uses located to the north of the project site boundary along Georgiana Drive and 4th Avenue (406 Georgiana Drive, Isleton). The noise meter was placed along the project site's northern boundary along the southern side of Georgiana Drive in close proximity to the residential uses.

Table 1 provides a summary of the short-term ambient noise data. Measured short-term ambient noise levels ranged between 43.1 and 48.3 dBA L_{eq}. The dominant noise source in the project vicinity was vehicle traffic associated with Jackson Slough Road, River Road, Andrus Circle, Jackson Boulevard Extension, and other surrounding roadways.

Table 1
Short-Term Noise Measurement Summary (dBA)

Daytime Measurements[1,2]								
Site Location	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
STNM1	2:13 PM	47.7	63.5	28.5	58.4	52.0	43.3	38.6
STNM2	2:42 PM	48.3	68.4	34.6	56.8	50.6	46.3	43.4
STNM3	3:09 PM	44.3	50.7	35.4	48.6	46.9	45.6	43.8
STNM4	3:45 PM	43.1	58.7	36.5	48.0	46.0	44.1	42.3

Notes:

(1) See Figure 5 for noise measurement locations. Each noise measurement was performed over a 15-minute duration.

(2) Noise measurements performed on August 16, 2022.

Legend

NM 1 Noise Measurement Location

ST NM Short-Term Noise Measurement

LT NM Long-Term Noise Measurement

Figure 5
Noise Measurement Location Map

4. REGULATORY SETTING

FEDERAL REGULATION

Federal Noise Control Act of 1972

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In response, the EPA published Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Levels of Environmental Noise). The Levels of Environmental Noise recommended that the Ldn should not exceed 55 dBA outdoors or 45 dBA indoors to prevent significant activity interference and annoyance in noise-sensitive areas.

In addition, the Levels of Environmental Noise identified five (5) dBA as an "adequate margin of safety" for a noise level increase relative to a baseline noise exposure level of 55 dBA Ldn (i.e., there would not be a noticeable increase in adverse community reaction with an increase of five dBA or less from this baseline level). The EPA did not promote these findings as universal standards or regulatory goals with mandatory applicability to all communities, but rather as advisory exposure levels below which there would be no risk to a community from any health or welfare effect of noise.

In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at lower levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to State and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated Federal agencies, allowing more individualized control for specific issues by designated Federal, State, and local government agencies.

STATE REGULATIONS

State of California General Plan Guidelines 2017

Though not adopted by law, the State of California General Plan Guidelines 2017, published by the California Governor's Office of Planning and Research (OPR) (OPR Guidelines), provides guidance for the compatibility of projects within areas of specific noise exposure. The OPR Guidelines identify the suitability of various types of construction relative to a range of outdoor noise levels and provide each local community some flexibility in setting local noise standards that allow for the variability in community preferences. Findings presented in the Levels of Environmental Noise Document (EPA 1974) influenced the recommendations of the OPR Guidelines, most importantly in the choice of noise exposure metrics (i.e., Ldn or CNEL) and in the upper limits for the normally acceptable outdoor exposure of noise-sensitive uses.

The OPR Guidelines include a Noise and Land Use Compatibility Matrix which identifies acceptable and unacceptable community noise exposure limits for various land use categories. Where the "normally acceptable" range is used, it is defined as the highest noise level that should be considered for the construction of the buildings which do not incorporate any special acoustical treatment or noise mitigation. The "conditionally acceptable" or "normally unacceptable" ranges include conditions calling for detailed acoustical study prior to the construction or operation of the proposed project. The City of Isleton has incorporated these guidelines in the City's General Plan Hazard Management Element (see Tables 2 and 3).

California Department of Transportation (Caltrans)

The California Department of Transportation has published one of the seminal works for the analysis of ground-borne noise and vibration relating to transportation- and construction-induced vibrations and although the project is not subject to these regulations, it serves as useful tools to evaluate vibration impacts.

As shown in Table 4, the threshold at which there is a risk to "architectural" damage to historic and some older buildings is a peak particle velocity (PPV) of 0.25, at older residential structures a PPV of 0.3, and at new residential structures a PPV of 0.5. Table 5 shows that a PPV of 0.04 is the threshold at which groundborne vibration becomes distinctly perceptible in regard to annoyance. Therefore, these guidelines recommend that a standard of 0.3 inches per second (in/sec) PPV not be exceeded for the protection of older residential structures (California Department of Transportation, 2020).

LOCAL REGULATIONS

City of Isleton General Plan

Noise and Land Use Compatibility Guidelines presented in the City of Isleton General Plan (Tables 2 and 3) establish outdoor noise standards for a variety of land uses within the City.

The City of Isleton General Plan Hazard Management Element includes noise related goals in order to protect citizens from the harmful effects of exposure to excessive noise, and to protect the economic base of the city by preventing the encroachment of incompatible land uses near noise-producing roadways, industries, and other sources. The following includes the noise related goals that pertain to the proposed project.

1. Areas within the City shall be designated as noise-impacted if exposed to existing or projected future noise levels exterior to buildings exceeding 60 dB CNEL or the performance standards described in Table 3.

2. New development of residential or other noise sensitive land uses will not be permitted in noise-impacted areas unless effective mitigation measures are incorporated into project designs to reduce noise to the following levels:

    a. Noise sources pre-empted from local control, such as highway traffic:
        - 60 dB CNEL or less in outdoor activity areas.
        - 45 dB CNEL within interior living spaces or other noise-sensitive interiors.
        - Where it is not possible to achieve reduction of exterior noise to 60 dB CNEL or less by using the best available and practical noise reduction technology, an exterior noise level of up to 65 dB CNEL will be allowed.
        - Under no circumstances will interior noise levels be allowed to exceed 45 dB CNEL with windows and doors closed.

    b. For noise from other sources, such as local industries:
        - 60 dB CNEL or less in outdoor activity areas.
        - 45 dB CNEL or less within interior living spaces, plus the performance standards contained in Table 3.

3. New development of industrial, commercial, or other noise generating land uses will not be permitted if resulting noise levels will exceed 60 dBA CNEL in areas containing residential or other noise-sensitive land uses. Additionally, new noise generating land uses which are not pre-empted from local noise regulation will not be permitted if resulting noise levels will exceed the performance standards contained in Table 3 in areas containing residential or other noise-sensitive land uses.

4. Noise level criteria applied to land sues other than residential or other noise-sensitive uses shall be consistent with the recommendation of the California Office of Noise Control.

City of Isleton Municipal Code

The City of Isleton Municipal Ordinances applicable to the evaluation of the proposed project in this analysis include the following:

Section 6.44.010 – Unnecessary Noises

It shall be unlawful for any person to make, continue, or cause to be made or continued, any loud, unnecessary, or unusual noise or any noise which either annoys, disturbs, injures or endangers the comfort, repose, health, peace or safety of others, within the limits of the city. The following noises are declared to be loud, disturbing, and unnecessary noises in violation of this section.

D. The erection (including excavating), demolition, alteration or repair of any building other than between the hours of 7:00 AM and 6:00 PM, except in case of urgent necessity in the interest of public health and safety, and then only with a permit from the building inspector, which permit may be granted for a period not to exceed three days or less while the emergency continues and which permit may be renewed for periods of three days or less while the emergency continues. If the building inspector should determine that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or the excavation of streets and highways within the hours of 6:00 PM and 7:00 AM and if he shall further determine that loss of inconvenience would result to any part in interest, he may grant permission for such work to be done within the hours of 6:00 PM and 7:00 AM, upon application being made at the time the permit for the work is awarded or during the progress of work.

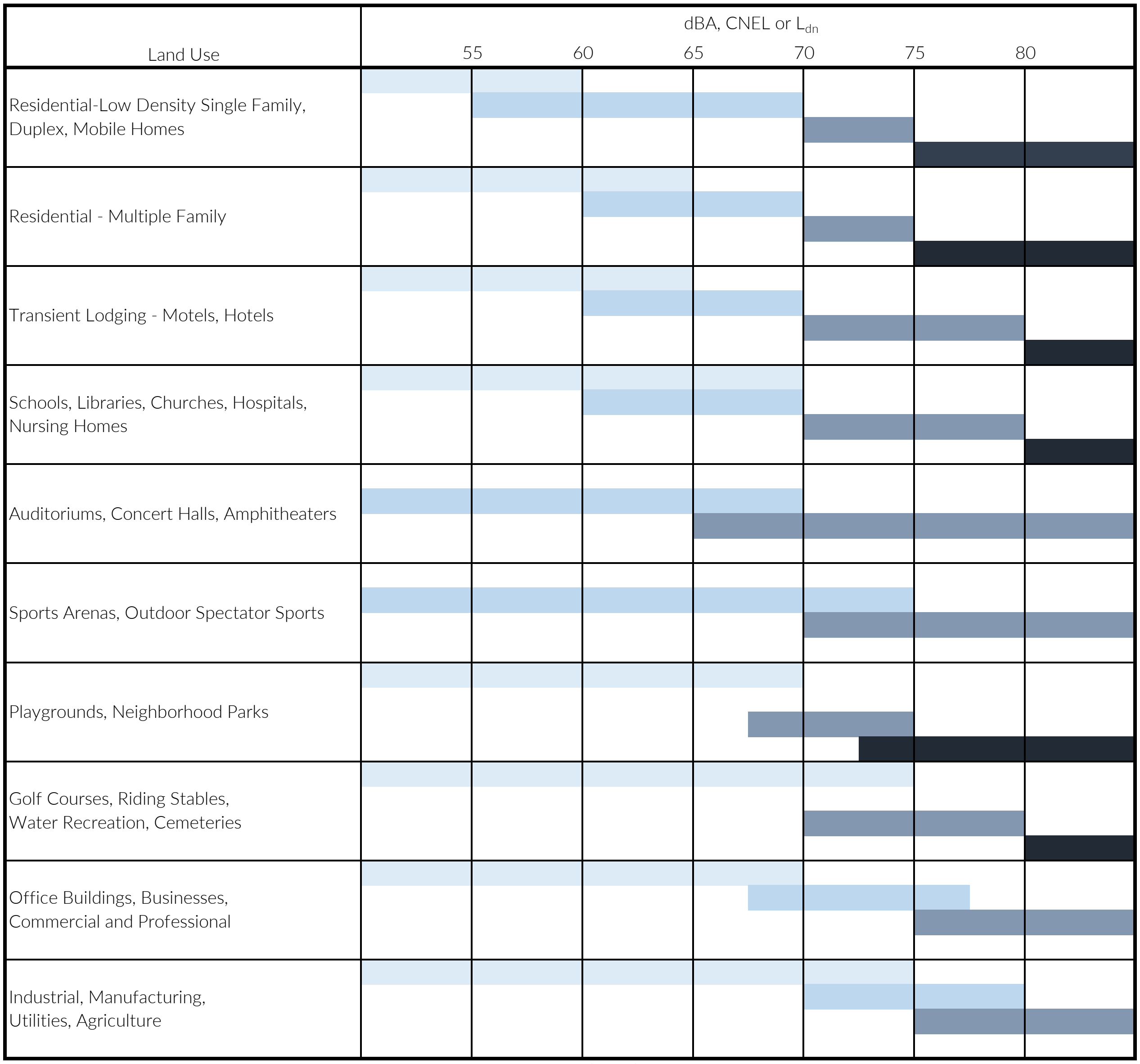
E. The operation between the hours of 10:00 PM and 7:00 AM of any pile-driver, stream-shovel, pneumatic hammer, derrick, stream or electric hoist or other appliance, the use of which is attended by loud or unusual noise.

F. The use of or operation between the hours of 10:00 PM and 7:00 AM of any power saw, power planer, or other powered tool or appliance or saw or hammer, or other tool, so as to disturb the quiet, comfort, or repose of persons in any dwelling, hotel, apartment, or other type of residence, or of any person in the vicinity.

G. The operating of any noise-creating blower or power fan or any internal combustion engine the operation of which causes noise due to the explosion of operating gases or fluids unless the noise from such blower or fan is muffled and such engine is equipped with a muffler device sufficient to deaden such noise.

J. The creation of a loud and excessive noise in connection with loading or unloading any vehicle or the opening and destruction of bales, boxes, crates, and containers.

Table 2
Land Use Compatibility for Community Noise Environments



Source: City of Isleton General Plan Hazard Resources Element Figure VI-1 (2000) and California Office of Planning and Research General Plan Guidelines, 1990.

Normally Acceptable: Specified land uses is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation or requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable: New construction and development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

Table 3
Noise Level Performance Standards
(For Non-Preempted Noise Sources)

Receiving Land Use	Nighttime[1] (10:00 PM to 7:00 AM)			Daytime[1] (7:00 AM to 10:00 PM)		
	RS	S	U	RS	S	U
One and Two Family Residential	40	45	50	50	55	60
Multiple Family Residential	45	50	55	50	55	60
Public Space	50	55	60	50	55	60
Limited Commercial	-	55	-	-	60	-
Commercial	-	60	-	-	65	-
Light Industrial	-	70	-	-	70	-
Heavy Industrial	-	75	-	-	75	-

Nighttime 10:00 PM to 7:00 AM	Category	Cumulative No. of Minutes in any 1-Hour Period	Daytime 7:00 AM to 10:00 PM
45	1	30	55
50	2	15	60
65	3	5	55
60	4	1	70
65	5	0	75

Source: City of Isleton General Plan Hazard Management Element Table VI-1, 2000.

Notes:

(1) RS-Rural Suburban, S-Suburban, and U-Urban.

(2) Each of the noise level standards specified in this table shall be reduced by five (5) dB for pure tone noises, noise consisting primarily of speech or music, or for recurring impulsive noises. The standards should be applied at a residential or other noise-sensitive land use and not on the property of a noise-generating land use. Nighttime and Daytime standards are measured by dB.

Table 4
Guideline Vibration Damage Potential Threshold Criteria

Structure Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Notes:

Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 7 Table 19, April 2020.

(1) Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 5
Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Notes:

Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 7 Table 20, April 2020.

(1) Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

5. ANALYTICAL METHODOLOGY AND MODEL PARAMETERS

This section discusses the analysis methodologies used to assess noise impacts.

CONSTRUCTION NOISE MODELING

Construction noise associated with the proposed project was calculated at the sensitive receptor locations, utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Construction noise levels were calculated for each phase based on the equipment assumptions provided in the Air Quality, Global Climate Change, and Energy Impact Analysis report prepared for the project (Ganddini 2022). For construction noise purposes, the distance measured from the project site to sensitive receptors was assumed to be the acoustical center of the project site to the property line of residential properties with existing residential buildings. Sound emission levels associated with typical construction equipment as well as typical usage factors provided in Table 6 were utilized for modeling purposes. Construction noise worksheets are provided in Appendix D.

FEDERAL HIGHWAY ADMINISTRATION (FHWA) TRAFFIC NOISE PREDICTION MODEL

Future traffic noise levels as well as existing and existing plus project traffic noise levels were modeled using the computer program that replicates the FHWA Traffic Noise Prediction Model FHWA-RD-77-108. The FHWA Traffic Noise Prediction Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emissions Levels.[1] Adjustments are then made to the REMEL to account for: total average daily traffic volumes, roadway classification (i.e., collector, secondary, major or arterial), the roadway active width (i.e., distance between the center of the outermost travel lanes on each side of the roadway), travel speed, truck mix (i.e., percentage of automobiles, medium trucks, and heavy trucks in the traffic volume), roadway grade and site conditions (hard or soft ground surface relating to the absorption of the ground, pavement, or landscaping). Research conducted by Caltrans identifies that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model.[2] Therefore, surfaces adjacent to all modeled roadways were assumed to have a "soft site". Possible reductions in noise levels due to intervening topography and buildings were not accounted for in this analysis.

Roadways that may generate enough traffic noise under buildout conditions to affect the proposed project include Jackson Boulevard Extension/Jackson Slough Road. The City of Isleton General Plan Community Development Element Section B – Circulation identifies Jackson Boulevard Extension/Jackson Slough Road as an Arterial Street in the vicinity of the project site. As stated in the General Plan, an Arterial Street has a right-of-way width between 60 to 72 feet and is designed to carry between 4,000 to 7,500 vehicles per day. Level of Service C, approximately 75% of the higher of these volumes (or approximately 5,625 vehicles per day) was used to estimate future noise levels associated with these roadways at the project site. Vehicle/Truck percentages for Jackson Slough Road/Jackson Road Extension were estimated based on Caltrans Traffic Census truck mix.[3]

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[1] California Department of Transportation Environmental Program, Office of Environmental Engineering. Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction. September 1995. TAN 95-03.

[2] California Department of Transportation. Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report. June 1995. FHWA/CA/TL-95/23.

[3] Estimate was based on the truck mix percentages provided by Caltrans for SR-160 near City of Isleton https://dot.ca.gov/programs/traffic-operations/census

Future traffic volumes were estimated using Caltrans vehicle counts for a similar road segment in the vicinity. Existing and project daily traffic volumes were obtained from the Meadows of Isleton RV Resort Traffic and VMT Assessment, Ganddini Group (August 2022). Existing Plus Project vehicle mixes were calculated by adding the proposed project trips to existing conditions. FHWA spreadsheets are included in Appendix E.

SOUNDPLAN NOISE MODEL

The SoundPLAN acoustical modeling software was utilized to model worst-case stationary noise impacts associated with project operation at adjacent sensitive uses (e.g., residences). SoundPLAN is capable of evaluating stationary noise sources (e.g., playgrounds, recreational areas, parking lots, drive-thru menus, carwash equipment, vacuums, heating and ventilation units (HVAC), etc.). The SoundPLAN software utilizes algorithms (based on the inverse square law) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations. In addition to the information provided below, noise modeling input and outputs assumptions are provided in Appendix F.

Noise associated with the RV park will be consistent with other residential land uses and the noise associated with the proposed recreation areas will be consistent with noise associated with community parks. In order to estimate increases in the ambient noise levels associated with operation of the RV park, the average operational noise level (L_{eq}) was modeled. Modeled noise sources include small HVAC units and the proposed recreation/common area. Both noise sources were modeled to be in full operation during daytime and evening hours. Electricity will be provided at each RV/Tiny Home site and generator use is not anticipated.

Mechanical Equipment (HVAC Units) Noise

A noise reference level of 67.7 dBA was utilized to represent HVAC units[4]. The noise source height for each HVAC unit was assumed at 1 meter above the ground.

Common / Recreational Area

A sound level representative of normal conversation (65 dBA) was utilized to model noise associated with the proposed common/recreation areas.

[4] MD Acoustics, LLC Noise Measurement Data for RTU –Carrier 50TFQ0006.

Table 6 (1 of 2)
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
All Other Equipment > 5 HP	No	50	85	-N/A-	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Bar Bender	No	20	80	-N/A-	0
Blasting	Yes	-N/A-	94	-N/A-	0
Boring Jack Power Unit	No	50	80	83	1
Chain Saw	No	20	85	84	46
Clam Shovel (dropping)	Yes	20	93	87	4
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-N/A-	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Forklift[2,3]	No	50	n/a	61	n/a
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25KVA, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader	No	40	85	-N/A-	0
Grapple (on backhoe)	No	40	85	87	1
Horizontal Boring Hydr. Jack	No	25	80	82	6
Hydra Break Ram	Yes	10	90	-N/A-	0
Impact Pile Driver	Yes	20	95	101	11
Jackhammer	Yes	20	85	89	133
Man Lift	No	20	85	75	23
Mounted Impact hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	50	85	77	9
Paving Equipment	No	50	85	77	9
Pneumatic Tools	No	50	85	85	90

Table 6 (2 of 2)
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
Pumps	No	50	77	81	17
Refrigerator Unit	No	100	82	73	3
Rivit Buster/chipping gun	Yes	20	85	79	19
Rock Drill	No	20	85	81	3
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Shears (on backhoe)	No	40	85	96	5
Slurry Plant	No	100	78	78	1
Slurry Trenching Machine	No	50	82	80	75
Soil Mix Drill Rig	No	50	80	-N/A-	0
Tractor	No	40	84	-N/A-	0
Vacuum Excavator (Vac-truck)	No	40	85	85	149
Vacuum Street Sweeper	No	10	80	82	19
Ventilation Fan	No	100	85	79	13
Vibrating Hopper	No	50	85	87	1
Vibratory Concrete Mixer	No	20	80	80	1
Vibratory Pile Driver	No	20	95	101	44
Warning Horn	No	5	85	83	12
Welder/Torch	No	40	73	74	5

Notes:

(1) Source: FHWA Roadway Construction Noise Model User's Guide January 2006.

(2) Warehouse & Forklift Noise Exposure - NoiseTesting.info Carl Stautins, November 4, 2014
http://www.noisetesting.info/blog/carl-strautins/page-3/

(3) Data provided Leq as measured at the operator. Sound Level at 50 feet is calculated using Inverse Square Law.

6. IMPACT ANALYSIS

This impact discussion analyzes the potential for noise and/or groundborne vibration impacts to cause the exposure of a person to, or generation of, noise levels in excess of established City of Isleton standards related to: construction and transportation noise related impacts to, or from, the proposed project.

IMPACTS RELATED TO CONSTRUCTION NOISE

Construction activities will occur in phases including demolition, grading, building construction, paving, and architectural coating. Assumptions for the phasing, duration, and required equipment for the construction of the proposed project were obtained from the project applicant. Construction activities are anticipated to begin no sooner than the beginning of November 2022 and be completed by mid-August 2023 with demolition lasting approximately 20 days, grading approximately 30 days, building construction approximately 150 days, paving approximately 20 days, and architectural coating approximately 20 days.

Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work. The existing surrounding single-family residential uses to the north, east, and southwest of the project site may be affected by short-term noise impacts associated with construction noise.

Construction noise associated with the proposed project was calculated utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Distances to receptors were based on the acoustical center of the proposed construction activity. Construction noise levels were calculated for each phase. Anticipated noise levels during each construction phase are presented in Table 7. Worksheets for each phase are included as Appendix D.

Modeled unmitigated construction noise levels reach up to 66.1 dBA L_{eq} at the nearest residential property line to the south, 64.4 dBA L_{eq} at the nearest residential property line to the north, 73.1 dBA L_{eq} at the nearest baseball field/park property line to the northeast, and up to 67.1 dBA L_{eq} at the nearest church property line to the northeast of the project site.

Table 7 also includes a comparison of existing noise levels and project construction noise levels. Short-term noise measurement (STNM)1 was used to represent the property line of the nearest residential receptor to the south, STNM4 was used to represent the property line of the nearest residential receptor to the north, STNM3 was used to represent the property line of the baseball field/park receptor to the northeast, and STNM2 was used to represent the property line of the church receptor to the northeast of the project site.

The City's Municipal Code Section 6.44.010 permits construction related activities between the hours of 7:00 AM to 6:00 PM. Project construction will not occur outside of the hours outlined as "exempt" in the City of Isleton Municipal Code Section 6.44.010 (as follows) and therefore, will not result in or generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance.

The following BMPs will be included on the project plans and any related contract specifications. Construction noise impacts would be less than significant.

Construction Noise - Best Management Practices

1. All construction equipment, fixed or mobile, will be equipped with properly operating and maintained mufflers, consistent with manufacturer standards.

2. All stationary construction equipment will be placed so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

3. As applicable, shut off all equipment when not in use.

4. To the degree possible, equipment staging will be located in areas that create the greatest distance between construction-related noise and vibration sources and sensitive receptors surrounding the project site.

5. Jackhammers, pneumatic equipment, and all other portable stationary noise sources will be directed away from existing residences east of the project site. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between equipment and the nearest off-site residences. The shielding should be without holes and cracks.

6. No amplified music and/or voice will be allowed on the project site.

7. Haul truck deliveries will not occur outside of the hours presented as exempt for construction per City's Municipal Code Section 6.44.010.

Off-Site Construction

Construction truck trips would occur throughout the construction period. Given the project site's proximity to the Highway 12, it is anticipated that worker, vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps traveling south on Jackson Slough Road.

According to the FHWA, the traffic volumes need to be doubled in order to increase noise levels by 3 dBA CNEL. The estimated existing average daily trips along Jackson Slough Road in the vicinity of the project site is approximately 1,250 average daily vehicle trips.[5] As shown in the CalEEMod output files provided in the Air Quality, Global Climate Change, and Energy Impact Analysis prepared for the proposed project (Ganddini Group, 2022) the greatest number of construction-related vehicle trips per day would be during grading at up to 20 worker vehicle trips per day. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

FUTURE TRAFFIC NOISE IMPACTS TO THE PROPOSED PROJECT

The City of Isleton has identified noise levels of up to 65 dBA CNEL as "normally acceptable" and of up to 70 dBA CNEL as "conditionally acceptable" for multi-family land uses and/or transient lodging (see Table 5).

Roadways that may generate enough traffic noise under buildout conditions to affect the proposed project include Jackson Boulevard Extension. As stated previously, the City of Isleton General Plan Community Development Element Section B – Circulation identifies Jackson Boulevard Extension/Jackson Slough Road as an Arterial Street in the vicinity of the project site. As stated in the General Plan, an Arterial Street has a right-of-way width between 60 to 72 feet and is designed to carry between 4,000 to 7,500 vehicles per day. Level of Service C, approximately 75% of the higher of these volumes (or approximately 5,625 vehicles per day) was used to estimate future noise levels associated with these roadways at the project site.

[5] Existing average daily traffic volumes for Jackson Slough Road provided in the Meadows of Isleton RV Resort Traffic and Vehicle Miles Traveled Assessment (Ganddini Group, Inc., August 2022).

Future noise levels are expected to reach 67 dBA CNEL at the RV/Tiny home lot closest to the road-right-of way and will fall into the “conditionally acceptable” category. According to the footnotes in the City’s Community Noise Threshold Table (Table 2), proposed land uses that fall into the “conditionally acceptable” category should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice. No mitigation is required.

NOISE IMPACTS TO OFF-SITE RECEPTORS DUE TO PROJECT GENERATED TRIPS

During operation, the proposed project is expected to generate approximately 311 average daily trips with 24 trips during the AM peak-hour and 314 trips during the PM peak-hour. A project generated traffic noise level was modeled utilizing the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108. Traffic noise levels were calculated at the right of way from the centerline of the analyzed roadway. The modeling is theoretical and does not take into account any existing barriers, structures, and/or topographical features that may further reduce noise levels. Therefore, the levels are shown for comparative purposes only to show the difference in with and without project conditions. Roadway input parameters including average daily traffic volumes (ADTs), speeds, and vehicle distribution data is shown in Table 8. The potential off-site noise impacts caused by an increase of traffic from operation of the proposed project on the nearby roadways were calculated for the following scenarios:

Existing Year (without Project): This scenario refers to existing year traffic noise conditions and is demonstrated in Table 8.

Existing Year (With Project): This scenario refers to existing year plus project traffic noise conditions and is demonstrated in Table 8.

As shown in Table 9, the modeled Existing traffic noise level in the vicinity of the project site along Jackson Slough Road/Jackson Boulevard Extension is 63 dBA CNEL at the right-of-way of the modeled roadway segment; and the modeled Existing Plus Project traffic noise level in the vicinity of the project site along Jackson Slough Road/Jackson Boulevard Extension is 64 dBA CNEL at the right-of-way of the modeled roadway segment.

For purposes of this project, increases in ambient noise due to project generated vehicle traffic, along affected roadways due to project generated vehicle traffic is considered substantial if they result in an increase of at least 3 dBA CNEL <u>and</u>: (1) the existing noise levels already exceed the applicable land use compatibility standard for the affected sensitive receptors set forth in the Hazard Resources Element of the City’s General Plan; or (2) the project increases noise levels by at least 3 dBA CNEL and raises the ambient noise level from below the applicable standard to above the applicable standard.

Project generated vehicle traffic along the modeled roadway segment is anticipated to increase the noise between approximately 0.96 dBA CNEL. Therefore, project generated increases in ambient noise levels would result in a less than 3 dBA CNEL increase.

Impacts from project generated vehicle trips would be considered less than significant.

NOISE IMPACTS DUE TO PROJECT OPERATION

<u>Compliance with Applicable Standards</u>

Noise associated with the RV park will be consistent with other residential land uses and the noise associated with the proposed recreation areas will be consistent with noise associated with community parks. Operational noise was modeled using the SoundPLAN noise model in order to determine if the project is likely to violate the City’s noise standards provided in Table 3. Modeled noise sources include small HVAC units and the proposed recreation/common area. Both noise sources were modeled to be in full operation during the modeled period. Electricity will be provided at each RV/Tiny Home site and generator use is not anticipated.

Sensitive land uses that may be affected by project noise include the include the existing single-family detached residential property lines located adjacent to the north and south of the project site boundaries; Isleton Community Baseball Field located adjacent to the northeast corner of the project site boundaries; and the church use located approximately 80 feet to the northeast (along Andrus Circle) of the project site boundaries.

The City noise standards that apply to project operational noise impacts to nearby sensitive receptors are the ones provided in Table VI-1 of the City's General Plan Noise Element. This table is included in this report as Table 3. As shown in Figures 6 and 7, project operational noise is expected to range between 40 and 42 dBA L_{eq} at receptors 1, 2, and 4 which represent existing single-family homes and up to 47 dBA L_{eq} at receptor 3 which represents the Isleton Community Baseball Field. The applicable daytime noise level that project operation is not to exceed is a 30-minute daytime L_{eq} of 55 dBA (between the hours of 7:00 AM and 10:00 PM). In addition, at residential receptors, the applicable nighttime noise level that project operation is not to exceed is a L_{eq} of 45 dBA during nighttime hours (10:00 PM to 7:00 AM).

Project operational noise is not expected to exceed City of Isleton noise standards. This impact would be less than significant, and no mitigation is required.

Substantial Increase

The recently updated CEQA Guidelines Appendix G Threshold Checklist includes the following question about substantial increases in ambient noise levels: *Would the project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

As discussed previously, existing ambient noise levels in the project vicinity range between 43.1 and 48.3 dBA L_{eq}. As shown in Figure 6, project operations would reach up to 42 dBA L_{eq} at existing single-family homes and up to 47 dBA L_{eq} at the Isleton Community Baseball Field. Therefore, considering noise levels add logarithmically, the proposed project would result in increases of ambient noise levels between 0.7 to 1.7 dBA L_{eq} at adjacent residential properties and up to 4.6 dBA L_{eq} at the Isleton Community Baseball Field during operation. Project operation would not result in substantial increases in ambient noise levels at the nearest sensitive receptors. Given that the project would not result in a violation of City standards at a sensitive receptor, increases in the ambient noise levels due to project operation would be less than significant. No mitigation is required.

GROUNDBORNE VIBRATION IMPACTS

There are several types of construction equipment that can cause vibration levels high enough to annoy persons in the vicinity and/or result in architectural or structural damage to nearby structures and improvements. For example, as shown in Table 10, a vibratory roller could generate up to 0.21 PPV at a distance of 25 feet; and operation of a large bulldozer could generate up to 0.089 PPV at a distance of 25 feet (two of the most vibratory pieces of construction equipment). Groundborne vibration at sensitive receptors associated with this equipment would drop off as the equipment moves away. For example, as the vibratory roller moves further than 100 feet from the sensitive receptors, the vibration associated with it would drop below 0.0026 PPV. It should be noted that these vibration levels are reference levels and may vary slightly depending upon soil type and specific usage of each piece of equipment.

Architectural Damage

Vibration generated by construction activity generally has the potential to damage structures. This damage could be structural damage, such as cracking of floor slabs, foundations, columns, beams, or wells, or cosmetic architectural damage, such as cracked plaster, stucco, or tile. (California Department of Transportation, 2020)

Table 4 identifies a PPV level of 0.3 in/sec as the threshold at which there is a risk to "architectural" damage to older residential structures and a PPV level of 0.5 in/sec for commercial buildings.

The closest residential structures are located approximately 9 feet to the north and 10 feet to the south of the project site boundaries. In addition, commercial structures are located as close as approximately 208 feet to the east and 226 feet to the northeast of the project site boundaries. Estimated groundborne vibration levels at the nearest sensitive receptors are presented in Table 11. In summary, if a vibratory roller is used within 20 feet of existing residential structures to the north and south or if a large bulldozer is used within 12 feet of existing residential structures to the north and south, there will be some potential for this equipment to result in architectural damage and significant impacts. Therefore, construction related groundborne vibration has the potential to exceed the residential threshold of 0.3 PPV in/sec at residential structures to the north and south of the project site boundaries. The project will implement a best management practice that limits the use of a vibratory roller within 20 feet or large bulldozer within 12 feet of the existing residential structures to the north and south of the project site. Implementation of the best management practice will avoid significant impacts. Vibration worksheets are provided in Appendix G.

Groundborne Vibration - Best Management Practice

1. A best management practice limiting the use of a vibratory roller within 20 feet and large bulldozer within 12 feet of the existing residential structures to the north and south of the project site will be implemented to avoid significant impacts.

Annoyance to Persons

The primary effect of perceptible vibration is often a concern. However, secondary effects, such as the rattling of a china cabinet, can also occur, even when vibration levels are well below perception. Any effect (primary perceptible vibration, secondary effects, or a combination of the two) can lead to annoyance. The degree to which a person is annoyed depends on the activity in which they are participating at the time of the disturbance. For example, someone sleeping, or reading will be more sensitive than someone who is running on a treadmill. Reoccurring primary and secondary vibration effects often lead people to believe that the vibration is damaging their home, although vibration levels are well below minimum thresholds for damage potential (California Department of Transportation, 2020).

As shown in Table 5, groundborne vibration becomes distinctly perceptible to sensitive receptors at a level of 0.04 in/sec PPV and severely perceptible at a level of 0.1 in/sec PPV. Operation of a vibratory roller may result in groundborne vibration levels of up to 0.1 at a distance of 41 feet and a large bulldozer at a distance of 23 feet. The threshold could theoretically be exceeded at existing residential receptors to the north and south of the project site, and residents may be temporarily annoyed. However, perceptibility of construction vibration would be temporary and would only occur while vibratory equipment is utilized within 41 feet of the existing structures. The best management practice discussed above for potential architectural damage impacts would lessen potential annoyance related impacts. Furthermore, this impact would only occur during daytime hours and will be temporary. This impact would be less than significant. Vibration worksheets are provided in Appendix G.

Table 7
Construction Noise Levels (dBA L_{eq})

Phase	Receptor Location	Existing Ambient Noise Levels (dBA Leq)[1]	Unmitigated Noise Levels (dBA Leq)[2]
Demolition	Single-family residential use to south (16242 Jackson Slough Rd, Isleton)	47.7	64.5
	Single-family residential uses to north (406 Georgiana Drive, Isleton)	43.1	62.8
	Isleton Community Baseball Field to northeast (Andrus Cir, Isleton)	44.3	71.5
	Church to northeast (215 Jackson Blvd Extension, Isleton)	48.3	65.5
Grading	Single-family residential use to south (16242 Jackson Slough Rd, Isleton)	47.7	66.1
	Single-family residential uses to north (406 Georgiana Drive, Isleton)	43.1	64.4
	Isleton Community Baseball Field to northeast (Andrus Cir, Isleton)	44.3	73.1
	Church to northeast (215 Jackson Blvd Extension, Isleton)	48.3	67.1
Building Construction	Single-family residential use to south (16242 Jackson Slough Rd, Isleton)	47.7	63.6
	Single-family residential uses to north (406 Georgiana Drive, Isleton)	43.1	62.0
	Isleton Community Baseball Field to northeast (Andrus Cir, Isleton)	44.3	70.6
	Church to northeast (215 Jackson Blvd Extension, Isleton)	48.3	64.6
Paving	Single-family residential use to south (16242 Jackson Slough Rd, Isleton)	47.7	59.1
	Single-family residential uses to north (406 Georgiana Drive, Isleton)	43.1	57.5
	Isleton Community Baseball Field to northeast (Andrus Cir, Isleton)	44.3	66.1
	Church to northeast (215 Jackson Blvd Extension, Isleton)	48.3	60.1
Architectural Coating	Single-family residential use to south (16242 Jackson Slough Rd, Isleton)	47.7	51.7
	Single-family residential uses to north (406 Georgiana Drive, Isleton)	43.1	50.0
	Isleton Community Baseball Field to northeast (Andrus Cir, Isleton)	44.3	58.7
	Church to northeast (215 Jackson Blvd Extension, Isleton)	48.3	52.7

Notes:

(1) See Table 1 for measured ambient noise. STNM1 was used for the residential receptor to south, STNM4 was used for residential receptors to the north, STNM3 was used for park/baseball field receptors to the northeast, and STNM2 was used for the church receptor to the northeast of

(2) Construction noise worksheets are provided in Appendix D.

Table 8
Project Average Daily Traffic Volumes and Roadway Parameters

Roadway	Segment	Average Daily Traffic Volume[1] Existing	Average Daily Traffic Volume[1] Existing Plus Project	Posted Travel Speeds (MPH)	Site Conditions
Jackson Slough Road/Jackson Road Ext.	In Vicinity of Project Site	1,250	1,561	30	Soft

Notes:

(1) Existing and project daily traffic volumes obtained from the Meadows of Isleton RV Resort Traffic and VMT Assessment, Ganddini Group (August 2022).

Table 9

Increase in Existing Noise Levels Along Roadways as a Result of Project (dBA CNEL)

Roadway	Segment	Distance from roadway centerline to right-of-way (feet)[2]	Modeled Noise Levels (dBA CNEL)[1]			Exceeds Standards?[3]	Increase of 3 dB or More
			Existing Without Project at right-of-way	Existing Plus Project at right-of-way	Change in Noise Level		
Jackson Slough Road/Jackson Road Ext.	In Vicinity of Project Site	36	62.91	63.87	+0.96	Yes	No

Notes:

(1) Exterior noise levels calculated 5 feet above pad elevation, perpendicular to subject roadway.

(2) Right of way per the City of Isleton General Plan Community Development Element Section B Circulation (2000).

(3) Per the City of Isleton normally acceptable standard for single-family detached residential dwelling units (see Table 2).

Table 10
Construction Equipment Vibration Source Levels

Equipment		PPV at 25 ft, in/sec	Approximate Lv* at 25 ft
Pile Driver (impact)	upper range	1.518	112
	typical	0.644	104
Pile Driver (sonic)	upper range	0.734	105
	typical	0.170	93
clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	in soil	0.008	66
	in rock	0.017	75
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Loaded Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

Source: Federal Transit Administration: Transit Noise and Vibration Impact Assessment Manual, 2018.
*RMS velocity in decibels, VdB re 1 micro-in/sec

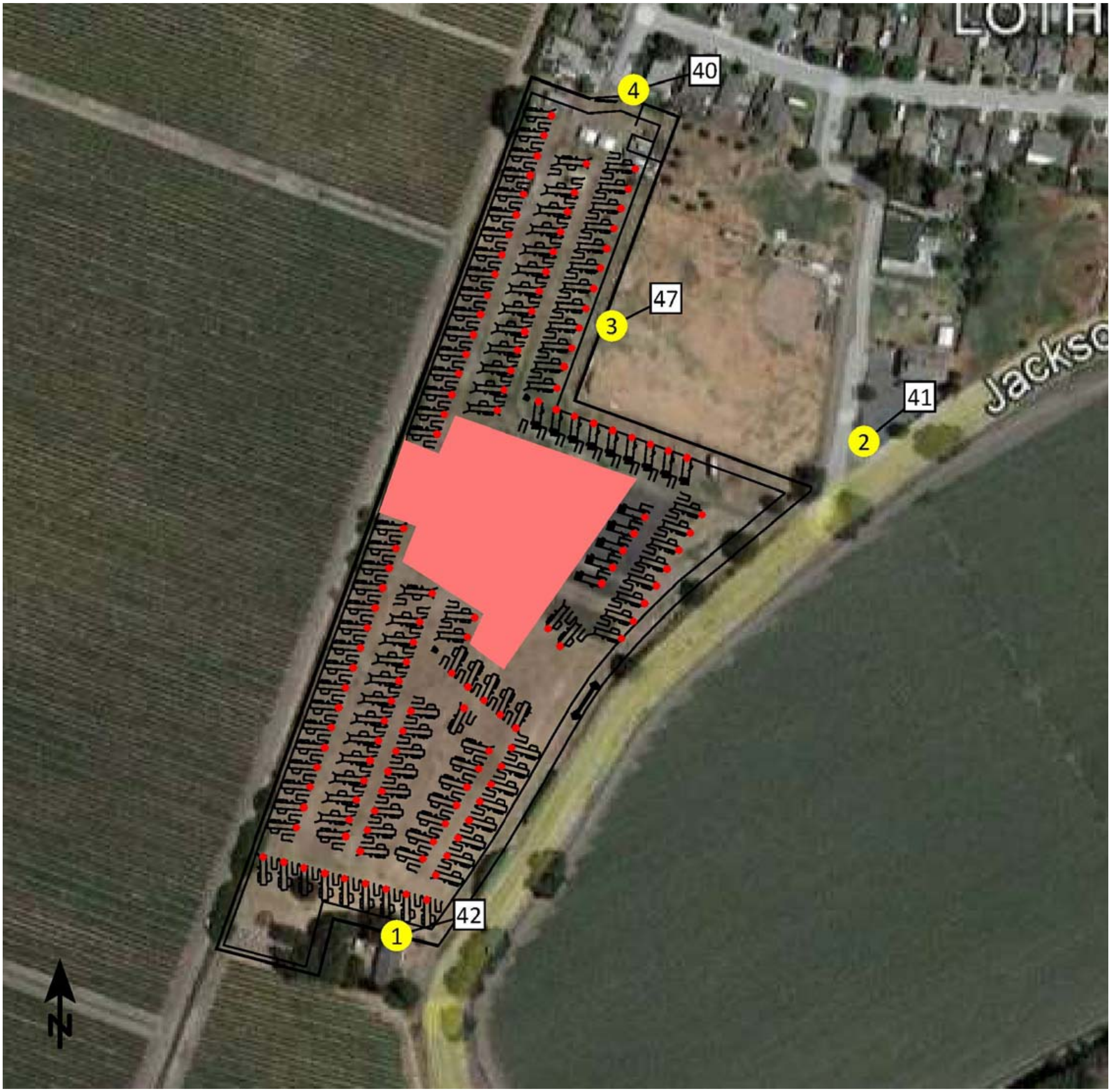
Table 11
Construction Vibration Levels at the Nearest Receptors

Receptor Location	Distance from Property Line to Nearest Structure (feet)	Equipment	Vibration Level	Threshold Exceeded?[1]	Vibration Level with Best Management Practices[1,2]	Threshold Exceeded With Best Management Practices?[1,2]
Architectural Damage Analysis						
Single-Family Residential to the North (along Georgiana Dr & 4th Ave)	9	Vibratory Roller	0.972	Yes	0.293	No
	9	Large Bulldozer	0.412	Yes	0.268	No
Park Structures to East/Northeast (Isleton Community Baseball Field)	208	Vibratory Roller	0.009	No	-	-
	208	Large Bulldozer	0.004	No	-	-
Church to Northeast (215 Jackson Blvd Ext)	226	Vibratory Roller	0.008	No	-	-
	226	Large Bulldozer	0.003	No	-	-
Single-Family Residential to the South (along Jackson Blvd Ext)	10	Vibratory Roller	0.830	Yes	0.293	No
	10	Large Bulldozer	0.352	Yes	0.268	No

Notes:

(1) Per Caltrans, 0.3 in/sec iss the threshold at which there is a risk to "architectural" damage to older residential structures and a PPV level of 0.5 in/sec for commercial buildings (see Table 4).

(2) Best management practices for architectural damage include limiting the use of vibratory rollers, or other similar vibratory equipment, within 20 feet and large bulldozers within 12 feet of residential structures to the north and south of the project site boundaries.



Signs and symbols

- Proposed Project
- Receiver
- Point source (HVAC)
- Area source (Common/Recreation Area)

Figure 6
Operational Noise Levels (dBA, Leq)

7. CEQA THRESHOLDS & IMPACTS EVALUATION

CALIFORNIA ENVIRONMENTAL QUALITY ACT THRESHOLDS

The California Environmental Quality Act Guidelines (Appendix G) establishes thresholds for noise impact analysis. This noise study includes analysis of noise and vibration impacts necessary to assess the project in light of the following Appendix G Checklist Thresholds.

Would the project result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Substantial increases in ambient noise levels are usually associated with project construction noise (temporary) and project operational noise (permanent).

<u>Project Construction Noise:</u> Construction noise sources are regulated within the City of Isleton Section 6.44.010 which permits construction activities between the hours of between the hours of 7:00 AM to 6:00 PM. In compliance with the City's Municipal Code, it is assumed that construction would not occur during the noise-sensitive nighttime hours.

<u>Off-Site Operational Noise:</u> The City has not established numerical thresholds to determine what a substantial increase is. For the purposes of this analysis, increases in ambient noise along affected roadways due to project generated vehicle traffic is considered substantial if they result in an increase of at least 3 dBA CNEL and: (1) the existing noise levels already exceed the applicable land use compatibility standard for the affected sensitive receptors set forth in the Hazard Resources Element of the City's General Plan; or (2) the project increases noise levels by at least 3 dBA CNEL and raises the ambient noise level from below the applicable standard to above the applicable standard.

<u>On-Site Project Generated Noise:</u> The recently updated CEQA Guidelines Appendix G Threshold Checklist includes the following question about substantial increases in ambient noise levels: *Would the project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?* Therefore, an increase in ambient noise levels would be considered substantial if it results in a violation of the City's noise standards that apply to the project. The applicable City standards are those provided in Table VI-1 of the City's General Plan Noise Element. This table is included in this report as Table 3. The applicable daytime and nighttime noise levels that project operation is not to exceed include a 30-minute daytime L_{eq} of 55 dBA (between the hours of 7:00 AM and 10:00 PM) and a nighttime L_{eq} of 45 dBA during nighttime hours (10:00 PM to 7:00 AM).

b) Generate excessive groundborne vibration or groundborne noise levels?

As shown in Table 4, the threshold at which there is a risk to "architectural" damage to historic and some older buildings is a peak particle velocity (PPV) of 0.25, at older residential structures a PPV of 0.3, and at new residential structures and modern industrial/commercial buildings is a PPV of 0.5. Table 5 shows that a PPV of 0.04 is the threshold at which groundborne vibration becomes distinctly perceptible in regard to annoyance. Impacts would be significant if construction activities result in groundborne vibration of 0.3 PPV or higher at a sensitive receptor or 0.5 PPV or higher at a commercial building.

California Environmental Quality Act Impact Analysis

Will the project result in the:

a) *Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Less Than Significant Impact

Construction Noise

On-Site Construction Noise

Construction activities will occur in phases including demolition, grading, building construction, paving, and architectural coating. Assumptions for the phasing, duration, and required equipment for the construction of the proposed project were obtained from the project applicant. Construction activities are anticipated to begin no sooner than the beginning of November 2022 and be completed by mid-August 2023 with demolition lasting approximately 20 days, grading approximately 30 days, building construction approximately 150 days, paving approximately 20 days, and architectural coating approximately 20 days.

Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work. The existing surrounding single-family residential uses to the north, east, and southwest of the project site may be affected by short-term noise impacts associated with construction noise.

Construction noise associated with the proposed project was calculated utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Distances to receptors were based on the acoustical center of the proposed construction activity. Construction noise levels were calculated for each phase. Anticipated noise levels during each construction phase are presented in Table 7. Worksheets for each phase are included as Appendix D.

Modeled unmitigated construction noise levels reach up to 66.1 dBA L_{eq} at the nearest residential property line to the south, 64.4 dBA L_{eq} at the nearest residential property line to the north, 73.1 dBA L_{eq} at the nearest baseball field/park property line to the northeast, and up to 67.1 dBA L_{eq} at the nearest church property line to the northeast of the project site.

Table 7 also includes a comparison of existing noise levels and project construction noise levels. Short-term noise measurement (STNM)1 was used to represent the property line of the nearest residential receptor to the south, STNM4 was used to represent the property line of the nearest residential receptor to the north, STNM3 was used to represent the property line of the baseball field/park receptor to the northeast, and STNM2 was used to represent the property line of the church receptor to the northeast of the project site.

The City's Municipal Code Section 6.44.010 permits construction related activities between the hours of 7:00 AM to 6:00 PM. Project construction will not occur outside of the hours outlined as "exempt" in the City of Isleton Municipal Code Section 6.44.010 (as follows) and therefore, will not result in or generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance.

The following BMPs will be included on the project plans and any related contract specifications. Construction noise impacts would be less than significant.

Construction Noise - Best Management Practices

1. All construction equipment, fixed or mobile, will be equipped with properly operating and maintained mufflers, consistent with manufacturer standards.

2. All stationary construction equipment will be placed so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

3. As applicable, shut off all equipment when not in use.

4. To the degree possible, equipment staging shall be located in areas that create the greatest distance between construction-related noise and vibration sources and sensitive receptors surrounding the project site.

5. Jackhammers, pneumatic equipment, and all other portable stationary noise sources will be directed away from existing residences east of the project site. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between equipment and the nearest off-site residences. The shielding should be without holes and cracks.

6. No amplified music and/or voice will be allowed on the project site.

7. Haul truck deliveries will not occur outside of the hours presented as exempt for construction per City's Municipal Code Section 6.44.010.

<u>Off-Site Construction</u>

Construction truck trips would occur throughout the construction period. Given the project site's proximity to the Highway 12, it is anticipated that worker, vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps traveling south on Jackson Slough Road.

According to the FHWA, the traffic volumes need to be doubled in order to increase noise levels by 3 dBA CNEL. The estimated existing average daily trips along Jackson Slough Road in the vicinity of the project site is approximately 1,250 average daily vehicle trips.[6] As shown in the CalEEMod output files provided in the Air Quality, Global Climate Change, and Energy Impact Analysis prepared for the proposed project (Ganddini Group, 2022) the greatest number of construction-related vehicle trips per day would be during grading at up to 20 worker vehicle trips per day. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

<u>**Operational Noise**</u>

<u>On-Site Operational Noise</u>

Compliance with Applicable Standards

Noise associated with the RV park will be consistent with other residential land uses and the noise associated with the proposed recreation areas will be consistent with noise associated with community parks. Operational noise was modeled using the SoundPLAN noise model in order to determine if the project is likely to violate

[6] Existing average daily traffic volumes for Jackson Slough Road provided in the Meadows of Isleton RV Resort Traffic and Vehicle Miles Traveled Assessment (Ganddini Group, Inc., August 2022).

the City's noise standards provided in Table 3. Modeled noise sources include small HVAC units and the proposed recreation/common area. Both noise sources were modeled to be in full operation during the modeled period. Electricity will be provided at each RV/Tiny Home site and generator use is not anticipated.

Sensitive land uses that may be affected by project noise include the include the existing single-family detached residential property lines located adjacent to the north and south of the project site boundaries; Isleton Community Baseball Field located adjacent to the northeast corner of the project site boundaries; and the church use located approximately 80 feet to the northeast (along Andrus Circle) of the project site boundaries.

The City noise standards that apply to project operational noise impacts to nearby sensitive receptors are the ones provided in Table VI-1 of the City's General Plan Noise Element. This table is included in this report as Table 3. As shown in Figures 6 and 7, project operational noise is expected to range between 40 and 42 dBA L_{eq} at receptors 1, 2, and 4 which represent existing single-family homes and up to 47 dBA L_{eq} at receptor 3 which represents the Isleton Community Baseball Field. The applicable daytime noise level that project operation is not to exceed is a 30-minute daytime L_{eq} of 55 dBA (between the hours of 7:00 AM and 10:00 PM). In addition, at residential receptors, the applicable nighttime noise level that project operation is not to exceed is a L_{eq} of 45 dBA during nighttime hours (10:00 PM to 7:00 AM).

Project operational noise is not expected to exceed City of Isleton noise standards. This impact would be less than significant, and no mitigation is required.

Substantial Increase

The recently updated CEQA Guidelines Appendix G Threshold Checklist includes the following question about substantial increases in ambient noise levels: *Would the project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

As discussed previously, existing ambient noise levels in the project vicinity range between 43.1 and 48.3 dBA L_{eq}. As shown in Figure 6, project operations would reach up to 42 dBA L_{eq} at existing single-family homes and up to 47 dBA L_{eq} at the Isleton Community Baseball Field. Therefore, considering noise levels add logarithmically, the proposed project would result in increases of ambient noise levels between 0.7 to 1.7 dBA L_{eq} at adjacent residential properties and up to 4.6 dBA L_{eq} at the Isleton Community Baseball Field during operation. Project operation would not result in substantial increases in ambient noise levels at the nearest sensitive receptors. Given that the project would not result in a violation of City standards at a sensitive receptor, increases in the ambient noise levels due to project operation would be less than significant. No mitigation is required.

<u>Noise Impacts to Off-Site Receptors Due to Project Generated Trips</u>

During operation, the proposed project is expected to generate approximately 311 average daily trips with 24 trips during the AM peak-hour and 31 trips during the PM peak-hour. A Project generated vehicle noise along affected roadways was modeled utilizing a computer program that replicates the FHWA Traffic Noise Prediction Model FHWA-RD-77-108. Project generated vehicle trips are anticipated to increase noise levels by approximately 0.96 dB along Jackson Boulevard Extension/Jackson Slough Road and would not result in significant increases in ambient noise levels. The impact would be less than significant. No mitigation is required.

b) Generation of excessive groundborne vibration of groundborne noise levels?

Less Than Significant Impact

The Caltrans Transportation and Construction Vibration Guidance Manual (2020) provides a comprehensive discussion regarding groundborne vibration and the appropriate thresholds to use to assess the potential for damage. As shown in Table 4, the threshold at which there is a risk of "architectural" damage to historic structures is a peak particle velocity (PPV) of 0.25 in/sec, and a PPV of 0.3 in/sec at older residential structures. There is a risk of architectural damage at newer residential structures and modern commercial/industrial buildings at a PPV of 0.5 in/sec. In addition, the Caltrans Noise and Vibration Manual identifies 0.1 PPV in./sec. as the level that is "strongly perceptible" (Table 5).

The closest residential structures are located approximately 9 feet to the north and 10 feet to the south of the project site boundaries. In addition, commercial structures are located as close as approximately 208 feet to the east and 226 feet to the northeast of the project site boundaries. Estimated groundborne vibration levels at the nearest sensitive receptors are presented in Table 11. In summary, if a vibratory roller is used within 20 feet of existing residential structures to the north and south or if a large bulldozer is used within 12 feet of existing residential structures to the north and south, there will be some potential for this equipment to result in architectural damage and significant impacts. Therefore, construction related groundborne vibration has the potential to exceed the residential threshold of 0.3 PPV in/sec at residential structures to the north and south of the project site boundaries. The project will implement a best management practice that limits the use of a vibratory roller within 20 feet or large bulldozer within 12 feet of the existing residential structures to the north and south of the project site. Implementation of the best management practice will avoid significant impacts. Vibration worksheets are provided in Appendix G.

As shown in Table 5, groundborne vibration becomes distinctly perceptible to sensitive receptors at a level of 0.04 in/sec PPV and severely perceptible at a level of 0.1 in/sec PPV. Operation of a vibratory roller may result in groundborne vibration levels of up to 0.1 at a distance of 41 feet and a large bulldozer at a distance of 23 feet. The threshold could theoretically be exceeded at existing residential receptors to the north and south of the project site, and residents may be temporarily annoyed. However, perceptibility of construction vibration would be temporary and would only occur while vibratory equipment is utilized within 41 feet of the existing structures. The best management practice discussed above for potential architectural damage impacts would lessen potential annoyance related impacts. Furthermore, this impact would only occur during daytime hours and will be temporary. This impact would be less than significant.

Operation of the proposed project will involve the movement of passenger vehicles and trucks. Driving surfaces associated with the project will be paved and will generally be smooth. Loaded trucks generally have a PPV of 0.076 at a distance of 25 feet (Caltrans 2020). Groundborne vibration levels associated with passenger vehicles is much lower. The movement of vehicles on the project site would not result in the generation of excessive groundborne vibration or groundborne noise. Impacts would be less than significant. No mitigation is required.

Groundborne Vibration - Best Management Practice

1. A best management practice limiting the use of a vibratory roller within 20 feet and large bulldozer within 12 feet of the existing residential structures to the north and south of the project site will be implemented to avoid significant impacts.

c) *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?*

Less Than Significant Impact

The closest airport to the project site is the Rio Vista Municipal Airport with airport runways located as close as approximately 5.1 miles northwest of the project site. As shown on Figure 5 of the Rio Vista Airport Land Use Compatibility Plan (May 10, 2018), the project site is well outside the 55 dBA CNEL noise contour for the airport.[7] Therefore, the proposed project would not expose people residing or working in the area to excessive noise levels. The impact is less than significant, and no mitigation is required.

[7] https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=34763

8. REFERENCES

California Department of Transportation

2002 Transportation Related Earthborne Vibrations (California Department of Transportation Experiences), Technical Advisory, Vibration TAV-02-01-R9601. February 20.

2020 Transportation and Construction Vibration Manual. April.

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1974 "Information on Levels of Environmental Noise Requisite to Protect Public Health And Welfare with an Adequate Margin of Safety," EPA/ONAC 550/9-74-004, March, 1974.

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2021 Municipal Ordinance. January 30.

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2017 State of California General Plan Guidelines

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2001 General Plan, Chapter 4, Figure C-3 "Link Volume Capacities/Level of Service for Riverside County Roadways".

2009 County of Riverside Industrial Hygiene Guidelines for Determining and Mitigating Traffic Noise Impacts to Residential Structures and County.

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2006 FHWA Roadway Construction Noise Model User's Guide. January.

APPENDICES

Appendix A

List of Acronyms

Term	Definition
ADT	Average Daily Traffic
ANSI	American National Standard Institute
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
D/E/N	Day / Evening / Night
dB	Decibel
dBA or dB(A)	Decibel "A-Weighted"
dBA/DD	Decibel per Double Distance
dBA L_{eq}	Average Noise Level over a Period of Time
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
L_{02},L_{08},L_{50},L_{90}	A-weighted Noise Levels at 2 percent, 8 percent, 50 percent, and 90 percent, respectively, of the time period
DNL	Day-Night Average Noise Level
$L_{eq(x)}$	Equivalent Noise Level for '"x" period of time
L_{eq}	Equivalent Noise Level
L_{max}	Maximum Level of Noise (measured using a sound level meter)
L_{min}	Minimum Level of Noise (measured using a sound level meter)
LOS C	Level of Service C
OPR	California Governor's Office of Planning and Research
PPV	Peak Particle Velocities
RCNM	Road Construction Noise Model
REMEL	Reference Energy Mean Emission Level
RMS	Root Mean Square

APPENDIX B

GLOSSARY

Term	Definition
Ambient Noise Level	The all-encompassing noise environment associated with a given environment, at a specified time, usually a composite of sound from many sources, at many directions, near and far, in which usually no particular sound is dominant.
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear.
CNEL	Community Noise Equivalent Level. CNEL is a weighted 24-hour noise level that is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours.
Decibel, dB	A logarithmic unit of noise level measurement that relates the energy of a noise source to that of a constant reference level; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
DNL, Ldn	Day Night Level. The DNL, or Ldn is a weighted 24-hour noise level that is obtained by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the nighttime hours.
Equivalent Continuous Noise Level, L_{eq}	A level of steady state sound that in a stated time period, and a stated location, has the same A-weighted sound energy as the time-varying sound.
Fast/Slow Meter Response	The fast and slow meter responses are different settings on a sound level meter. The fast response setting takes a measurement every 100 milliseconds, while a slow setting takes one every second.
Frequency, Hertz	In a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., the number of cycles per second).
L_{02}, L_{08}, L_{50}, L_{90}	The A-weighted noise levels that are equaled or exceeded by a fluctuating sound level, 2 percent, 8 percent, 50 percent, and 90 percent of a stated time period, respectively.
L_{max}, L_{min}	Lmax is the RMS (root mean squared) maximum level of a noise source or environment measured on a sound level meter, during a designated time interval, using fast meter response. Lmin is the minimum level.
Offensive/ Offending/Intrusive Noise	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of sound depends on its amplitude, duration, frequency, and time of occurrence, and tonal information content as well as the prevailing ambient noise level.
Root Mean Square (RMS)	A measure of the magnitude of a varying noise source quantity. The name derives from the calculation of the square root of the mean of the squares of the values. It can be calculated from either a series of lone values or a continuous varying function.

APPENDIX C

NOISE MEASUREMENT FIELD WORKSHEETS

Noise Measurement
Field Data

Project Name: Meadows of Isleton RV Resort, Isleton **Date:** August 16, 2022

Project #: 19542

Noise Measurement #: STNM1 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 16242 Jackson Slough Road, Isleton, CA 95641

Site Description (Type of Existing Land Use and any other notable features): Project Site: Mostly vacant grassy land used for outdoor recreation and bounded by farmland to west, farmland & a single-family residence to south, Jackson Blvd Ext. to east w/ farmland further east, & a baseball field & single-family residneces to the north. Noise Measurement Site: Project site to N/NW, Jackson Blvd Ext./Jackson Slough Rd to east, & a single-family residence to S/SW.

Weather: Clear skies, sunny. **Settings:** $\boxed{\text{SLOW}}$ FAST

Temperature: 97 deg F **Wind:** 6 mph **Humidity:** 20% **Terrain:** Flat

Start Time: 2:13 PM **End Time:** 2:28 PM **Run Time:**

Leq: 47.7 dB

Lmax 63.5 dB

L2 58.4 dB

L8 52.0 dB

L25 43.3 dB

L50 38.6 dB

Primary Noise Source: Traffic noise from 14 vehicles passing microphone traveling along Jackson Slough Road. Traffic ambiance from River Rd to N of STNM1.

Secondary Noise Sources: Leaf rustle from breeze. Bird song. Occasional distant overhead air traffic.

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	11/17/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	8/16/2022		

Noise Measurement
Field Data

PHOTOS:

STNM1 looking WSW towards single family residence 16242 Jackson Slough Road.

STNM1 looking S passed driveway to residence 16242 Jackson Slough Road.

Summary		
File Name on Meter	LxT_Data.038.s	
File Name on PC	LxT_0003099-20220816 141353-LxT_Data.038.ldbin	
Serial Number	0003099	
Model	SoundTrack LxT®	
Firmware Version	2.404	
User	Ian Edward Gallagher	
Location	STNM1 38° 9'24.78"N 121°37'5.89"W	
Job Description	15 minute noise measurement (1 x 15 minutes)	
Note	Ganddini 19542 Meadows of Isleton RV Resort	
Measurement		
Start	2022-08-16 14:13:53	
Stop	2022-08-16 14:28:53	
Duration	00:15:00.0	
Run Time	00:15:00.0	
Pause	00:00:00.0	
Pre-Calibration	2022-08-16 14:12:24	
Post-Calibration	None	
Overall Settings		
RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamplifier	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Frequency Weighting	C Weighting	
OBA Max Spectrum	At LMax	
Overload	123.1 dB	
Results		
LAeq	47.7	
LAE	77.2	
EA	5.857 µPa²h	
EA8	187.424 µPa²h	
EA40	937.121 µPa²h	
LApeak (max)	2022-08-16 14:15:56	88.2 dB
LASmax	2022-08-16 14:22:13	63.5 dB
LASmin	2022-08-16 14:26:09	28.5 dB

		Statistics	
LCeq	58.3 dB	**LA2.00**	58.4 dB
LAeq	47.7 dB	**LA8.00**	52.0 dB
LCeq - LAeq	10.6 dB	**LA25.00**	43.3 dB
LAIeq	50.8 dB	**LA50.00**	38.6 dB
LAeq	47.7 dB	**LA66.60**	36.6 dB
LAIeq - LAeq	3.1 dB	**LA90.00**	33.1 dB
Overload Count	0		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.038.s	Computer's File Name	LxT_0003099-20220816 141353-LxT_Data.038.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM1 38° 9'24.78"N 121°37'5.89"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19542 Meadows of Isleton RV Resort		

Start Time	2022-08-16 14:13:53	Duration	0:15:00.0		
End Time	2022-08-16 14:28:53	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	47.7 dB		
LAE	77.2 dB	SEA	--- dB
EA	5.9 µPa²h	LAFTM5	53.9 dB
EA8	187.4 µPa²h		
EA40	937.1 µPa²h		

LA_{peak}	88.2 dB	2022-08-16 14:15:56
LAS_{max}	63.5 dB	2022-08-16 14:22:13
LAS_{min}	28.5 dB	2022-08-16 14:26:09

LA_{eq}	47.7 dB		
LC_{eq}	58.3 dB	LC_{eq} - LA_{eq}	10.6 dB
LAI_{eq}	50.8 dB	LAI_{eq} - LA_{eq}	3.1 dB

Exceedances	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	--- dB	--- dB	0.0 dB	
	LDEN	**LDay**	**LEve**	**LNight**
	--- dB	--- dB	--- dB	--- dB

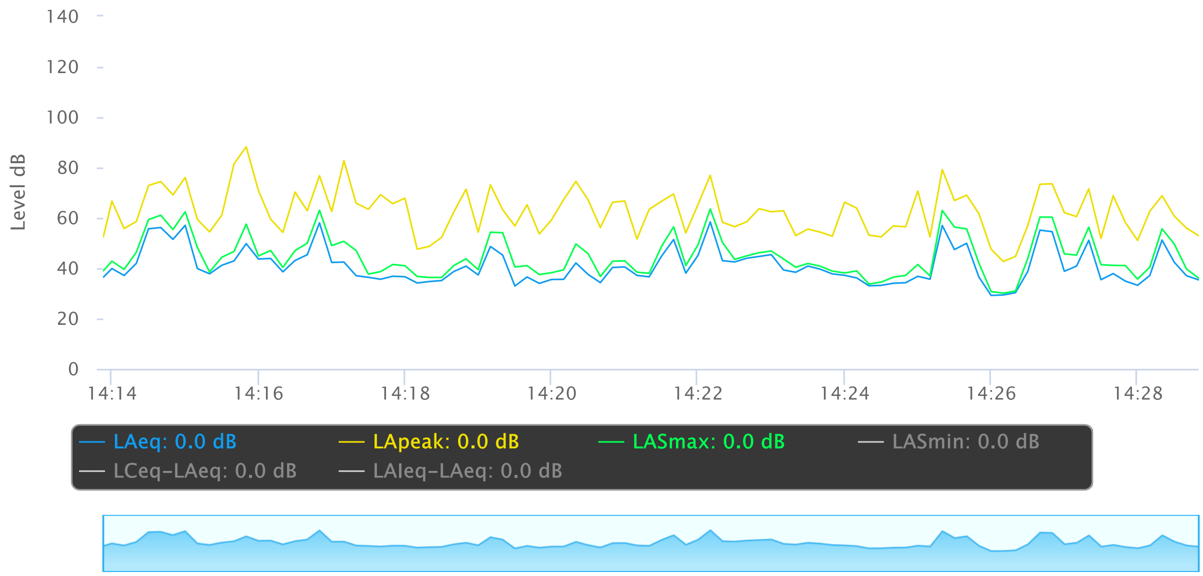
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	47.7 dB		58.3 dB		--- dB	
$Ls_{(max)}$	63.5 dB	2022-08-16 14:22:13	--- dB		--- dB	
$LS_{(min)}$	28.5 dB	2022-08-16 14:26:09	--- dB		--- dB	
$L_{Peak(max)}$	88.2 dB	2022-08-16 14:15:56	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

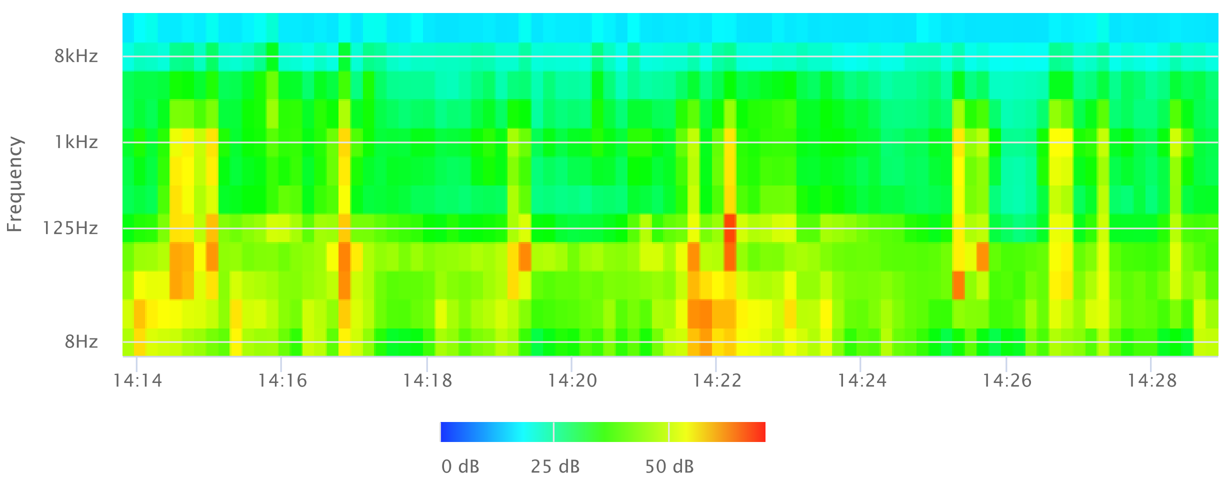
Statistics

LAS 2.0	58.4 dB
LAS 8.0	52.0 dB
LAS 25.0	43.3 dB
LAS 50.0	38.6 dB
LAS 66.6	36.6 dB
LAS 90.0	33.1 dB

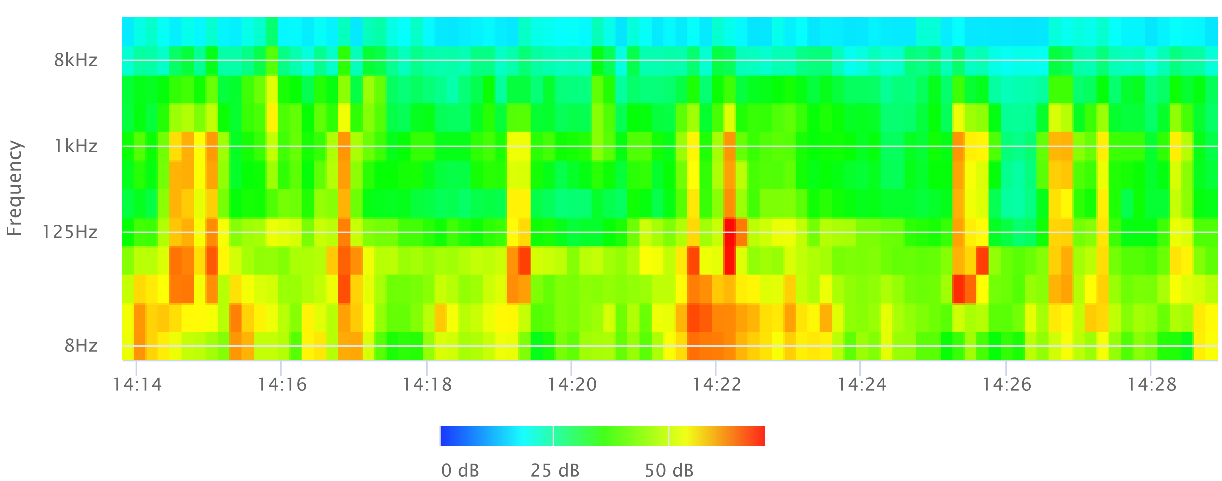
Time History



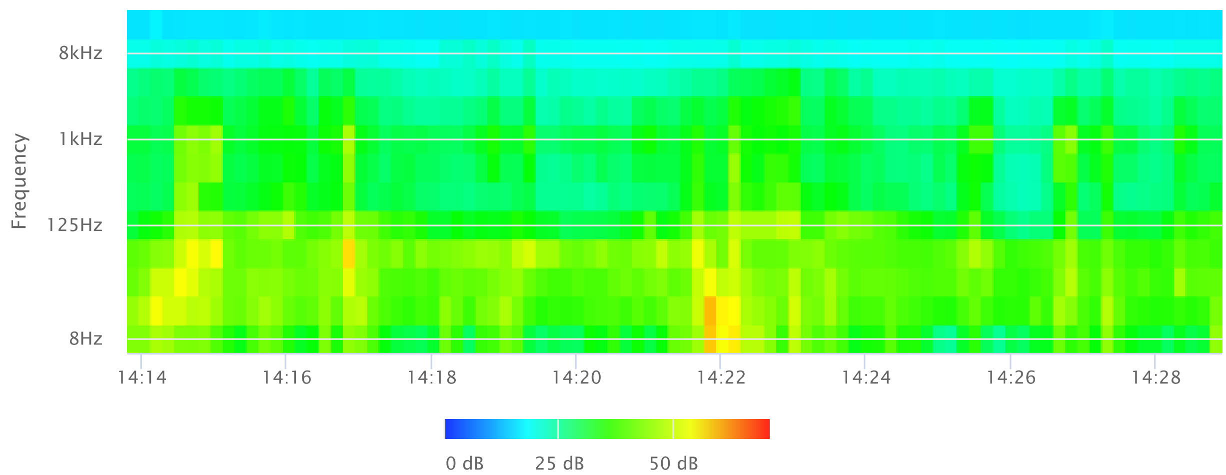
OBA 1/1 Leq



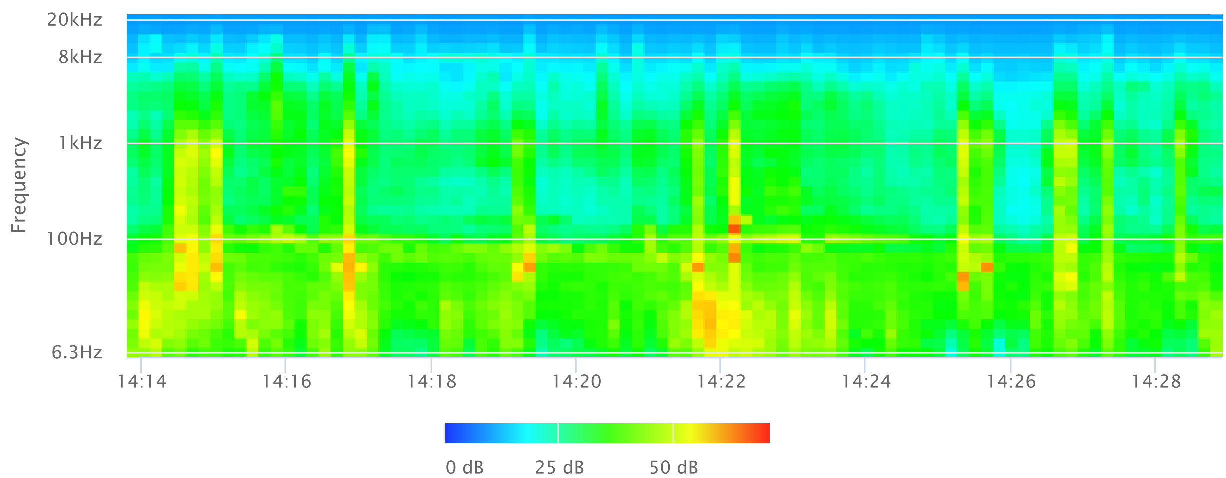
OBA 1/1 Lmax



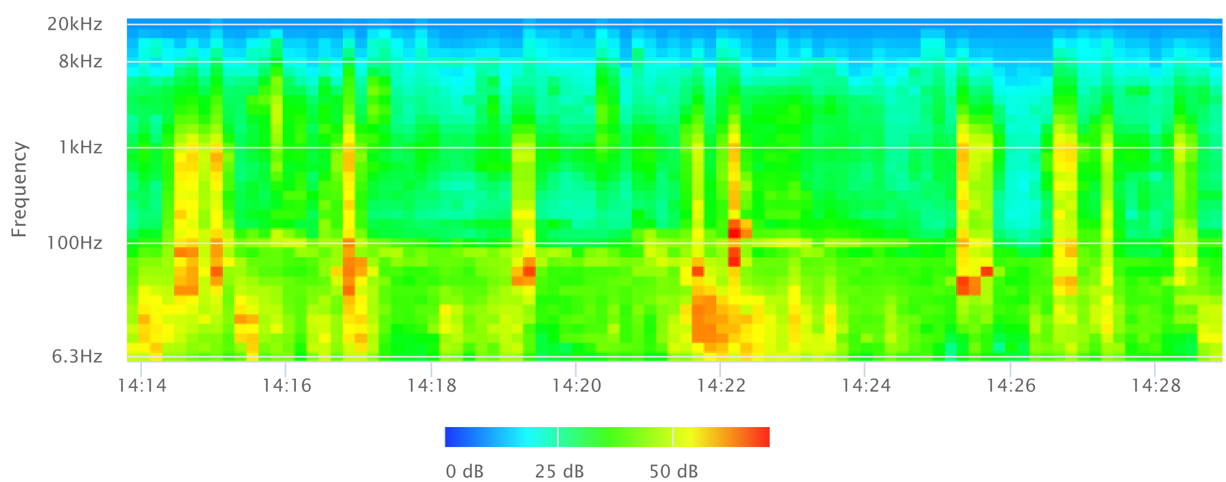
OBA 1/1 Lmin



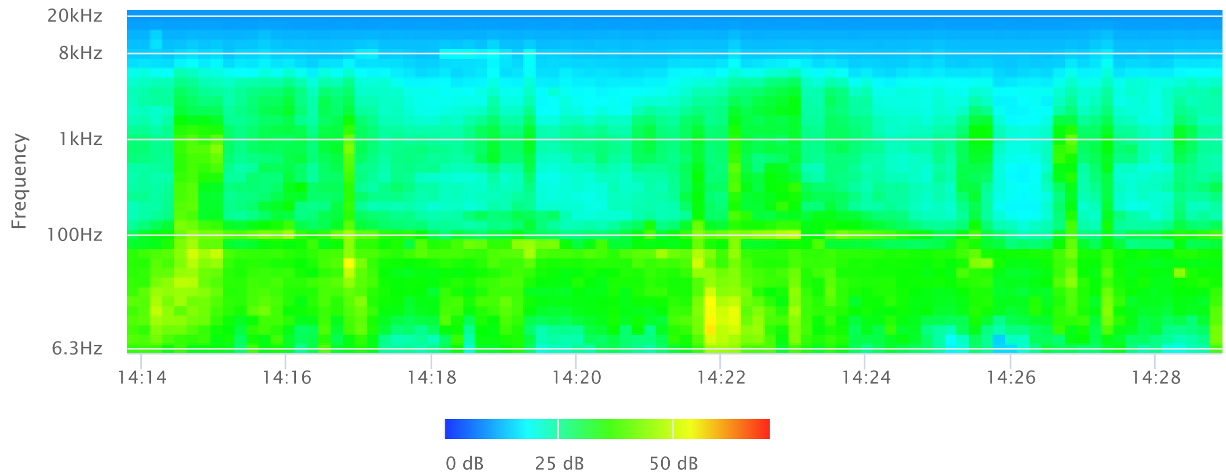
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
14:14
14:16
14:18
14:20
14:22
14:24
14:26
14:28
0 dB
25 dB
50 dB

Noise Measurement
Field Data

Project Name: Meadows of Isleton RV Resort, Isleton **Date:** August 16, 2022

Project #: 19542

Noise Measurement #: STNM2 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 215 Jackson Boulevard Ext, Isleton, CA 95641

Site Description (Type of Existing Land Use and any other notable features): Project Site: Mostly vacant grassy land used for outdoor recreation and bounded by farmland to west, farmland & a single-family residence to south, Jackson Blvd Ext. to east w/ farmland further east, & a baseball field & single-family residnеces to the north. Noise Measurement Site: Andrus Cir to west w/ baseball field/park further west, chruch use to east/SE, & residential to north/NE.

Weather: Clear skies, sunny. **Settings:** SLOW FAST

Temperature: 97 deg F **Wind:** 6 mph **Humidity:** 20% **Terrain:** Flat

Start Time: 2:42 PM **End Time:** 2:57 PM **Run Time:**

Leq: 48.3 dB

Lmax 68.4 dB

L2 56.8 dB

L8 50.6 dB

L25 46.3 dB

L50 43.4 dB

Primary Noise Source: Traffic noise from 3 vehicles passing microphone traveling along Andrus Circle.
Traffic noise from Jackson Blvd Ext, traffic ambiance from other roads.

Secondary Noise Sources: Leaf rustle from breeze. Bird song. Occasional distant overhead air traffic.
Residential ambiance.

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	11/17/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	8/16/2022		

Noise Measurement
Field Data

PHOTOS:

STNM2 looking W across Andrus Ctr towards baseball field.

STNM2 looking SE towards building 215 Jackson Blvd Ext, Isleton.

Summary			
File Name on Meter	LxT_Data.039.s		
File Name on PC	LxT_0003099-20220816 144238-LxT_Data.039.ldbin		
Serial Number	3099		
Model	SoundTrack LxT®		
Firmware Version	2.404		
User	Ian Edward Gallagher		
Location	STNM2 38° 9'34.98"N 121°36'57.04"W		
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19542 Meadows of Isleton RV Resort		
Measurement			
Start	2022-08-16 14:42:38		
Stop	2022-08-16 14:57:38		
Duration	00:15:00.0		
Run Time	00:15:00.0		
Pause	00:00:00.0		
Pre-Calibration	2022-08-16 14:42:04		
Post-Calibration	None		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamplifier	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Frequency Weighting	C Weighting		
OBA Max Spectrum	At LMax		
Overload	123.6 dB		
Results			
LAeq	48.3		
LAE	77.8		
EA	6.724848 µPa²h		
EA8	215.1951 µPa²h		
EA40	1.075976 mPa²h		
LApeak (max)	2022-08-16 14:55:02	81.9 dB	
LASmax	2022-08-16 14:55:03	68.4 dB	
LASmin	2022-08-16 14:49:54	34.6 dB	
		Statistics	
LCeq	57.8 dB	**LA2.00**	56.8 dB
LAeq	48.3 dB	**LA8.00**	50.6 dB
LCeq - LAeq	9.5 dB	**LA25.00**	46.3 dB
LAIeq	51.5 dB	**LA50.00**	43.4 dB
LAeq	48.3 dB	**LA66.60**	41.8 dB
LAIeq - LAeq	3.2 dB	**LA90.00**	38.7 dB
Overload Count	0		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.039.s	Computer's File Name	LxT_0003099-20220816 144238-LxT_Data.039.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM2 38° 9'34.98"N 121°36'57.04"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19542 Meadows of Isleton RV Resort		

Start Time	2022-08-16 14:42:38	Duration	0:15:00.0		
End Time	2022-08-16 14:57:38	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	48.3 dB		
LAE	77.8 dB	SEA	--- dB
EA	6.7 µPa²h	LAFTM5	54.9 dB
EA8	215.2 µPa²h		
EA40	1.1 mPa²h		

LA_{peak}	81.9 dB	2022-08-16 14:55:02
LAS_{max}	68.4 dB	2022-08-16 14:55:03
LAS_{min}	34.6 dB	2022-08-16 14:49:54

LA_{eq}	48.3 dB		
LC_{eq}	57.8 dB	LC_{eq} - LA_{eq}	9.5 dB
LAI_{eq}	51.5 dB	LAI_{eq} - LA_{eq}	3.2 dB

Exceedances	Count	Duration
LAS > 65.0 dB	1	0:00:02.6
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	--- dB	--- dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

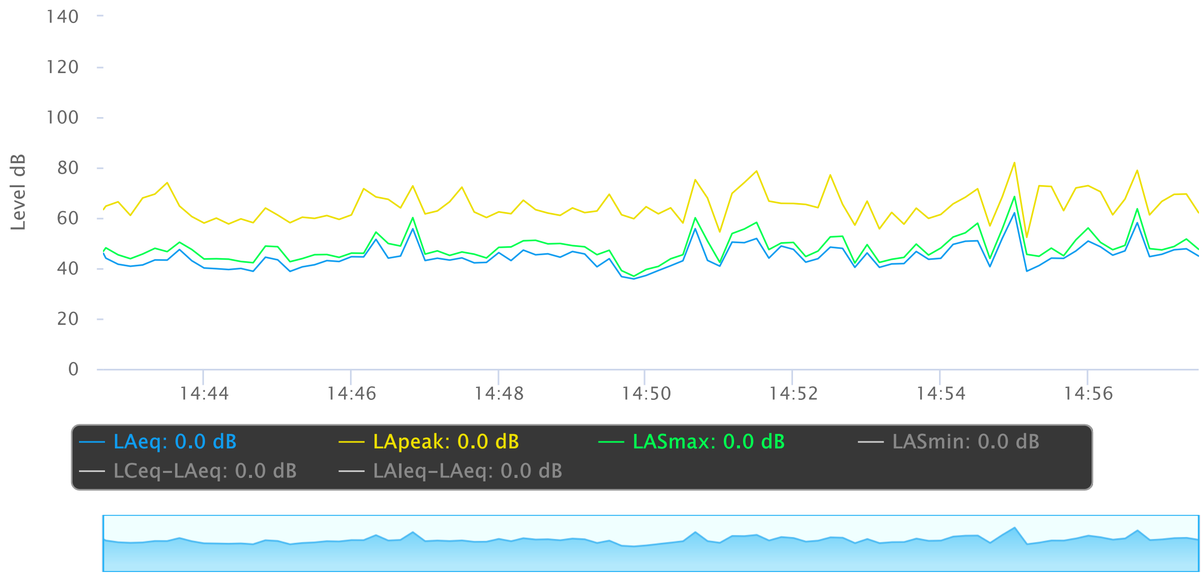
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	48.3 dB		57.8 dB		--- dB	
$Ls_{(max)}$	68.4 dB	2022-08-16 14:55:03	--- dB		--- dB	
$LS_{(min)}$	34.6 dB	2022-08-16 14:49:54	--- dB		--- dB	
$L_{Peak(max)}$	81.9 dB	2022-08-16 14:55:02	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

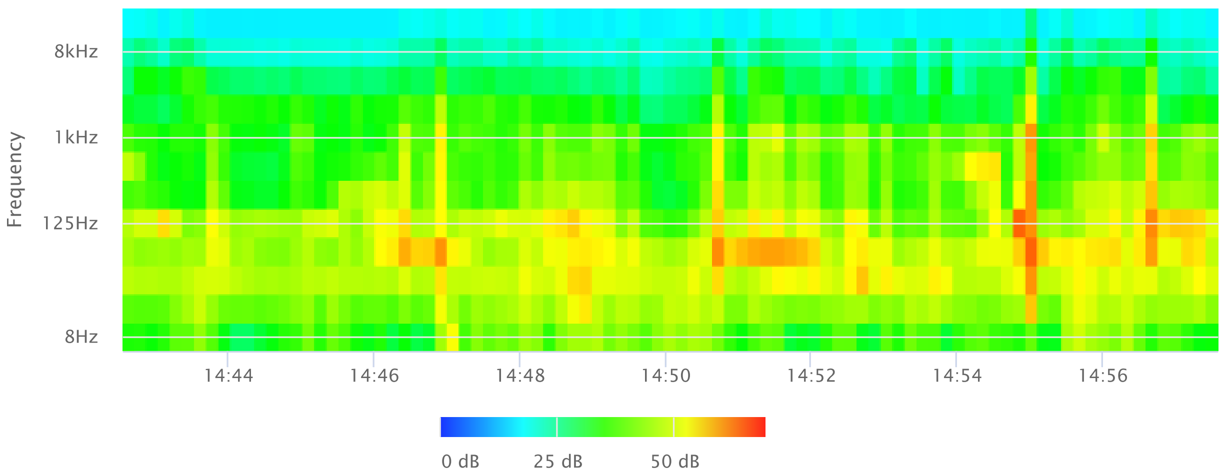
Statistics

LAS 2.0	56.8 dB
LAS 8.0	50.6 dB
LAS 25.0	46.3 dB
LAS 50.0	43.4 dB
LAS 66.6	41.8 dB
LAS 90.0	38.7 dB

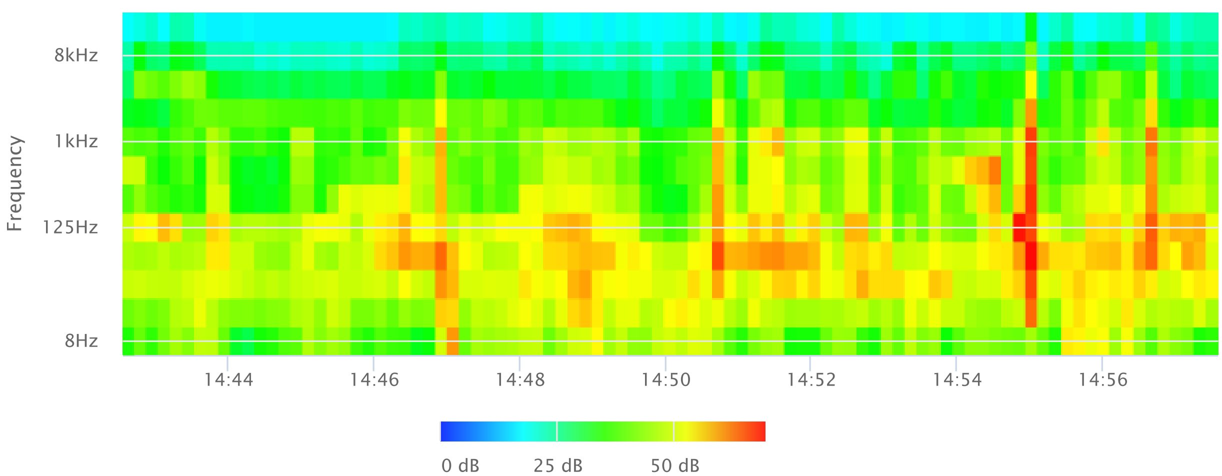
Time History



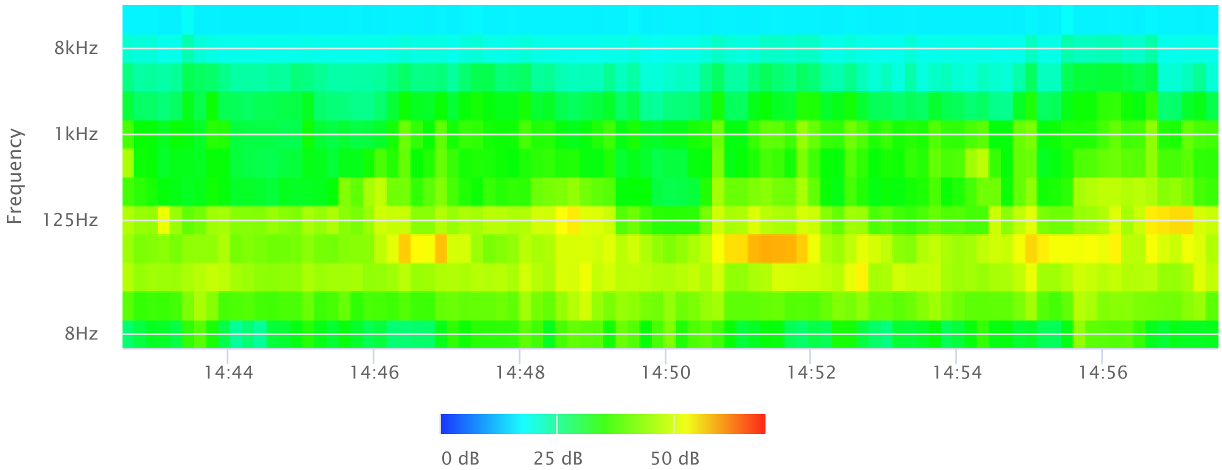
OBA 1/1 Leq



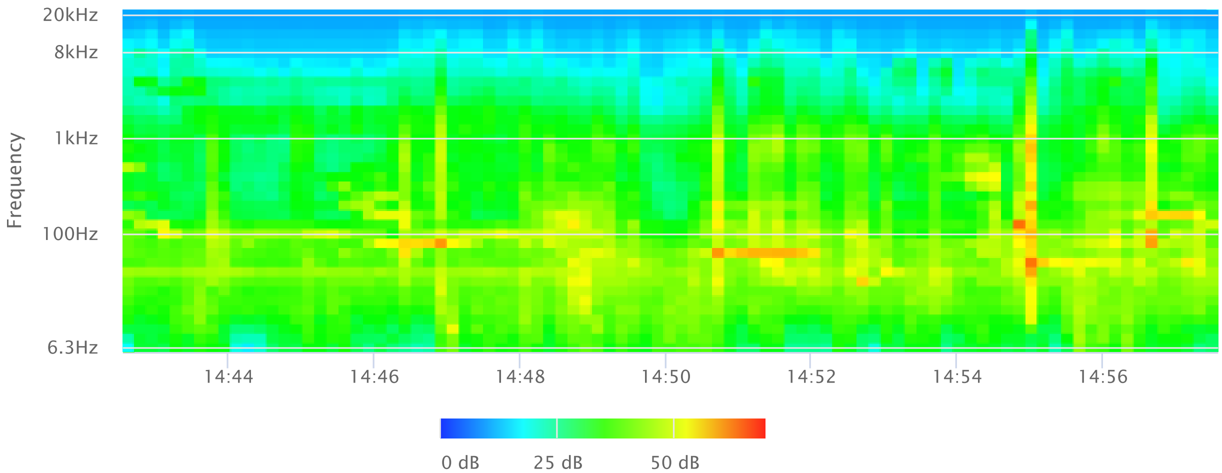
OBA 1/1 Lmax



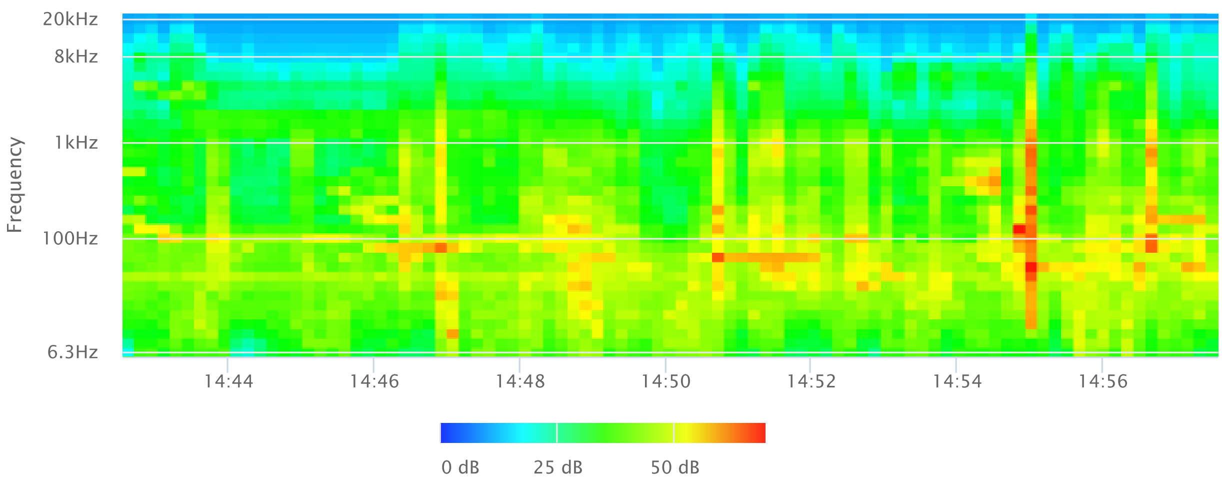
OBA 1/1 Lmin



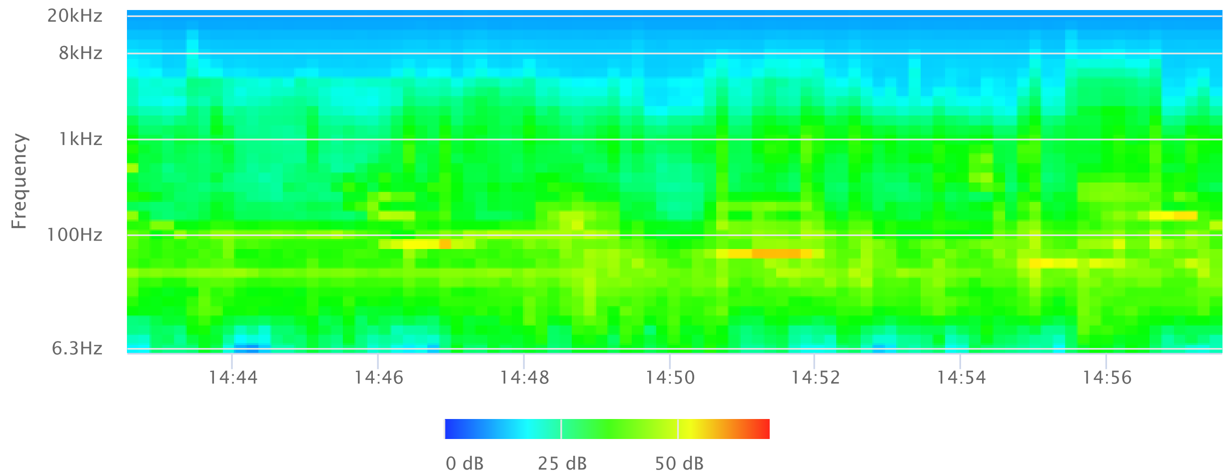
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
14:44
14:46
14:48
14:50
14:52
14:54
14:56
0 dB
25 dB
50 dB

Noise Measurement
Field Data

Project Name: Meadows of Isleton RV Resort, Isleton **Date:** August 16, 2022

Project #: 19542

Noise Measurement #: STNM3 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: SW corner of Isleton Community Baseball Park, Andrus Ctr, Isleton, CA 95641

Site Description (Type of Existing Land Use and any other notable features): Project Site: Mostly vacant grassy land used for outdoor recreation and bounded by farmland to west, farmland & a single-family residence to south, Jackson Blvd Ext. to east w/ farmland further east, & a baseball field & single-family residnece s to the north. Noise Measurement Site: Baseball field/park surrouding measurement site to north, east, and south with project site furhter west and south.

Weather: Clear skies, sunny. **Settings:** SLOW FAST

Temperature: 97 deg F **Wind:** 6 mph **Humidity:** 20% **Terrain:** Flat

Start Time: 3:09 PM **End Time:** 3:24 PM **Run Time:**

Leq: 44.3 dB **Primary Noise Source:** Traffic noise from vehicles traveling along Jackson Blvd Ext.

Lmax 50.7 dB Traffic ambiance from River Road and other surrounding roads.

L2 48.6 dB **Secondary Noise Sources:** Leaf rustle from breeze. Bird song. Occasional distant overhead air traffic.

L8 46.9 dB Residential ambiance.

L25 45.6 dB

L50 43.8 dB

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	11/17/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	8/16/2022		

Noise Measurement
Field Data

PHOTOS:

STNM3 looking SSW towards SW corner of baseball field.

STNM3 looking WNW towards pitchers mound of baseball field.

Summary		
File Name on Meter	LxT_Data.040.s	
File Name on PC	LxT_0003099-20220816 150950-LxT_Data.040.ldbi	
Serial Number	3099	
Model	SoundTrack LxT®	
Firmware Version	2.404	
User	Ian Edward Gallagher	
Location	STNM3 38° 9'34.45"N 121°37'2.30"W	
Job Description	15 minute noise measurement (1 x 15 minutes)	
Note	Ganddini 19542 Meadows of Isleton RV Resort	
Measurement		
Start	2022-08-16 15:09:50	
Stop	2022-08-16 15:24:50	
Duration	00:15:00.0	
Run Time	00:15:00.0	
Pause	00:00:00.0	
Pre-Calibration	2022-08-16 15:09:29	
Post-Calibration	None	
Overall Settings		
RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamplifier	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Frequency Weighting	C Weighting	
OBA Max Spectrum	At LMax	
Overload	123.5 dB	
Results		
LAeq	44.3	
LAE	73.9	
EA	2.720451 µPa²h	
EA8	87.05442 µPa²h	
EA40	435.2721 µPa²h	
LApeak (max)	2022-08-16 15:17:39	74.8 dB
LASmax	2022-08-16 15:11:10	50.7 dB
LASmin	2022-08-16 15:15:20	35.4 dB

		Statistics	
LCeq	55.4 dB	**LA2.00**	48.6 dB
LAeq	44.3 dB	**LA8.00**	46.9 dB
LCeq - LAeq	11.0 dB	**LA25.00**	45.6 dB
LAIeq	46.0 dB	**LA50.00**	43.8 dB
LAeq	44.3 dB	**LA66.60**	42.6 dB
LAIeq - LAeq	1.7 dB	**LA90.00**	39.7 dB
Overload Count	0		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.040.s	Computer's File Name	LxT_0003099-20220816 150950-LxT_Data.040.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM3 38° 9'34.45"N 121°37'2.30"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19542 Meadows of Isleton RV Resort		

Start Time	2022-08-16 15:09:50	Duration	0:15:00.0		
End Time	2022-08-16 15:24:50	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	44.3 dB		
LAE	73.9 dB	SEA	--- dB
EA	2.7 µPa²h	LAFTM5	47.5 dB
EA8	87.1 µPa²h		
EA40	435.3 µPa²h		

LA_{peak}	74.8 dB	2022-08-16 15:17:39
LAS_{max}	50.7 dB	2022-08-16 15:11:10
LAS_{min}	35.4 dB	2022-08-16 15:15:20

LA_{eq}	44.3 dB		
LC_{eq}	55.4 dB	LC_{eq} - LA_{eq}	11.0 dB
LAI_{eq}	46.0 dB	LAI_{eq} - LA_{eq}	1.7 dB

Exceedances	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	--- dB	--- dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

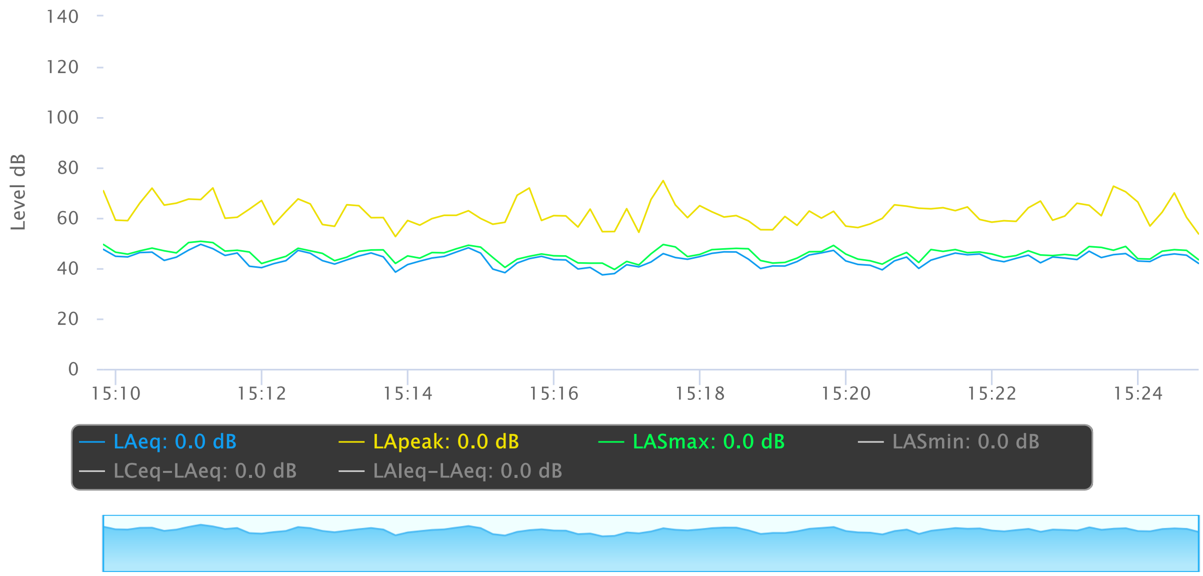
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	44.3 dB		55.4 dB		--- dB	
$Ls_{(max)}$	50.7 dB	2022-08-16 15:11:10	--- dB		--- dB	
$LS_{(min)}$	35.4 dB	2022-08-16 15:15:20	--- dB		--- dB	
$L_{Peak(max)}$	74.8 dB	2022-08-16 15:17:39	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

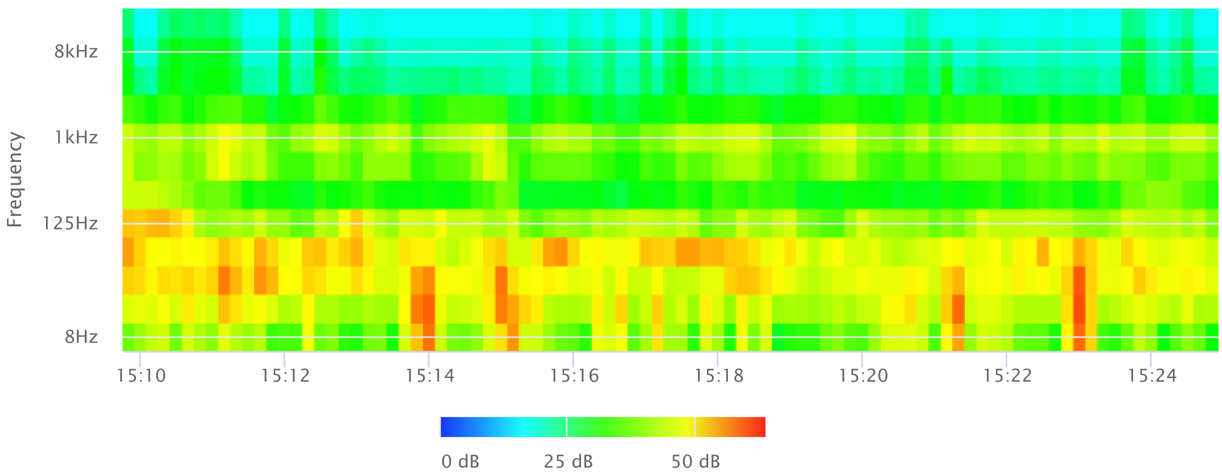
Statistics

LAS 2.0	48.6 dB
LAS 8.0	46.9 dB
LAS 25.0	45.6 dB
LAS 50.0	43.8 dB
LAS 66.6	42.6 dB
LAS 90.0	39.7 dB

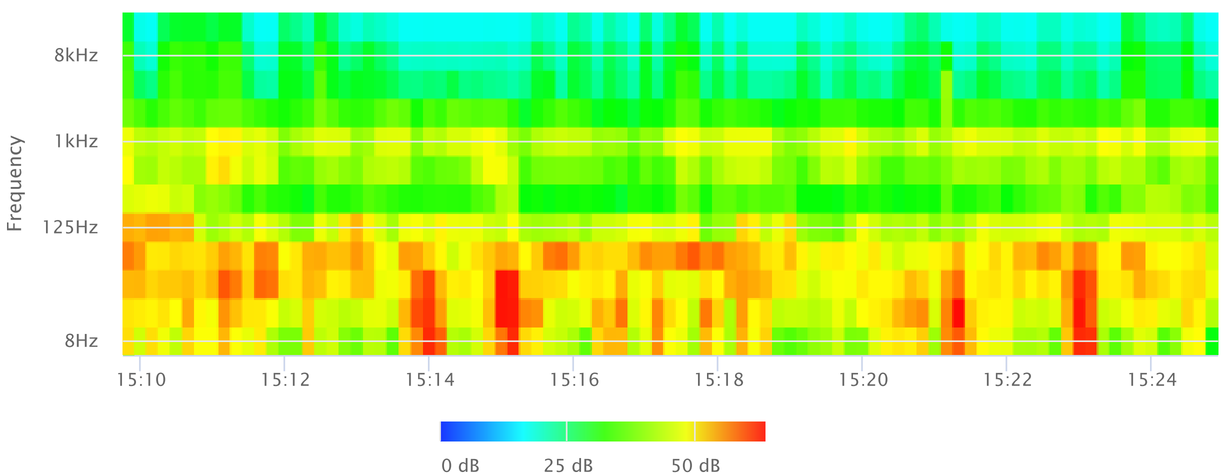
Time History



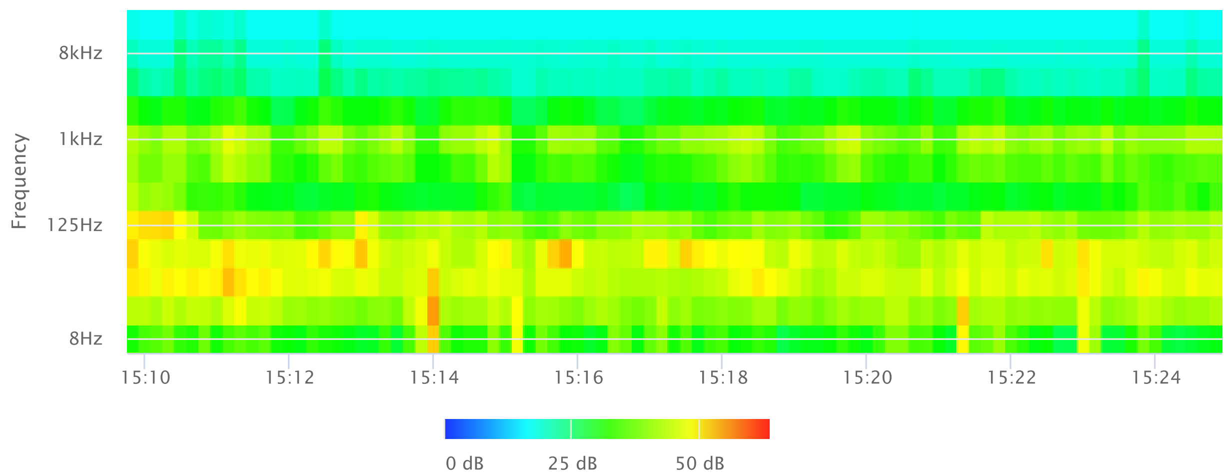
OBA 1/1 Leq



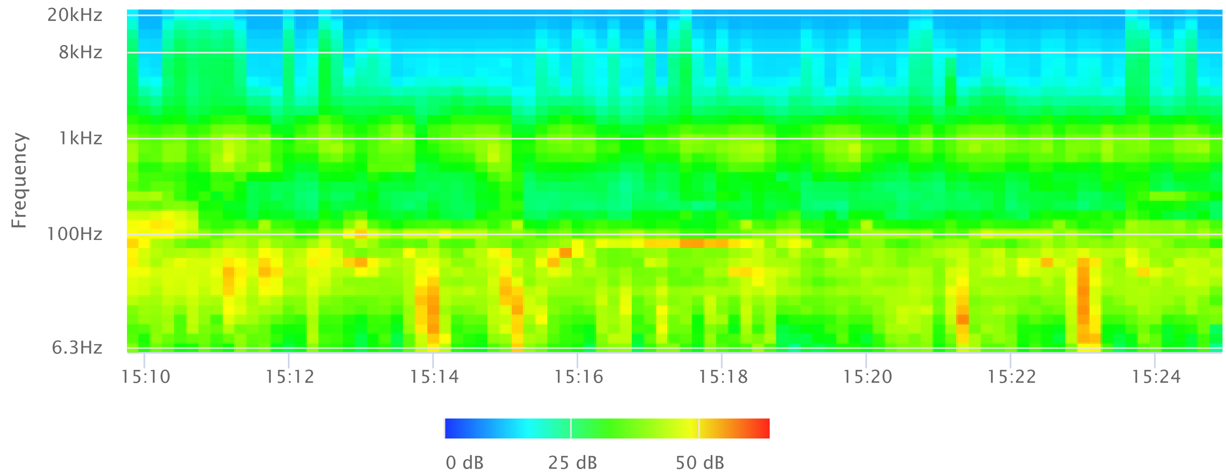
OBA 1/1 Lmax



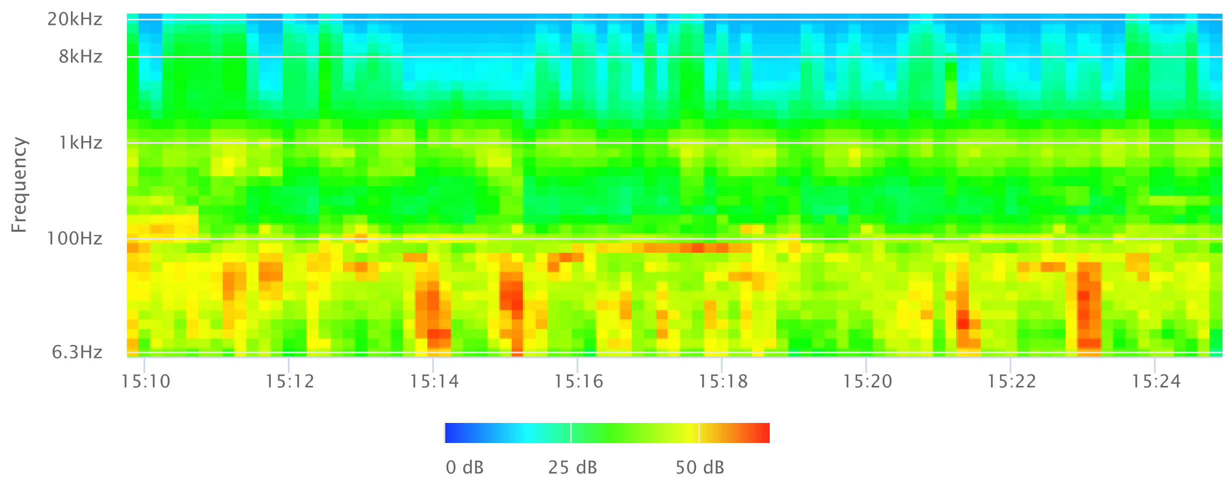
OBA 1/1 Lmin



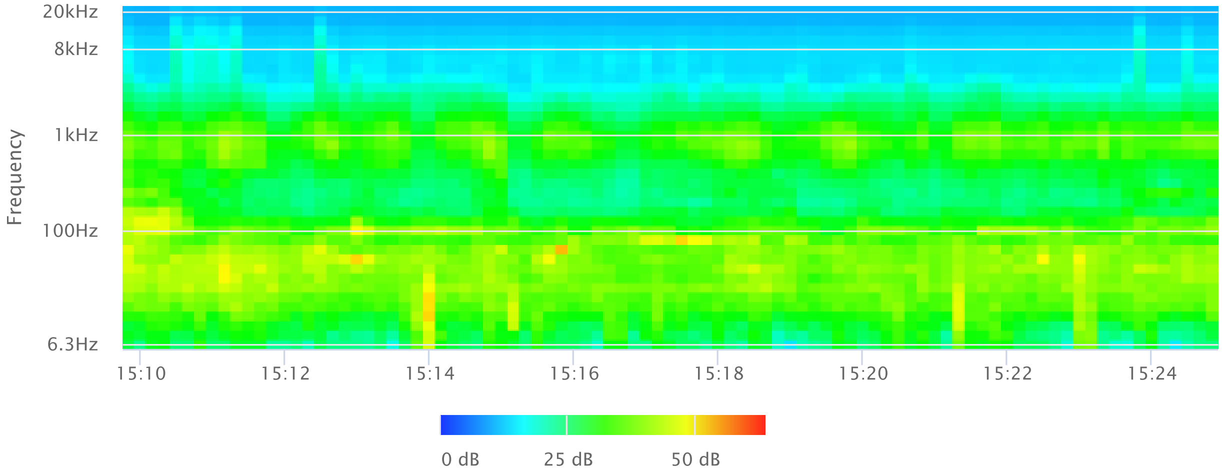
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin



20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
15:10
15:12
15:14
15:16
15:18
15:20
15:22
15:24
0 dB
25 dB
50 dB

Noise Measurement
Field Data

Project Name: Meadows of Isleton RV Resort, Isleton **Date:** August 16, 2022

Project #: 19542

Noise Measurement #: STNM4 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 406 Georgiana Drive, Isleton, CA 94571

Site Description (Type of Existing Land Use and any other notable features): Project Site: Mostly vacant grassy land used for outdoor recreation and bounded by farmland to west, farmland & a single-family residence to south, Jackson Blvd Ext. to east w/ farmland further east, & a baseball field & single-family residneces to the north. Noise Measurement Site: Single-family residential & Georgiana Dr to north & project site to south.

Weather: Clear skies, sunny. **Settings:** $\boxed{\text{SLOW}}$ FAST

Temperature: 97 deg F **Wind:** 6 mph **Humidity:** 20% **Terrain:** Flat

Start Time: 3:45 PM **End Time:** 4:00 PM **Run Time:**

Leq: 43.1 dB **Primary Noise Source:** Traffic ambiance from vehicles traveling along Jackson Blvd Ext. River Road and other surrounding roads.

Lmax 58.7 dB

L2 48.0 dB **Secondary Noise Sources:** Leaf rustle from breeze. Bird song. Occasional distant overhead air traffic. Residential ambiance.

L8 46.0 dB

L25 44.1 dB

L50 42.3 dB

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	11/17/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	8/16/2022		

Noise Measurement
Field Data

PHOTOS:

STNM4 looking S towards fence of property 406 Georgiana Drive, Isleton.

STNM4 looking W towards front yard of residence 404 Georgiana Drive, Isleton.

Summary			
File Name on Meter	LxT_Data.041.s		
File Name on PC	LxT_0003099-20220816 154520-LxT_Data.041.ldbin		
Serial Number	3099		
Model	SoundTrack LxT®		
Firmware Version	2.404		
User	Ian Edward Gallagher		
Location	STNM4 38° 9'38.57"N 121°37'2.32"W		
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19542 Meadows of Isleton RV Resort		
Measurement			
Start	2022-08-16 15:45:20		
Stop	2022-08-16 16:00:20		
Duration	00:15:00.0		
Run Time	00:15:00.0		
Pause	00:00:00.0		
Pre-Calibration	2022-08-16 15:44:55		
Post-Calibration	None		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamplifier	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Frequency Weighting	C Weighting		
OBA Max Spectrum	At LMax		
Overload	123.4 dB		
Results			
LAeq	43.1		
LAE	72.7		
EA	2.061789 µPa²h		
EA8	65.97726 µPa²h		
EA40	329.8862 µPa²h		
LApeak (max)	2022-08-16 15:46:34	86.6 dB	
LASmax	2022-08-16 15:58:10	53.7 dB	
LASmin	2022-08-16 15:52:18	36.5 dB	

		Statistics	
LCeq	56.5 dB	**LA2.00**	48.0 dB
LAeq	43.1 dB	**LA8.00**	46.0 dB
LCeq - LAeq	13.3 dB	**LA25.00**	44.1 dB
LAIeq	47.5 dB	**LA50.00**	42.5 dB
LAeq	43.1 dB	**LA66.60**	41.2 dB
LAIeq - LAeq	4.4 dB	**LA90.00**	38.7 dB
Overload Count	0		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.041.s	Computer's File Name	LxT_0003099-20220816 154520-LxT_Data.041.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM4 38° 9'38.57"N 121°37'2.32"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19542 Meadows of Isleton RV Resort		

Start Time	2022-08-16 15:45:20	Duration	0:15:00.0		
End Time	2022-08-16 16:00:20	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	43.1 dB		
LAE	72.7 dB	SEA	--- dB
EA	2.1 µPa²h	LAFTM5	48.5 dB
EA8	66.0 µPa²h		
EA40	329.9 µPa²h		
LA_{peak}	86.6 dB	2022-08-16 15:46:34	
LAS_{max}	53.7 dB	2022-08-16 15:58:10	
LAS_{min}	36.5 dB	2022-08-16 15:52:18	
LA_{eq}	43.1 dB		
LC_{eq}	56.5 dB	LC_{eq} - LA_{eq}	13.3 dB
LAI_{eq}	47.5 dB	LAI_{eq} - LA_{eq}	4.4 dB

Exceedances

Exceedances	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
--- dB	--- dB	0.0 dB

LDEN	LDay	LEve	LNight
--- dB	--- dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	43.1 dB		56.5 dB		--- dB	
$Ls_{(max)}$	53.7 dB	2022-08-16 15:58:10	--- dB		--- dB	
$LS_{(min)}$	36.5 dB	2022-08-16 15:52:18	--- dB		--- dB	
$L_{Peak(max)}$	86.6 dB	2022-08-16 15:46:34	--- dB		--- dB	

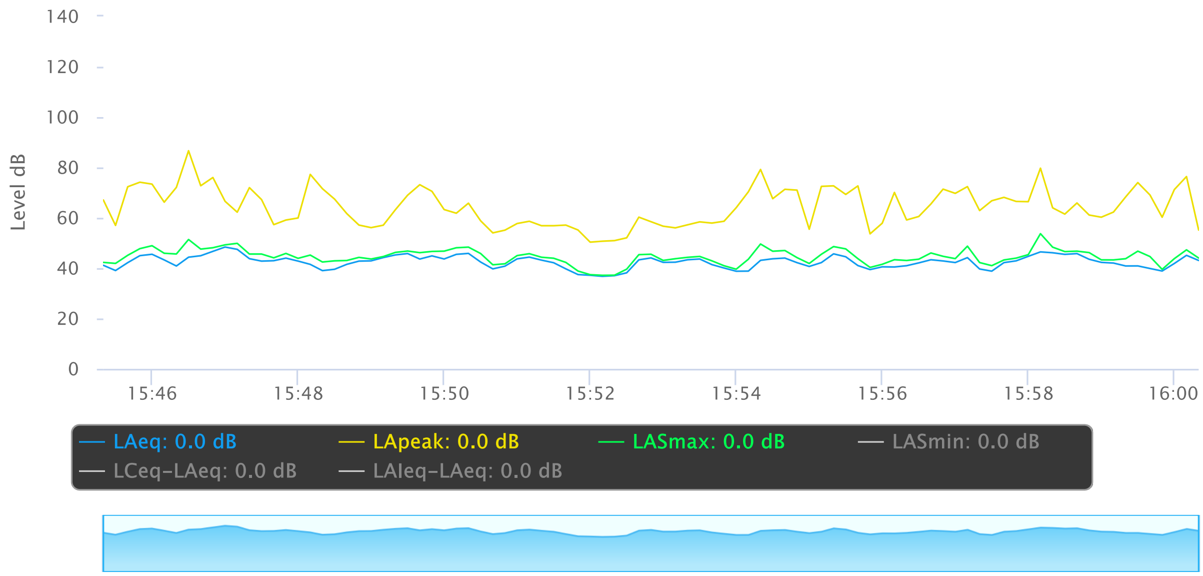
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

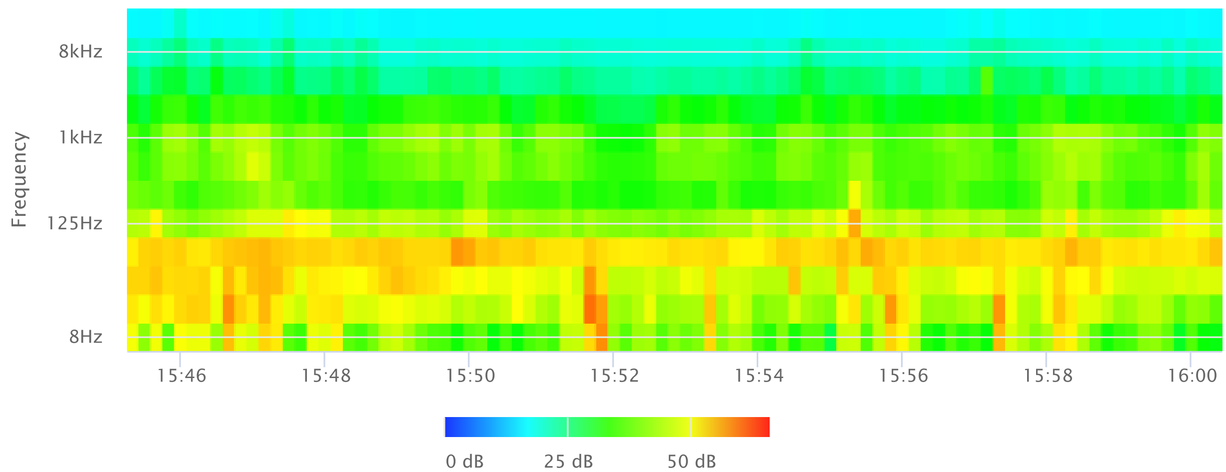
Statistics

LAS 2.0	48.0 dB
LAS 8.0	46.0 dB
LAS 25.0	44.1 dB
LAS 50.0	42.5 dB
LAS 66.6	41.2 dB
LAS 90.0	38.7 dB

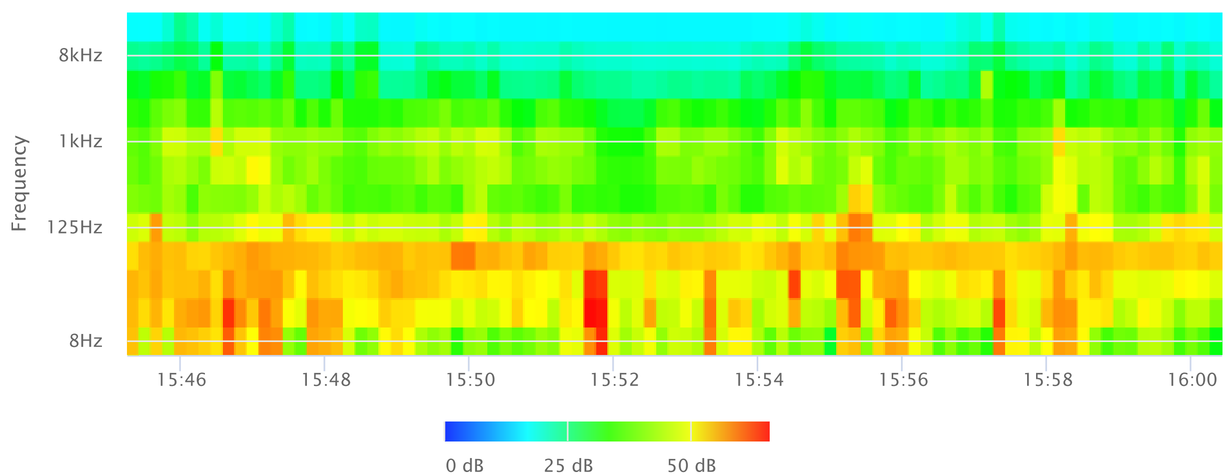
Time History



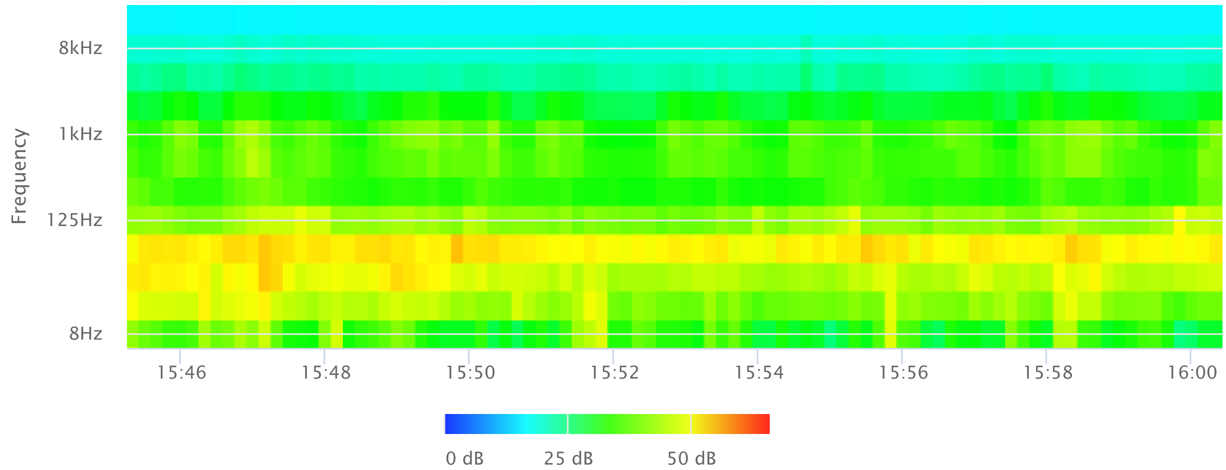
OBA 1/1 Leq



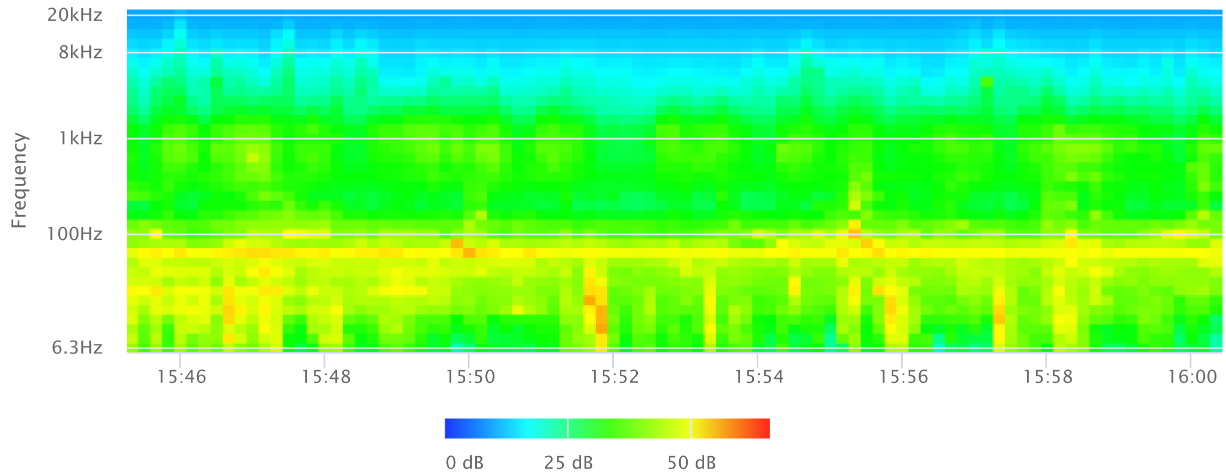
OBA 1/1 Lmax



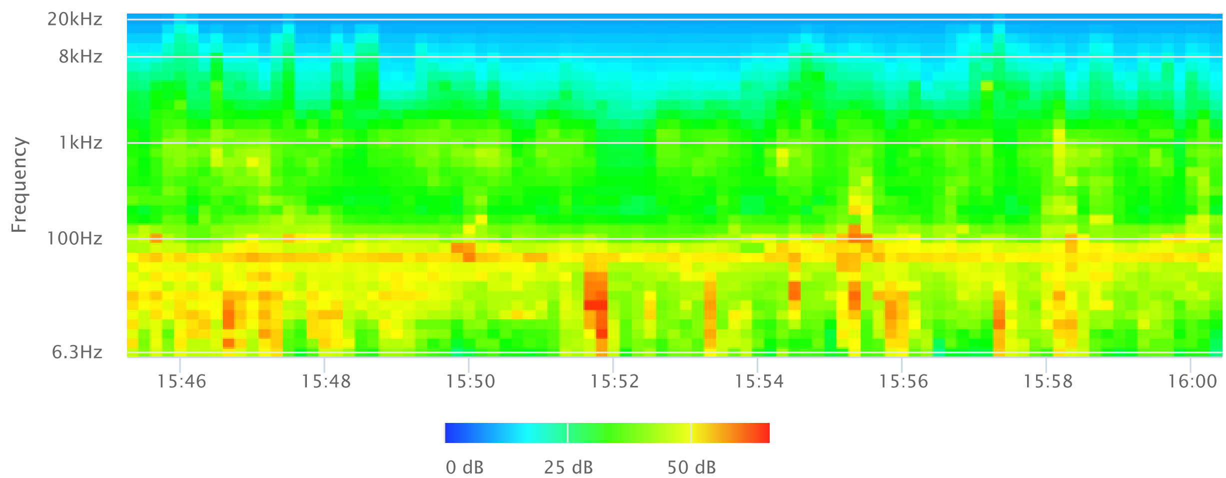
OBA 1/1 Lmin



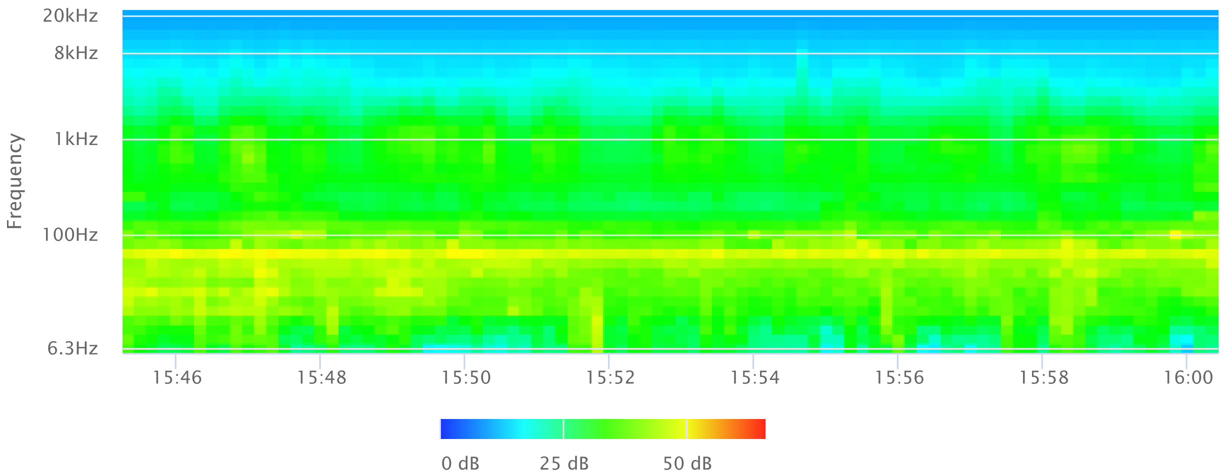
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
15:46
15:48
15:50
15:52
15:54
15:56
15:58
16:00
0 dB
25 dB
50 dB

APPENDIX D

CONSTRUCTION NOISE CALCULATIONS

Receptor - Single-family Residential Use to South (16242 Jackson Slough Road, Isleton)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Demolition									
Excavator	3	81	653	40	1.20	-22.3	0.8	58.7	59.5
Rubber Tired Dozers	2	82	653	40	0.80	-22.3	-1.0	59.7	58.7
Concrete/Industrial Saws	1	90	653	20	0.20	-22.3	-7.0	67.7	60.7
								Log Sum	64.5
Grading									
Excavator	2	81	653	40	0.80	-22.3	-1.0	58.7	57.7
Rubber Tired Dozers	1	82	653	40	0.40	-22.3	-4.0	59.7	55.7
Tractors/Loaders/Backhoes	2	84	653	40	0.80	-22.3	-1.0	61.7	60.7
Scrapers	2	84	653	40	0.80	-22.3	-1.0	61.7	60.7
Graders	1	85	653	40	0.40	-22.3	-4.0	62.7	58.7
								Log Sum	66.1
Building Construction									
Cranes	1	81	653	16	0.16	-22.3	-8.0	58.7	50.7
Forklifts[2]	3	48	653	40	1.20	-22.3	0.8	25.7	26.5
Generator Sets	1	81	653	50	0.50	-22.3	-3.0	58.7	55.7
Welders	1	74	653	40	0.40	-22.3	-4.0	51.7	47.7
Tractors/Loaders/Backhoes	3	84	653	40	1.20	-22.3	0.8	61.7	62.5
								Log Sum	63.6
Paving									
Pavers	2	77	653	50	1.00	-22.3	0.0	54.7	54.7
Paving Equipment	2	77	653	50	1.00	-22.3	0.0	54.7	54.7
Rollers	2	80	653	20	0.40	-22.3	-4.0	57.7	53.7
								Log Sum	59.1
Architectural Coating									
Air Compressors	1	78	653	40	0.40	-22.3	-4.0	55.7	51.7
								Log Sum	51.7

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construciton Noise Model User's Guide (January 2006)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

Receptor - Single-family Residential Uses to North (406 Georgiana Drive, Isleton)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Demolition									
Excavator	3	81	793	40	1.20	-24.0	0.8	57.0	57.8
Rubber Tired Dozers	2	82	793	40	0.80	-24.0	-1.0	58.0	57.0
Concrete/Industrial Saws	1	90	793	20	0.20	-24.0	-7.0	66.0	59.0
								Log Sum	62.8
Grading									
Excavator	2	81	793	40	0.80	-24.0	-1.0	57.0	56.0
Rubber Tired Dozers	1	82	793	40	0.40	-24.0	-4.0	58.0	54.0
Tractors/Loaders/Backhoes	2	84	793	40	0.80	-24.0	-1.0	60.0	59.0
Scrapers	2	84	793	40	0.80	-24.0	-1.0	60.0	59.0
Graders	1	85	793	40	0.40	-24.0	-4.0	61.0	57.0
								Log Sum	64.4
Building Construction									
Cranes	1	81	793	16	0.16	-24.0	-8.0	57.0	49.0
Forklifts[2]	3	48	793	40	1.20	-24.0	0.8	24.0	24.8
Generator Sets	1	81	793	50	0.50	-24.0	-3.0	57.0	54.0
Welders	1	74	793	40	0.40	-24.0	-4.0	50.0	46.0
Tractors/Loaders/Backhoes	3	84	793	40	1.20	-24.0	0.8	60.0	60.8
								Log Sum	62.0
Paving									
Pavers	2	77	793	50	1.00	-24.0	0.0	53.0	53.0
Paving Equipment	2	77	793	50	1.00	-24.0	0.0	53.0	53.0
Rollers	2	80	793	20	0.40	-24.0	-4.0	56.0	52.0
								Log Sum	57.5
Architectural Coating									
Air Compressors	1	78	793	40	0.40	-24.0	-4.0	54.0	50.0
								Log Sum	50.0

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construciton Noise Model User's Guide (January 2006)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

Receptor - Isleton Community Baseball Field to Northeast (Andrus Cir, Isleton)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Demolition									
Excavator	3	81	292	40	1.20	-15.3	0.8	65.7	66.5
Rubber Tired Dozers	2	82	292	40	0.80	-15.3	-1.0	66.7	65.7
Concrete/Industrial Saws	1	90	292	20	0.20	-15.3	-7.0	74.7	67.7
								Log Sum	71.5
Grading									
Excavator	2	81	292	40	0.80	-15.3	-1.0	65.7	64.7
Rubber Tired Dozers	1	82	292	40	0.40	-15.3	-4.0	66.7	62.7
Tractors/Loaders/Backhoes	2	84	292	40	0.80	-15.3	-1.0	68.7	67.7
Scrapers	2	84	292	40	0.80	-15.3	-1.0	68.7	67.7
Graders	1	85	292	40	0.40	-15.3	-4.0	69.7	65.7
								Log Sum	73.1
Building Construction									
Cranes	1	81	292	16	0.16	-15.3	-8.0	65.7	57.7
Forklifts[2]	3	48	292	40	1.20	-15.3	0.8	32.7	33.5
Generator Sets	1	81	292	50	0.50	-15.3	-3.0	65.7	62.7
Welders	1	74	292	40	0.40	-15.3	-4.0	58.7	54.7
Tractors/Loaders/Backhoes	3	84	292	40	1.20	-15.3	0.8	68.7	69.5
								Log Sum	70.6
Paving									
Pavers	2	77	292	50	1.00	-15.3	0.0	61.7	61.7
Paving Equipment	2	77	292	50	1.00	-15.3	0.0	61.7	61.7
Rollers	2	80	292	20	0.40	-15.3	-4.0	64.7	60.7
								Log Sum	66.1
Architectural Coating									
Air Compressors	1	78	292	40	0.40	-15.3	-4.0	62.7	58.7
								Log Sum	58.7

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construciton Noise Model User's Guide (January 2006)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

Receptor - Church to Northeast (215 Jackson Boulevard Extension, Isleton)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Demolition									
Excavator	3	81	583	40	1.20	-21.3	0.8	59.7	60.5
Rubber Tired Dozers	2	82	583	40	0.80	-21.3	-1.0	60.7	59.7
Concrete/Industrial Saws	1	90	583	20	0.20	-21.3	-7.0	68.7	61.7
								Log Sum	65.5
Grading									
Excavator	2	81	583	40	0.80	-21.3	-1.0	59.7	58.7
Rubber Tired Dozers	1	82	583	40	0.40	-21.3	-4.0	60.7	56.7
Tractors/Loaders/Backhoes	2	84	583	40	0.80	-21.3	-1.0	62.7	61.7
Scrapers	2	84	583	40	0.80	-21.3	-1.0	62.7	61.7
Graders	1	85	583	40	0.40	-21.3	-4.0	63.7	59.7
								Log Sum	67.1
Building Construction									
Cranes	1	81	583	16	0.16	-21.3	-8.0	59.7	51.7
Forklifts[2]	3	48	583	40	1.20	-21.3	0.8	26.7	27.5
Generator Sets	1	81	583	50	0.50	-21.3	-3.0	59.7	56.7
Welders	1	74	583	40	0.40	-21.3	-4.0	52.7	48.7
Tractors/Loaders/Backhoes	3	84	583	40	1.20	-21.3	0.8	62.7	63.5
								Log Sum	64.6
Paving									
Pavers	2	77	583	50	1.00	-21.3	0.0	55.7	55.7
Paving Equipment	2	77	583	50	1.00	-21.3	0.0	55.7	55.7
Rollers	2	80	583	20	0.40	-21.3	-4.0	58.7	54.7
								Log Sum	60.1
Architectural Coating									
Air Compressors	1	78	583	40	0.40	-21.3	-4.0	56.7	52.7
								Log Sum	52.7

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construciton Noise Model User's Guide (January 2006)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

APPENDIX E

FHWA WORKSHEETS

Existing Traffic Noise

1	:Id	
Jackson Slough Rd/Jackson Road Ext.	:Road	
In vicinity of project site to	:Segment	

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	1250
Speed	30
Distance	36
Left Angle	-90
Right Angle	90

Noise Parameters	Daytime			Evening			Night		
	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	72.39	1.50	2.50	53.74	0.25	0.42	13.33	2.08	3.47
Speed in MPH	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	62.51	73.11	78.76	62.51	73.11	78.76	62.51	73.11	78.76
ADJUSTMENTS									
Flow	13.52	-3.32	-1.10	12.23	-11.10	-8.88	6.17	-1.89	0.33
Distance	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	52.39	46.15	54.02	51.10	38.37	46.24	45.04	47.58	55.45
	DAY LEQ	56.69		EVENING LEQ	52.49		NIGHT LEQ	56.43	

F	CNEL	62.91	Day hour	89.00
	DAY LEQ	56.69	Absorptive?	no
			Use hour?	no
			GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle/Truck total percentage of traffic flow for Jackson Slough Road/Jackson Road Extension were estimated based on Caltrans Traffic Census truck mix for SR-160 near City of Isleton. https://dot.ca.gov/programs/traffic-operations/census.

Existing Plus Project Traffic Noise

1	:Id	
Jackson Slough Rd/Jackson Road Ext.	:Road	
In vicinity of project site to	:Segment	

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	1561
Speed	30
Distance	36
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	90.40	1.87	3.12	67.11	0.31	0.52	16.64	2.60	4.34
Speed in MPH	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	62.51	73.11	78.76	62.51	73.11	78.76	62.51	73.11	78.76
ADJUSTMENTS									
Flow	14.48	-2.35	-0.13	13.19	-10.13	-7.91	7.14	-0.92	1.29
Distance	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	53.35	47.12	54.98	52.06	39.34	47.20	46.00	48.55	56.41
	DAY LEQ	57.66		EVENING LEQ	53.46		NIGHT LEQ	57.40	

CNEL	**63.87**
DAY LEQ	57.66

Day hour	89.00
Absorptive?	no
Use hour?	no
GRADE dB	0.00

Notes:
(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108
(2) Vehicle/Truck percentages for Jackson Slough Road/Jackson Road Extension were estimated based on Caltrans Traffic Census truck mix for SR-160 near City of Isleton. https://dot.ca.gov/programs/traffic-operations/census.

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Buildout Traffic Noise

Jackson Slough Road/Jackson Rd Ext. - at nearest proposed RV space property line

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	5625.00
							AUTOS			SPEED	30.00
										DISTANCE	65.00
INPUT PARAMETERS											
Vehicles per hour	325.77	6.75	11.25	241.85	1.13	1.88	59.97	9.38	15.63	% A	92.00
Speed in MPH	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	% MT	3.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	% HT	5.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	LEFT	-90.00
										RIGHT	90.00
NOISE CALCULATIONS											
Reference levels	62.51	73.11	78.76	62.51	73.11	78.76	62.51	73.11	78.76	CNEL	66.87
ADJUSTMENTS										DAY LEQ	60.66
Flow	20.05	3.22	5.43	18.76	-4.57	-2.35	12.70	4.64	6.86		
Distance	-1.21	-1.21	-1.21	-1.21	-1.21	-1.21	-1.21	-1.21	-1.21	Day hour	89.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Absorbtive?	no
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	Use hour?	no
LEQ	56.35	50.12	57.99	55.06	42.34	50.20	49.01	51.55	59.41	GRADE dB	0.00

DAY LEQ 60.66 EVENING LEQ 56.46 NIGHT LEQ 60.40

CNEL 66.87

APPENDIX F

SOUNDPLAN WORKSHEETS

Noise emissions of industry sources

Source name	Refere	Level		Frequency spectrum [dB(A)]																															Correcti		
			dB(A	20 Hz	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.3 kHz	1.6 kHz	2 kHz	2.5 kHz	3.2 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12. kHz	16 kHz	20 kHz	Cw dB	C dB	CT dB
Proposed Common/R	Lw/m²	Day	98.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HVAC1	Lw/uni	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC2	Lw/uni	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC3	Lw/uni	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC4	Lw/uni	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC5	Lw/uni	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC6	Lw/uni	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC7	Lw/uni	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC8	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC9	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC10	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC11	Lw/uni	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC12	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC13	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC14	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC15	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC16	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC17	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC18	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC19	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC20	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC21	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC22	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC23	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC24	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC25	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC26	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC27	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC28	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC29	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC30	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC31	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC32	Lw/	Day	75.7	-31	-22	-11	-2.3	15	24	21	36	41	43	47	49	53	56	59	64	66	63	66	67	65	66	63	64	61	61	55	48	45	38	30	-	-	-
HVAC33	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC34	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC35	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC36	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC37	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC38	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC39	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC40	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC41	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC42	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC43	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC44	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC45	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC46	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC47	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC48	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC49	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC50	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC51	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC52	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC53	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC54	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC55	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC56	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC57	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC58	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC59	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC60	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC61	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC62	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC63	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-
HVAC64	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36	30	21	-	-	-

Noise emissions of industry sources

Source name	Refere	Level		Frequency spectrum [dB(A)]																															Correcti		
			dB(	20 Hz	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	10(Hz	12! Hz	16(Hz	20(Hz	25(Hz	31! Hz	40(Hz	50(Hz	63(Hz	80(Hz	1 kH	1.3 kH	1.6 kH	2 kH	2.5 kH	3.2 kH	4 kH	5 kH	6.3 kH	8 kH	10 kH	12. kH	16 kH	20 kH	Cw dB	C dE	C dE
HVAC65	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC66	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC67	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC68	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC69	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC70	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC71	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC72	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC73	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC74	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC75	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC76	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC77	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC78	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC79	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC80	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC81	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC82	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC83	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC84	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC85	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC86	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC87	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC88	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC89	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC90	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC91	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC92	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC93	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC94	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC95	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC96	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC97	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC98	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC99	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC100	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC101	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC102	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC103	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC104	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC105	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC106	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC107	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC108	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC109	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC110	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC111	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC112	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC113	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC114	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC115	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC116	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC117	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC118	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC119	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC120	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC121	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC122	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC123	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC124	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC125	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC126	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC127	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC128	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC129	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-

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Noise emissions of industry sources

Source name	Refere	Level		Frequency spectrum [dB(A)]																															Correcti		
				20	25	31	40	50	63	80	10(	12	16(	20(	25(	31	40(	50(	63(	80(	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	12.	16	20	Cw	C	C
			dB(	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	kH	kH	kH	kH	kH	kH	kH	kH	kH	kH	kH	kH	kH	kH	dB	dE	dE
HVAC130	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC131	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC132	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC133	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC134	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-
HVAC135	Lw/	Day	67.3	-39	-30	-19	-10	6.8	15	13	27	32	34	39	41	45	48	50	56	58	55	57	59	57	58	55	56	53	52	46	40	36.	30	21	-	-	-

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Receiver list

No.	Receiver name	Building side	Floor	Limit Day dB(A)	Level Day dB(A)	Conflict Day dB
1	1	-	1.Fl	-	42.1	-
2	2	-	1.Fl	-	40.6	-
3	3	-	1.Fl	-	46.6	-
4	4	-	1.Fl	-	39.7	-

APPENDIX G

VIBRATION WORKSHEETS

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19542 Meadows at Isleton RV Resort	Date:	8/10/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Single-Family Residential to the North (along Georgiana Dr & 4th Ave)		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	9.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.972	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19542 Meadows at Isleton RV Resort	Date:	8/10/22
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Single-Family Residential to the North (along Georgiana Dr & 4th Ave)		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	9.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.412	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19542 Meadows at Isleton RV Resort		Date: 8/10/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Park Structures to East/Northeast		
Address:	Isleton Community Baseball Field Andrus Circle, Isleton, CA		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	208.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.009	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19542 Meadows at Isleton RV Resort		Date: 8/10/22
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Park Structures to East/Northeast		
Address:	Isleton Community Baseball Field Andrus Circle, Isleton, CA		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	208.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.004	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19542 Meadows at Isleton RV Resort	Date:	8/10/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Church to Northeast		
Address:	215 Jackson Blvd Ext, Isleton, CA		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	226.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.008	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19542 Meadows at Isleton RV Resort	Date:	8/10/22
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Church to Northeast		
Address:	215 Jackson Blvd Ext, Isleton, CA		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	226.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.003	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19542 Meadows at Isleton RV Resort		Date: 8/10/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Single-Family Residential to the South (along Jackson Blvd Ext)		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	10.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.830	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19542 Meadows at Isleton RV Resort	Date:	8/10/22
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Single-Family Residential to the South (along Jackson Blvd Ext)		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	10.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.352	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19542 Meadows at Isleton RV Resort	Date:	8/10/22
Source:	Vibratory Roller		
Scenario:	BMPs for Residential		
Location:			
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	20.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.293	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19542 Meadows at Isleton RV Resort	Date:	8/10/22
Source:	Large Bulldozer		
Scenario:	BMPs for Residential		
Location:			
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	12.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.268	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19542 Meadows at Isleton RV Resort	Date:	8/10/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Annoyance Threshold		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	41.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.100	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19542 Meadows at Isleton RV Resort	Date:	8/10/22
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Annoyance Threshold		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	23.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.101	IN/SEC	OUTPUT IN BLUE

GANDDINI GROUP INC.

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TECHNICAL MEMORANDUM

TO: Mr. Ethan Mobley | DYNAMIC PLANNING

FROM: Giancarlo Ganddini | GANDDINI GROUP, INC.

DATE: August 31, 2022 (Revision 1)

SUBJECT: Meadows of Isleton RV Resort Focused Transportation Study
Project No. 19542

Ganddini Group, Inc. is pleased to provide this vehicle miles traveled (VMT) analysis for the proposed Meadows of Isleton RV Resort Project in the City of Isleton. The purpose of this analysis is to assess the level of potential transportation impacts associated with the proposed Project both in the context of vehicle miles traveled (VMT) for California Environmental Quality Act (CEQA) requirements and forecast traffic conditions for non-CEQA purposes. We trust the findings of this analysis will aid you and the City of Isleton in assessing the project.

PROJECT DESCRIPTION

The project site is situated west of Jackson Slough Road and Andrus Circle at 301, 401, and 501 Jackson Slough Road in the City of Isleton, California. The project site is part of a working farm that currently offers 20 campsites. Figure 1 shows the regional location map and Figure 2 shows the project location map.

The proposed project involves development of a recreational vehicle (RV) park with up to 135 camp sites. The proposed site plan is provided in Attachment A.

PROJECT TRIP GENERATION

Table 1 shows the project generation forecast based on trip generation rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021).

Based on review of the ITE land use description, trip generation rates for ITE Land Use Code 416 (Campground/RV Park) were determined to adequately represent the proposed project and were used for the analysis. The number of trips forecast to be generated are determined by multiplying the trip rates by the land use quantity. Since the existing site currently includes 20 campsites, the project trip generation was calculated for the proposed net increase of 115 additional campsites. No existing trip credits are applied for the existing farm activities as these are assumed to be nominal, thus providing a conservative estimate of the net project trips generated.

As shown in Table 1, the proposed project is forecast to generate approximately 311 daily trips, including 24 trips during the AM peak hour and 31 trips during the PM peak hour.

CRITERIA FOR THE PREPARATION OF A LOCAL TRANSPORTATION ANALYSIS

In the absence of formal traffic study guidelines established by the City of Isleton, the need to prepare a local transportation analysis (LTA) was assessed based on guidance from the County of Sacramento *Transportation*

Analysis Guidelines (September 2020) ["County TIA Guidelines"]. According to the County TIA Guidelines, certain types of projects, because of their size, nature, or location, are exempt from the requirement of preparing an LTA with more detailed level of service (LOS) analysis. As specified in the County TIA Guidelines, an LTA is typically required under any of the following conditions:

1. The project will generate 100 or more new AM or PM peak hour vehicle trip-ends.
2. The project will generate 1,000 or more daily vehicle trip-ends.
3. New project traffic will substantially affect an intersection or a roadway segment already identified as operating at an unacceptable level of service.
4. The project may result in a decrease in public safety on any roadway for any mode of travel.
5. The project will substantially change the off-site transportation system or connections to it.
6. Any other land development or transportation project requiring an LTA, at the sole determination of the Department of Transportation.

As shown in Table 1, the proposed project is forecast to generate fewer than 100 trips during the weekday AM and PM peak hours. Based on review of the City of Isleton General Plan Update Traffic Impact Analysis (Ganddini Group, March 2022), intersections and roadways in the project vicinity currently operate at LOS C or better. The project would not decrease public safety assuming on-site and site access improvements are constructed in accordance with City of Isleton design standards nor does the project proposes changes to off-site transportation systems. Therefore, Preparation of an LTA is not warranted based on the criteria specified in the County TIA Guidelines.

Notwithstanding the above, sight distance and the need for installation of dedicated turning lanes at the proposed project driveway were evaluated to ensure adequate site access.

PROJECT DRIVEWAY SIGHT DISTANCE

Roadways are designed to provide sufficient stopping sight distance continuously along each travel lane so that drivers have adequate view of the roadway ahead. If the available sight distance equals or exceeds the appropriate stopping sight distance for the major road, sufficient sight distance is provided to anticipate and avoid collisions. In some cases, however, vehicles traveling on the major road may need to substantially slow down or stop to accommodate vehicles entering or crossing from the minor road. Therefore, to enhance traffic operations at uncontrolled or minor street stop-controlled intersections, it is desirable to provide intersection sight distances that exceed the stopping sight distances along the major road.

The sight distance analysis was prepared based on the sight distance guidelines specified in the American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Street (7th Edition, 2018)* ["*AASHTO Greenbook*"]. Both stopping sight distance and intersection sight distance were evaluated. The stopping sight distances are based on passenger car operation and do not explicitly consider design for truck operations. While trucks typically require longer braking distances, they generally travel slower and truck drivers are more experienced than the average passenger car driver; therefore, separate stopping distances for trucks and passenger cars are not generally used in highway design. For intersection sight distance, AASHTO notes that the minor road design vehicle can usually be assumed to be a passenger car, except in cases where substantial volumes of heavy vehicles enter the major road, such as ramp terminals.

Assuming level major street roadways (less than three percent grade), stopping sight distance is determined by the following formula:

> Stopping Sight Distance = 1.47 Vt + 1.075 (V^2 / a)
> where:
> V = design speed (miles per hour)
> t = brake reaction time, 2.5 seconds
> a = deceleration rate (feet / $second^2$), 11.2 $feet/second^2$

The intersection sight distance was determined based on “Case B – Intersections with stop control on the minor road.” For Case B conditions, the intersection sight distance along the major road is determined by the following formula:

> Intersection Sight Distance = 1.47 V_{major} t_g
> where:
> V_{major} = design speed of the major road (miles per hour)
> t_g = time gap for minor road vehicle to enter the major road (seconds)

Time gaps are determined based on the design vehicle, number of lanes crossed, median widths, minor road approach grade, design vehicle, and turning movement from the minor road.

Signage along Jackson Slough Road describes the roadway as a winding levee road with advisory speeds ranging from 25 to 40 miles per hour. There is no posted regulatory speed limit on Jackson Slough Road. Therefore, to provide a conservative assessment, the design speed used for the sight distance analysis is based on the California statutory speed limit of 55 miles per hour for two lane undivided highways, although the critical speed (i.e., 85th-percentile) is likely lower due to the horizontal alignment of the road.

Intersection sight distance at the project driveway was calculated for two cases: left turn from stop (Case B1) and right turn from stop (Case B2). Since most vehicles utilizing the project driveway are expected to consist of heavier RV vehicles, time gaps for single unit trucks were used for the analysis. In accordance with AASHTO recommendations, a 9.5-second time gap was used for left turn from stop (Case B1) and an 8.5-second time gap was used for right turn from stop (Case B2). Based on the intersection sight distance formulas, an intersection sight distance of 770 feet is desirable for left turn from stop and 690 feet is desirable for right turn from stop. In both cases, the minimum stopping sight distance is 495 feet.

Figure 3 shows the sight distance analysis for the proposed project driveway at Jackson Slough Road. The restricted use areas shown on Figure 3 should be kept free of objects that could substantially obstruct the line of sight, including parked vehicles and landscaping over two feet in height. As shown on Figure 3, sufficient stopping sight distance would be provided for vehicles (passenger cars and RVs) exiting the proposed project driveway at Jackson Slough Road with implementation of the recommended landscaping restrictions.

Ideally, intersection sight distance for left turn from stop would provide 770 feet of clear sight for RV vehicles based on a design speed of 55 miles per hour. As shown on Figure 3, the ideal intersection sight distance does not appear to be provided due to existing trees near the roadway bend at the south of the project site. This indicates there is adequate sight distance to avoid collisions, however, vehicles traveling on the major road may need to substantially slow down or stop to accommodate RVs exiting the site and turning left. In reality, vehicles exiting the bend are unlikely to be traveling at 55 miles per hour based on the advisory speeds of 30 miles per hour through this area. Additionally, the volume of vehicles exiting the project driveway is forecast to be relatively low, especially when considering only RVs making a left turn, and thus would have a minimal impact in terms of the likelihood of requiring northbound vehicles on Jackson Slough Road to substantially slow. For these reasons, adequate stopping sight distance is provided to avoid collisions and the available intersection sight distance for vehicles departing the project site driveway is not anticipated to result in substantial disruptions to flow along Jackson Slough Road.

NEED FOR DEDICATED TURNING LANES

The need for installation of dedicated left or right turn lanes at the proposed project driveway on Jackson Slough Road was evaluated based on National Cooperative Highway Research Program (NCHRP) 457 guidance. The NCHRP turn lane warrant analysis worksheets are provided in Attachment B.

The peak season average daily traffic (ADT) on Jackson Slough Road is estimated as 1,250 trips per day (both directions) based on a 24-hour roadway segment count obtained in December 2021. Based on review of California Department of Transportation (Caltrans) data on nearby State Route 160, the December 2021 count was increased by approximately 20 percent to account for peak season and pandemic adjustments. Peak hour flows were determined based on the adjusted daily volume and factored based on the observed peak hour ratios. The existing roadway segment count worksheet is provided in Attachment C.

Based on the NCHRP criteria, installation of a dedicated left turn or right turn lane is <u>not</u> warranted at the proposed project driveway on Jackson Slough Road.

GENERAL PLAN CONSISTENCY AND SR-160 CAPACITY ASSESSMENT

The City of Isleton recently completed a General Plan Update, which included growth projections for 135 campsites at the project site in addition to Citywide growth projections through year 2040. The *City of Isleton General Plan Update Traffic Impact Analysis (Ganddini Group, March 2022)* includes a capacity analysis for several roadway segments in the project vicinity and five intersections along State Route 160 (SR-160).

As documented in the General Plan Update traffic study, the intersection of A Street and SR-160 is forecast to operate at Level of Service B during the AM peak hour and Level of Service C during the PM peak hour for Existing Plus Project conditions (i.e., Existing Plus General Plan growth inclusive of the proposed project). The proposed project represents a small portion of the total growth and would have an even smaller impact on capacity. Since the proposed project is consistent with the General Plan Update traffic analysis, which did not identify any Level of Service deficiencies, the proposed project is forecast to cause <u>no</u> substantial adverse effects on roadway capacity.

VMT ASSESSMENT

<u>Background</u>

California Senate Bill 743 (SB 743) directs the State Office of Planning and Research (OPR) to amend the CEQA Guidelines for evaluating transportation impacts to provide alternatives to Level of Service that "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." In December 2018, the California Natural Resources Agency certified and adopted the updated CEQA Guidelines package. The amended CEQA Guidelines, specifically Section 15064.3, recommend the use of VMT as the primary metric for the evaluation of transportation impacts associated with land use and transportation projects. In general terms, VMT quantifies the amount and distance of automobile travel attributable to a project or region. All agencies and projects State-wide are required to utilize the updated CEQA guidelines recommending use of VMT for evaluating transportation impacts as of July 1, 2020.

The updated CEQA Guidelines allow for lead agency discretion in establishing methodologies and thresholds provided there is substantial evidence to demonstrate that the established procedures promote the intended goals of the legislation. Where quantitative models or methods are unavailable, Section 15064.3 allows agencies to assess VMT qualitatively using factors such as availability of transit and proximity to other destinations. The Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* (State of California, December 2018) ["OPR Technical Advisory"] provides technical considerations regarding methodologies and thresholds with a focus on office, residential, and retail developments as these projects tend to have the greatest influence on VMT.

Methodology

The City of Isleton is the Lead Agency responsible for identifying potential impacts associated with development of the proposed project in accordance with CEQA requirements. In the absence of formal VMT analysis guidelines established by the City of Isleton, this VMT analysis was prepared in accordance with available guidance from the OPR Technical Advisory and County TIA Guidelines.

Screening Assessment

As noted in the County TIA Guidelines, certain types of projects are not required to prepare a detailed CEQA transportation analysis due to the project description, characteristics, and/or location. As specified in the County TIA Guidelines, the following project types are expected to result in a less than significant VMT impact:

- Small projects (fewer than 237 daily trips)
- Local-serving retail
- Local-serving public facilities/services
- Projects in VMT-efficient areas
- Project near transit stations
- Affordable residential projects

Additional details for each of the screening criteria are provided in the County TIA Guidelines. As shown in Table 1, the proposed project is forecast to generate more than 237 daily trips. Appendix A of the County TIA Guidelines classifies recreation vehicle/travel trailer parks as regional public facilities/services (FCPS). The County TIA Guidelines state that regional retail and public facilities, services, and recreation typically draws from a larger area compared to local serving uses, potentially resulting in higher VMT. Therefore, the proposed project does not satisfy any of the County-established screening criteria.

Significance Threshold

When assessing a regional retail or public facilities, services, or recreation project, the project's significance threshold is zero increase in total regional VMT.

Project VMT Impact Assessment

To calculate net change in total regional VMT, the County TIA Guidelines recommend use of the Sacramento Council of Governments (SACOG) regional travel forecasting model known as the Sacramento Activity-Based Travel Simulation Model (SACSIM); however, SACSIM is not conducive to modeling recreational uses since land use / socio-economic data is primarily related to households and employees. Therefore, it is necessary to use an alternative method for assessing the project's VMT impact.

To assess whether the project is likely to increase or decrease regional VMT, a qualitative review of the project location relative to competing facilities and destination centers in the region was performed.

Figure 4 shows the location of at 40 other existing RV and trailer facilities in the region. As shown on Figure 4, the project site is generally located centrally relative to other similar facilities; therefore, capture of any new customers/guests from other existing facilities is not anticipated to result in any substantial net changes to VMT for the region. Addition of the proposed project would introduce more opportunities for RV camp sites in a relatively central area of the region, thus reducing the need for visitors to find accommodations farther away during the peak season. The proposed project is not anticipated to be the primary reason for visitors traveling to the region. Visitors, particularly RV owners interested in outdoor activities, are primarily drawn to the region for its existing water recreation, fishing, and hiking spots. Therefore, addition of the proposed project is not anticipated to induce latent demand for travel to the region that would not otherwise occur without addition of the proposed project. Trips associated with the project site will likely have similar or shorter trip lengths compared to visitors that would have to find accommodations elsewhere if the project is not constructed.

For the reasons noted above, the proposed project can reasonably be anticipated to result in either a net decrease or negligible effect on total VMT for the region and would have a less than significant VMT impact.

CONCLUSIONS

The proposed project is forecast to generate approximately 311 daily trips, including 24 trips during the AM peak hour and 31 trips during the PM peak hour.

Preparation of an LTA is not warranted based on the criteria specified in the County TIA Guidelines.

Adequate stopping sight distance is provided to avoid collisions and the available intersection sight distance for vehicles departing the project site driveway is not anticipated to result in substantial disruptions to flow along Jackson Slough Road.

Installation of a dedicated left turn or right turn lane is not warranted at the proposed project driveway on Jackson Slough Road.

Since the proposed project is consistent with the General Plan Update traffic analysis, which did not identify any Level of Service deficiencies, the proposed project is forecast to cause no substantial adverse effects on roadway capacity.

Addition of the proposed project is not anticipated to induce latent demand for travel to the region that would not otherwise occur without addition of the proposed project. Trips associated with the project site will likely have similar or shorter trip lengths compared to visitors that would have to find accommodations elsewhere if the project is not constructed. For these reasons, the proposed project can reasonably be anticipated to result in either a net decrease or negligible effect on total VMT for the region and would have a less than significant VMT impact.

Table 1
Project Trip Generation

Trip Generation Rates									
Land Use	Source[1]	Land Use Variable[2]	AM Peak Hour			PM Peak Hour			Daily Rate
			% In	% Out	Rate	% In	% Out	Rate	
Campground Recreational Vehicle Park	ITE 416	OCS	36%	64%	0.21	65%	35%	0.27	2.70

Trips Generated									
Land Use	Source	Quantity	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Campground Recreational Vehicle Park	ITE 416	115 OCS	9	15	24	20	11	31	311

Notes:

1. ITE = Institute of Transportation Engineers *Trip Generation Manual* (11th Edition, 2021); ### = Land Use Code
   The daily trip rate was estimated as 10 times the PM peak hour rate in the absence of data from ITE.
2. OCS = Occupied Campsites

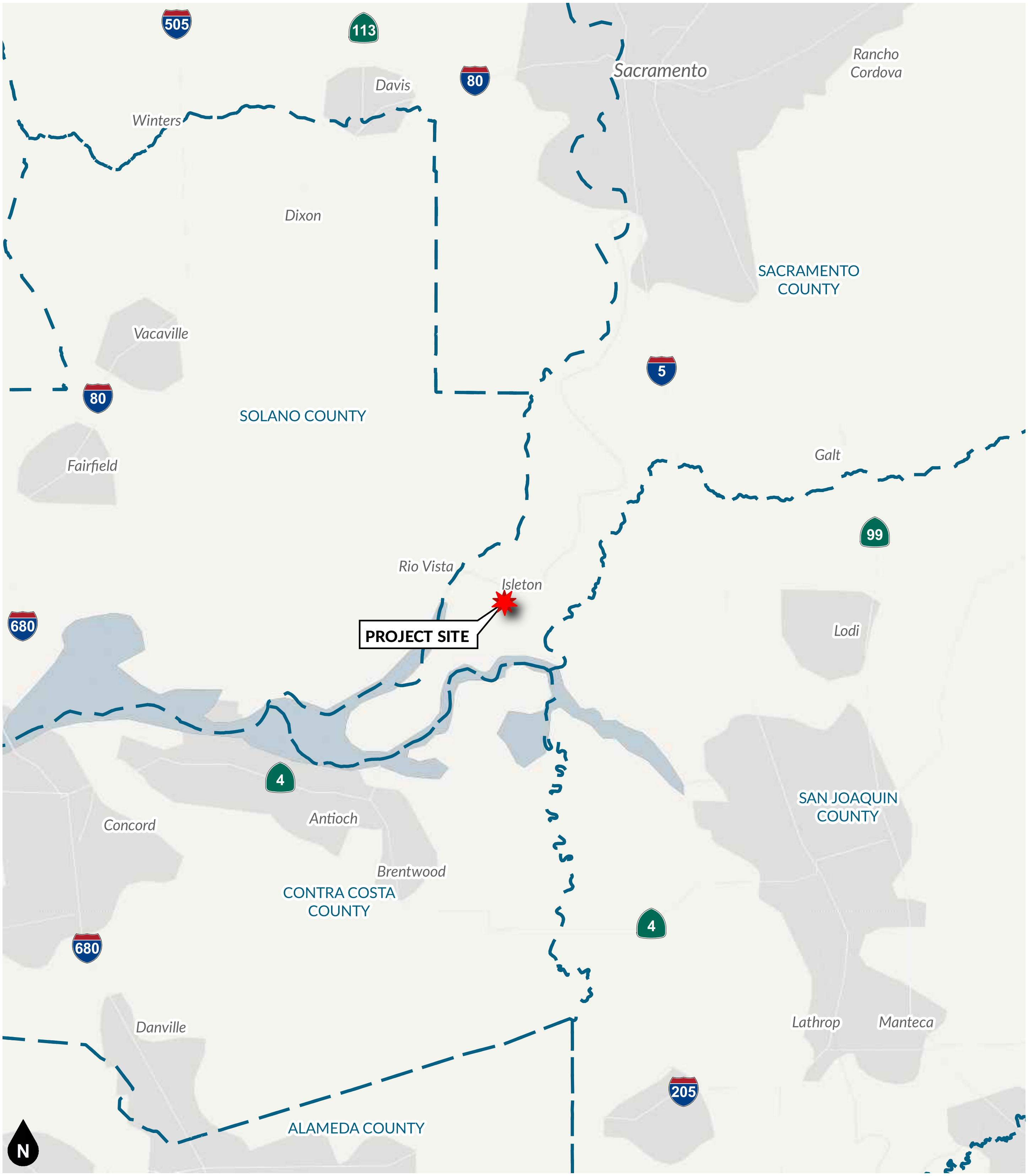


Figure 1
Regional Location Map

Figure 2
Proejct Location Map

gandini

Meadows of Isleton RV Resort
Focused Transportation Study
19542

Legend

- Intersection Sight Distance
- Stopping Sight Distance
- Restricted Use Area
- Driver's Eye (10 foot setback from curbline extension and 3 feet right of centerline)

Figure 3
Project Driveway Sight Distance Analysis

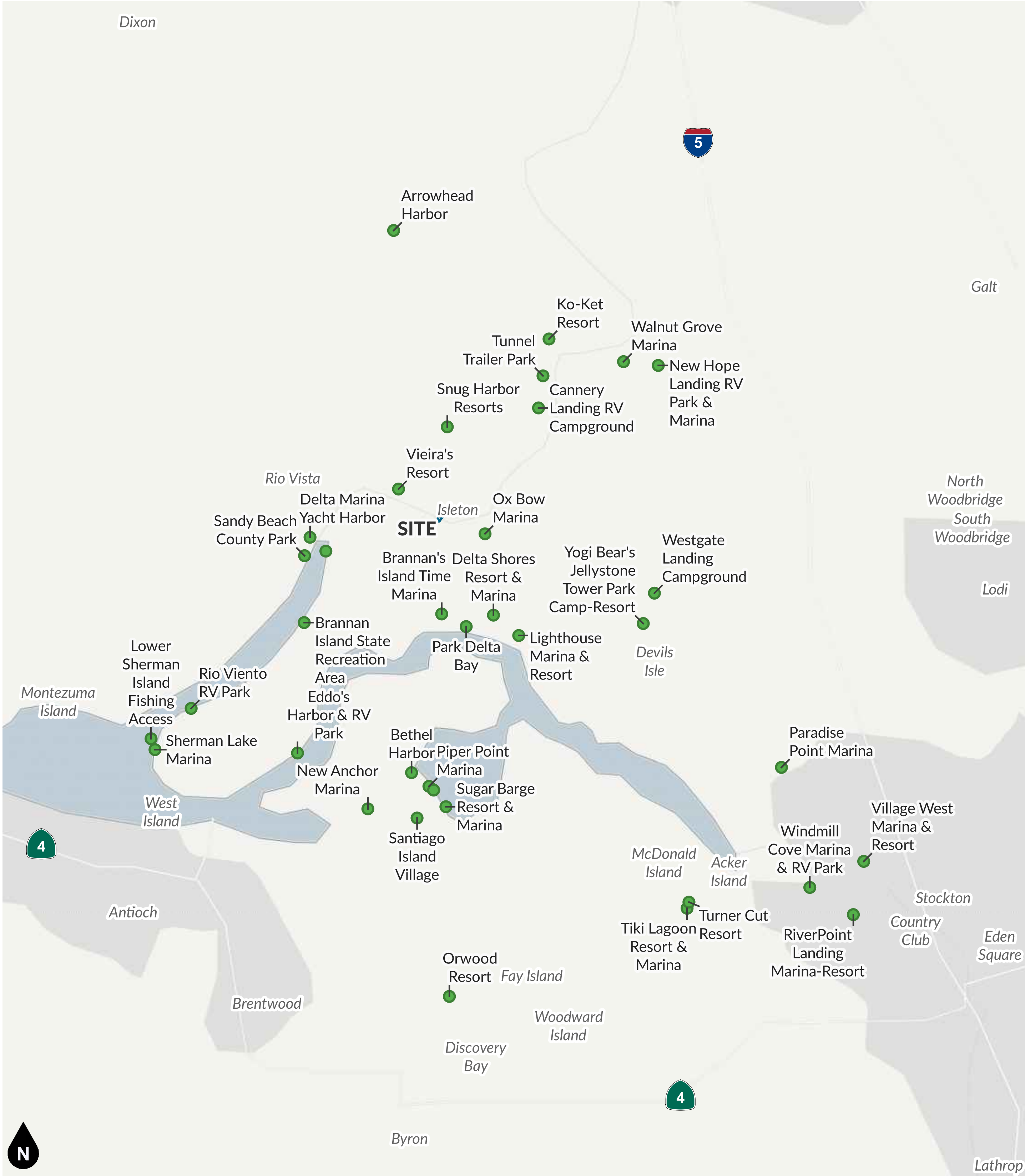


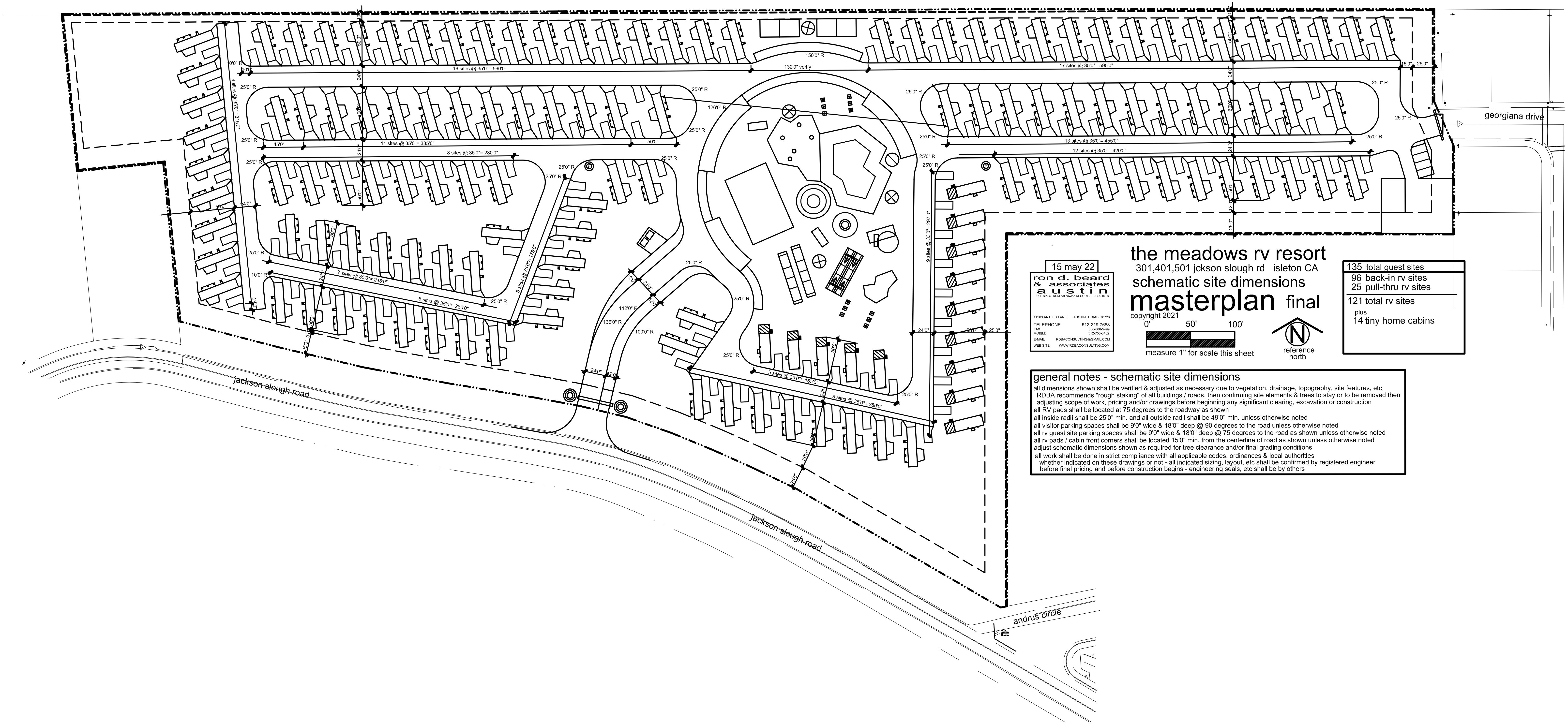
Figure 4
Existing RV & Trailer Parks

gandhi

Meadows of Isleton RV Resort
Focused Transportation Study
19542

ATTACHMENT A

Site Plan



15 may 22

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& associates
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WEB SITE WWW.RDBACONSULTING.COM

the meadows rv resort

301,401,501 jckson slough rd isleton CA

schematic site dimensions

masterplan final

copyright 2021

0' 50' 100'

measure 1" for scale this sheet

reference north

135	total guest sites
96	back-in rv sites
25	pull-thru rv sites
121	total rv sites
plus	
14	tiny home cabins

general notes - schematic site dimensions

all dimensions shown shall be verified & adjusted as necessary due to vegetation, drainage, topography, site features, etc
RDBA recommends "rough staking" of all buildings / roads, then confirming site elements & trees to stay or to be removed then adjusting scope of work, pricing and/or drawings before beginning any significant clearing, excavation or construction
all RV pads shall be located at 75 degrees to the roadway as shown
all inside radii shall be 25'0" min. and all outside radii shall be 49'0" min. unless otherwise noted
all visitor parking spaces shall be 9'0" wide & 18'0" deep @ 90 degrees to the road unless otherwise noted
all rv guest site parking spaces shall be 9'0" wide & 18'0" deep @ 75 degrees to the road as shown unless otherwise noted
all rv pads / cabin front corners shall be located 15'0" min. from the centerline of road as shown unless otherwise noted
adjust schematic dimensions shown as required for tree clearance and/or final grading conditions
all work shall be done in strict compliance with all applicable codes, ordinances & local authorities whether indicated on these drawings or not - all indicated sizing, layout, etc shall be confirmed by registered engineer before final pricing and before construction begins - engineering seals, etc shall be by others

ATTACHMENT B

NCHRP Turn Lane Warrant Analysis Worksheets

Project Driveway at Jackson Slough Road
Existing Plus Project - PM Peak Hour

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

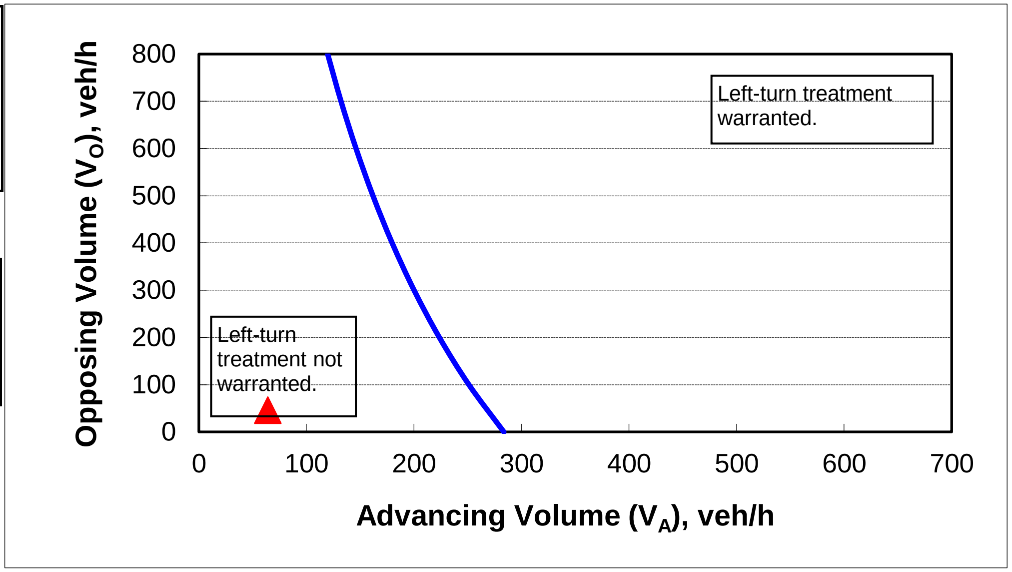
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	55
Percent of left-turns in advancing volume (V_A), %:	38%
Advancing volume (V_A), veh/h:	64
Opposing volume (V_O), veh/h:	46

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	268
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

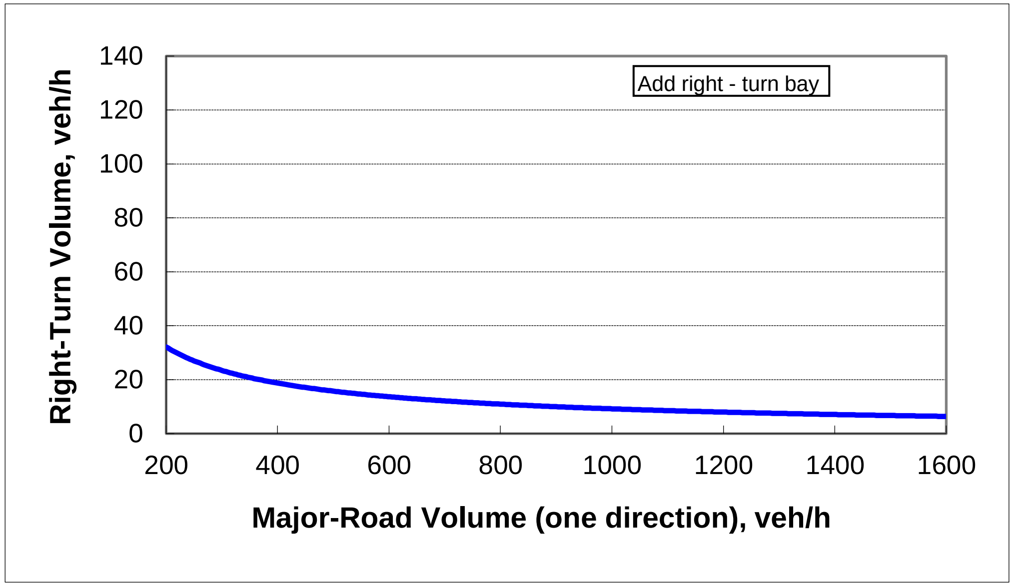
Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Project Driveway at Jackson Slough Road
Existing Plus Project - PM Peak Hour

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Variable	Value
Roadway geometry:	2-lane roadway
Major-road speed, mph:	55
Major-road volume (one direction), veh/h:	46
Right-turn volume, veh/h:	24



OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	101
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

ATTACHMENT C

Roadway Segment Count Worksheet

Prepared by National Data & Surveying Services

VOLUME

Jackson Slough Rd Bet. West City Limits & Jackson Blvd

Day: Wednesday
Date: 12/15/2021

City: Isleton
Project #: CA21_090144_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	537	496	1,033

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00					2		1		3		12:00					19		10		29	
00:15					0		0		0		12:15					9		5		14	
00:30					0		1		1		12:30					12		3		15	
00:45					0	2	2	4	2	6	12:45					7	47	9	27	16	74
01:00					0		0		0		13:00					16		9		25	
01:15					0		0		0		13:15					8		6		14	
01:30					0		1		1		13:30					14		7		21	
01:45					1	1	0	1	1	2	13:45					11	49	14	36	25	85
02:00					0		0		0		14:00					15		13		28	
02:15					0		1		1		14:15					15		11		26	
02:30					1		0		1		14:30					6		14		20	
02:45					1	2	4	5	5	7	14:45					10	46	11	49	21	95
03:00					0		2		2		15:00					6		24		30	
03:15					0		0		0		15:15					4		11		15	
03:30					2		1		3		15:30					9		10		19	
03:45					0	2	0	3	0	5	15:45					16	35	9	54	25	89
04:00					1		3		4		16:00					10		10		20	
04:15					0		1		1		16:15					15		6		21	
04:30					1		2		3		16:30					18		14		32	
04:45					1	3	2	8	3	11	16:45					10	53	8	38	18	91
05:00					3		1		4		17:00					10		9		19	
05:15					1		0		1		17:15					10		3		13	
05:30					4		1		5		17:30					7		4		11	
05:45					3	11	5	7	8	18	17:45					10	37	7	23	17	60
06:00					0		3		3		18:00					5		8		13	
06:15					2		4		6		18:15					3		4		7	
06:30					7		7		14		18:30					8		4		12	
06:45					4	13	9	23	13	36	18:45					3	19	4	20	7	39
07:00					5		4		9		19:00					4		2		6	
07:15					5		4		9		19:15					6		7		13	
07:30					4		5		9		19:30					5		1		6	
07:45					8	22	11	24	19	46	19:45					4	19	3	13	7	32
08:00					11		10		21		20:00					4		2		6	
08:15					9		8		17		20:15					6		7		13	
08:30					8		8		16		20:30					0		6		6	
08:45					11	39	10	36	21	75	20:45					4	14	3	18	7	32
09:00					13		3		16		21:00					4		4		8	
09:15					8		8		16		21:15					3		1		4	
09:30					6		7		13		21:30					0		3		3	
09:45					8	35	6	24	14	59	21:45					1	8	2	10	3	18
10:00					8		8		16		22:00					2		0		2	
10:15					12		5		17		22:15					0		2		2	
10:30					4		3		7		22:30					0		1		1	
10:45					6	30	10	26	16	56	22:45					4	6	5	8	9	14
11:00					3		11		14		23:00					0		1		1	
11:15					13		8		21		23:15					2		0		2	
11:30					5		9		14		23:30					0		0		0	
11:45					18	39	10	38	28	77	23:45					3	5	0	1	3	6
TOTALS						199		199		**398**	**TOTALS**						338		297		**635**
SPLIT %						50.0%		50.0%		**38.5%**	**SPLIT %**						53.2%		46.8%		**61.5%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	537	496	1,033

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			11:45	10:45	**11:15**	**PM Peak Hour**			15:45	14:15	**13:30**
AM Pk Volume			58	38	**92**	**PM Pk Volume**			59	60	**100**
Pk Hr Factor			0.763	0.864	**0.793**	**Pk Hr Factor**			0.819	0.625	**0.893**
7 - 9 Volume	0	0	61	60	**121**	**4 - 6 Volume**	0	0	90	61	**151**
7 - 9 Peak Hour			08:00	07:45	**08:00**	**4 - 6 Peak Hour**			16:00	16:00	**16:00**
7 - 9 Pk Volume	0	0	39	37	**75**	**4 - 6 Pk Volume**	0	0	53	38	**91**
Pk Hr Factor	0.000	0.000	0.886	0.841	**0.893**	**Pk Hr Factor**	0.000	0.000	0.736	0.679	**0.711**