17 Lot Subdivision
TTM 38041
Initial Study and Mitigated Negative Declaration

Lead Agency:
City of Rancho Mirage
69-825 Highway 111
Rancho Mirage, California 92270

Prepared by:
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April 17, 2024

ENVIRONMENTAL INITIAL STUDY

17 Lot Subdivision

Project Title:	17 Lot Subdivision
City Project No:	Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004 and Tentative Tract Map Case No. TTM23-003 for Tentative Tract Map 38041
Lead Agency Name and Address:	City of Rancho Mirage 69-825 Highway 111 Rancho Mirage, California 92270 Phone: (760) 328-2266
Applicant:	Dan Arthofer La Poloma Homes, Inc. P.O. Box 10179 Palm Springs, California 92255
Contact Person:	Ben Torres – Planning Manager
Phone Number:	(760) 328-2266
Project Location:	East of the intersection of Via Josefina and Victory Lane in the City of Rancho Mirage, California (Township 4 South, Range 6 East, Section 30, USGS Cathedral City, California Quadrangle, 1956).
Accessor Parcel Number(s):	685-080-031, 685-080-010, 685-030-006
Project Area:	±8.42 Acres
General Plan & Zoning Designation:	The General Plan/Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). The remaining two parcels are designated as *Medium Density Residential* (R-M).

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CHAPTER 1: PROJECT DESCRIPTION

PROJECT OVERVIEW

The City of Rancho Mirage is reviewing an application that would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

PROJECT LOCATION

The proposed project site is located in the northeastern portion of the City of Rancho Mirage. The City is located in the eastern portion of Riverside County within the Coachella Valley area. Rancho Mirage is generally bounded on the north by Thousand Palms and Cathedral City; on the east by Palm Desert; on the south by Palm Desert and unincorporated Riverside County; and on the west by Cathedral City. Regional access to the City of Rancho Mirage is provided by the Interstate 10 (I-10) Freeway which extends across the northernmost portion of the City. The I-10 Freeway is located approximately 1.2 miles northeast of the project site. The location of Rancho Mirage, in a regional context, is shown in Exhibit 1. A citywide map is provided in Exhibit 2.

The proposed project site is located to the east of the intersection of Via Josefina and Victory Lane in the City of Rancho Mirage. The project site is currently vacant and undisturbed. The proposed project's latitude and longitude is 33.79816, -116.39753. A local vicinity map is provided in Exhibit 3.

DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed project would involve the development of 17, single-family units within the 8.42-acre site. The individual lot sizes would range from 12,510 square feet to 22,323 square feet. Each unit would consist of a single level and would contain between 4-bedrooms and 5-bedrooms. Units would be arranged around the proposed cul-de-sac roadway. Each unit would be provided with an enclosed garage that would accommodate two to three vehicles. The new units would consist of a single level within a maximum height of 20-feet. Three floor plans are proposed and would include Plan 1, Plan 2, and Plan 3. Plan 1 would have a total size of 3,588 square feet and would contain four bedrooms, Plan 2 would have a total size of 4,192 square feet and would contain four bedrooms, and Plan 3 would have a total size of 4,200 square feet and

would contain four bedrooms. A retention basin consisting of 18,711 square feet would be located in the site's northeast corner.

Access and Parking

The individual units would be arranged around the proposed cul-de-sac roadway. Each unit would be provided with an enclosed garage that would accommodate two to three vehicles. The driveway apron would accommodate an additional two vehicles. The entry way would be gated and would have a curb-to-curb width of 60 feet (30-feet for the ingress travel land and 30-feet for the egress travel lane). The internal roadway would have a curb-to-curb width of approximately 37-feet.

Energy Utilities

The Imperial Irrigation District (IID) would provide electricity to the project site. Natural gas service is provided by the Southern California Gas Company.

Water Utilities

There are no existing water infrastructure located on-site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. Groundwater is the primary source of domestic water supply in the Coachella Valley. The Coachella Valley Water District (CVWD) is the largest provider of potable water in the valley and currently provides potable water in the project vicinity.

Wastewater Utilities

There are no existing wastewater infrastructure located on-site. CVWD operates 6 water reclamation plants and maintains more than 1,000 miles of sewer pipelines and more than 30 lift stations that transport wastewater to the nearest treatment facility and nearly 6.3 billion gallons of wastewater is treated yearly. In addition, wastewater generated by the project will be conveyed to CVWD Wastewater Reclamation Plant Number 10 in Palm Desert (WRP-10). Per the 2015 CVWD Urban Water Management Plan, WRP-10 has a capacity to treat 18 million gallons per day (MGD).

Solid Waste

Solid waste disposal and recycling services for the City of Rancho Mirage is provided by Burrtec. Solid waste and recycling collected from the proposed project will be hauled to the Edom Hill Transfer Station. Waste from this transfer station is then sent to a permitted landfill or recycling facility outside of the Coachella Valley. These include the Badlands Disposal Site, the El Sobrante Sanitary Landfill, and the Lamb Canyon Disposal Site.

The proposed site plan is illustrated in Exhibit 5. The project is summarized in Table 1 provided on the following page.

Table 1 Project Summary (Building & Lot Characteristics)

Lot	Description	Lot Area
Lot 1	Single-Family Residential Unit	20,625 sq. ft.
Lot 2	Single-Family Residential Unit	18,334 sq. ft.
Lot 3	Single-Family Residential Unit	18,232 sq. ft.
Lot 4	Single-Family Residential Unit	18,892 sq. ft.
Lot 5	Single-Family Residential Unit	18,418 sq. ft.
Lot 6	Single-Family Residential Unit	22,323 sq. ft.
Lot 7	Single-Family Residential Unit	12,785 sq. ft.
Lot 8	Single-Family Residential Unit	12,782 sq. ft.
Lot 9	Single-Family Residential Unit	12,778 sq. ft.
Lot 10	Single-Family Residential Unit	12,593 sq. ft.
Lot 11	Single-Family Residential Unit	13,019 sq. ft.
Lot 12	Single-Family Residential Unit	12,511 sq. ft.
Lot 13	Single-Family Residential Unit	12,551 sq. ft.
Lot 14	Single-Family Residential Unit	12,587 sq. ft.
Lot 15	Single-Family Residential Unit	18,445 sq. ft.
Lot 16	Single-Family Residential Unit	12,580 sq. ft.
Lot 17	Single-Family Residential Unit	13,164 sq. ft.
Northeast Corner	Retention Basin	19,094 sq. ft.

Source: Fomotor Engineering. *Preliminary Grading Plan.* Sheet C.01. January 29, 2024.

CONSTRUCTION CHARACTERISTICS

The construction for the proposed project is assumed to commence in January 2025 and would take approximately twelve months to complete. The key construction tasks that would occur are outlined in the paragraphs below.

- *Task 1 Demolition and Grading.* The existing onsite improvements would be removed, and the site would be graded and ready for construction. The typical heavy equipment used during this construction phase would include graders, bulldozers, offroad trucks, back-hoes, and trenching equipment. This task would require one month to complete.

- *Task 2 Site Preparation.* During this phase, the building footings, utility lines, and other underground infrastructure would be installed. The typical heavy equipment used during this construction phase would include bulldozers, offroad trucks, back-hoes, and trenching equipment. This task would require one month to complete.

- *Task 3 Building Construction.* The new housing units would be constructed during this phase. The typical heavy equipment used during this construction phase would include

offroad trucks, cranes, and fork-lifts. This task will take approximately eight months to complete.

- *Task 4 Paving and Finishing.* This concluding task would involve the paving and finishing. The typical heavy equipment used during this construction phase would include trucks, backhoes, rollers, pavers, and trenching equipment. The completion of this phase will take approximately two months to complete.

ENVIRONMENTAL SETTING AND SURROUNDING LAND USES

The relatively flat site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The site contains a few species of plant which include the creosote bush (*Larrea tridentata*), hairy sand verbena (*Abronia villosa var. villosa*), Desert palafox (*Palafoxia arida*), whitestem blazingstar (*Mentzelia albicaulis*), Flatspine burr ragweed (*Ambrosia acanthicarpa*), London rocket (*Sisymbrium irio*), Dyebush (*Psorothamnus emoryi*) and cheatgrass (*Bromus tectorum*). The site supports a minimal amount of wildlife, with many of them being birds. A single mammalian species was seen on site, the blacktailed jackrabbit (*Lepus californicus*). Species that were not observed, but are expected to occur on site given their abundance in the surrounding areas include California ground squirrel (*Otospermophilus beecheyi*) and antelope ground squirrel (*Ammospermophilus leucurus*). The site and the surrounding area are illustrated in Exhibit 4. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

Land uses and development located in the vicinity of the proposed project site are outlined below:

- *North of the project site:* A vacant land, single family home, and Unitarian Universalist Church abuts the north side of the project site. These parcels are designated as *Very Low Density Residential* (R-L-2) and *Medium Density Residential* (R-M).

- *East of the project site:* Key Largo Avenue abuts the project's east side. Further east of the road is Rancho Mirage Dog Park as well as vacant, undeveloped lands. These parcels are designated as *Open Space / Public Park* (OS/PP), Medium Density Residential (R-M), and *High Density Residential* (R-M).

- *South of the project site:* A single-family residential development and vacant, undeveloped land abuts the project site's south side. These parcels are designated as *Very Low Density Residential* (R-L-2) and *Medium Density Residential* (R-M).

- *West of the project site:* Via Josefina abuts the west side of the project. Further west of the road are single family homes. These parcels are designated as *Very Low Density Residential* (R-L-2).

An aerial photograph of the project site and the surrounding area is provided in Exhibit 4.

DISCRETIONARY APPROVALS & OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED

A Discretionary Action is an action taken by a government agency (for this project, the government agency is the City of Rancho Mirage) that calls for an exercise of judgment in deciding whether to approve a project. The following discretionary approvals are required:

- Approval of a General Plan Zoning Map Amendment. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).
- Approval of a Tentative Tract Map (TTM 38041);
- Approval of the Mitigated Negative Declaration (MND); and,
- The adoption of the Mitigation Monitoring and Reporting Program (MMRP).

All potentially interested tribes identified by the NAHC were also contacted pursuant to AB-52 and SB-18 for information regarding their knowledge of cultural resources that were within or near the project area. These groups includes the Agua Caliente Band of Cahuilla Indians. There are currently no other public agencies whose approval is required at this time.

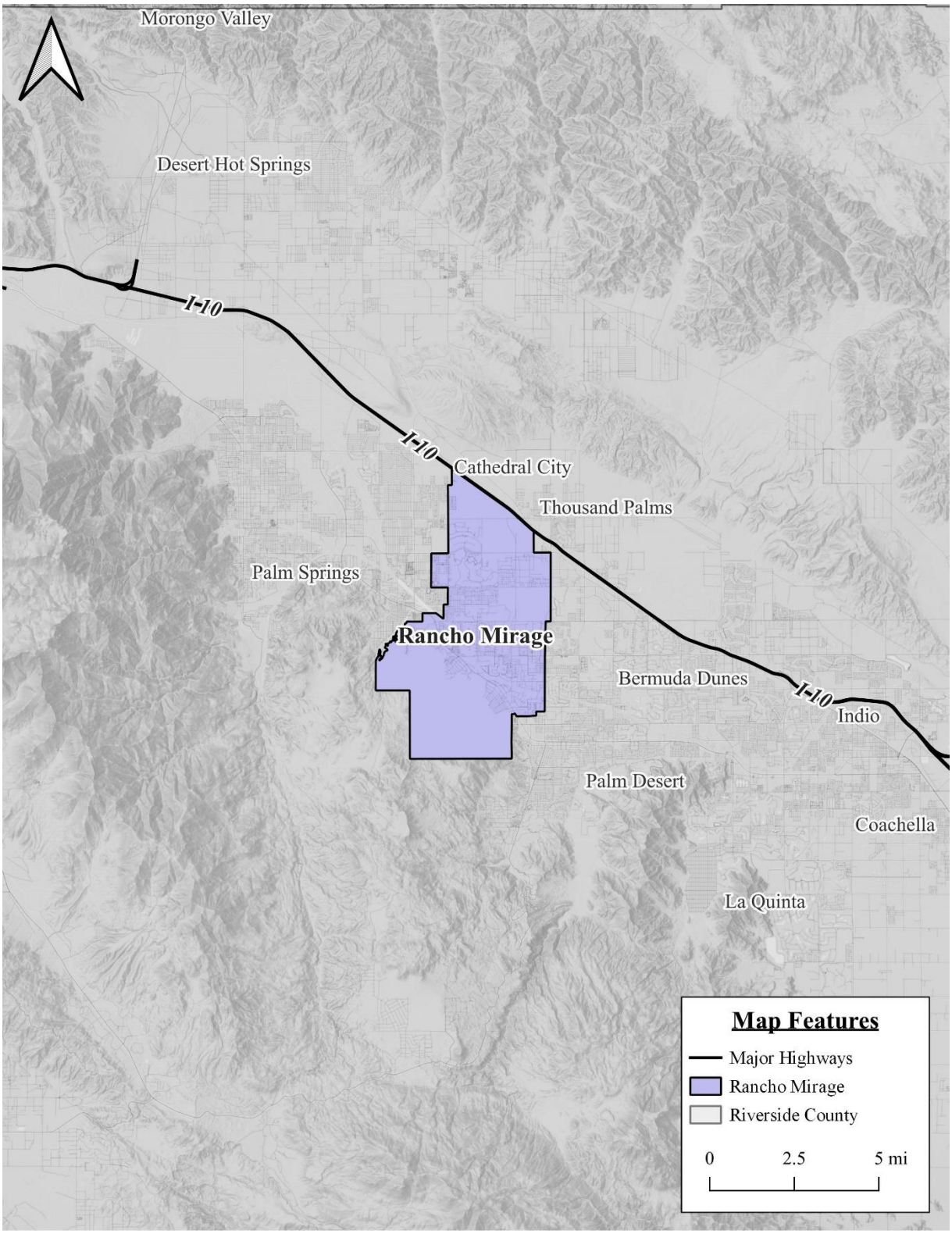

Exhibit 1 Regional Map

SOURCE: BLODGETT BAYLOSIS ENVIRONMENTAL PLANNING

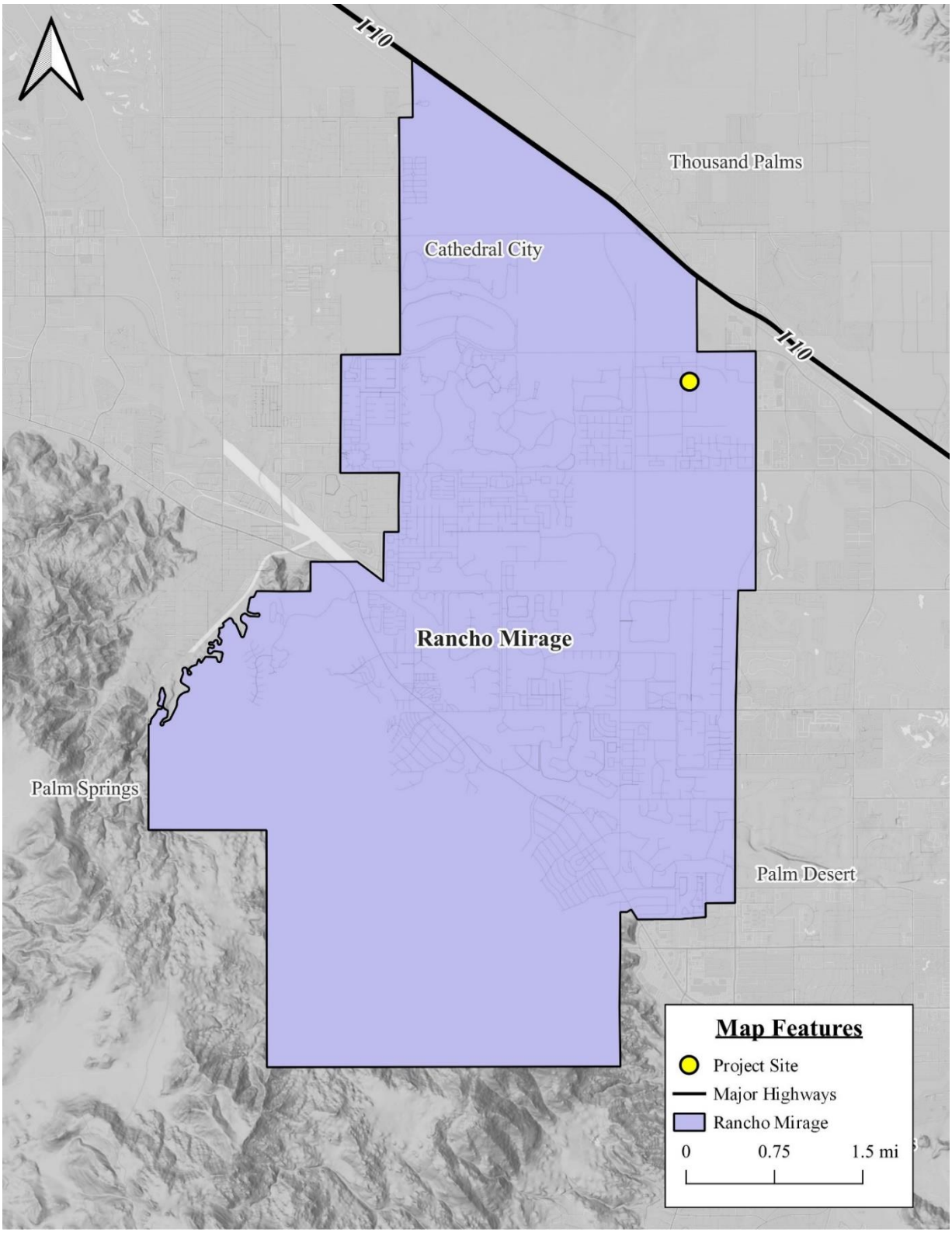

Exhibit 2 Citywide Map

SOURCE: BLODGETT BAYLOSIS ENVIRONMENTAL PLANNING

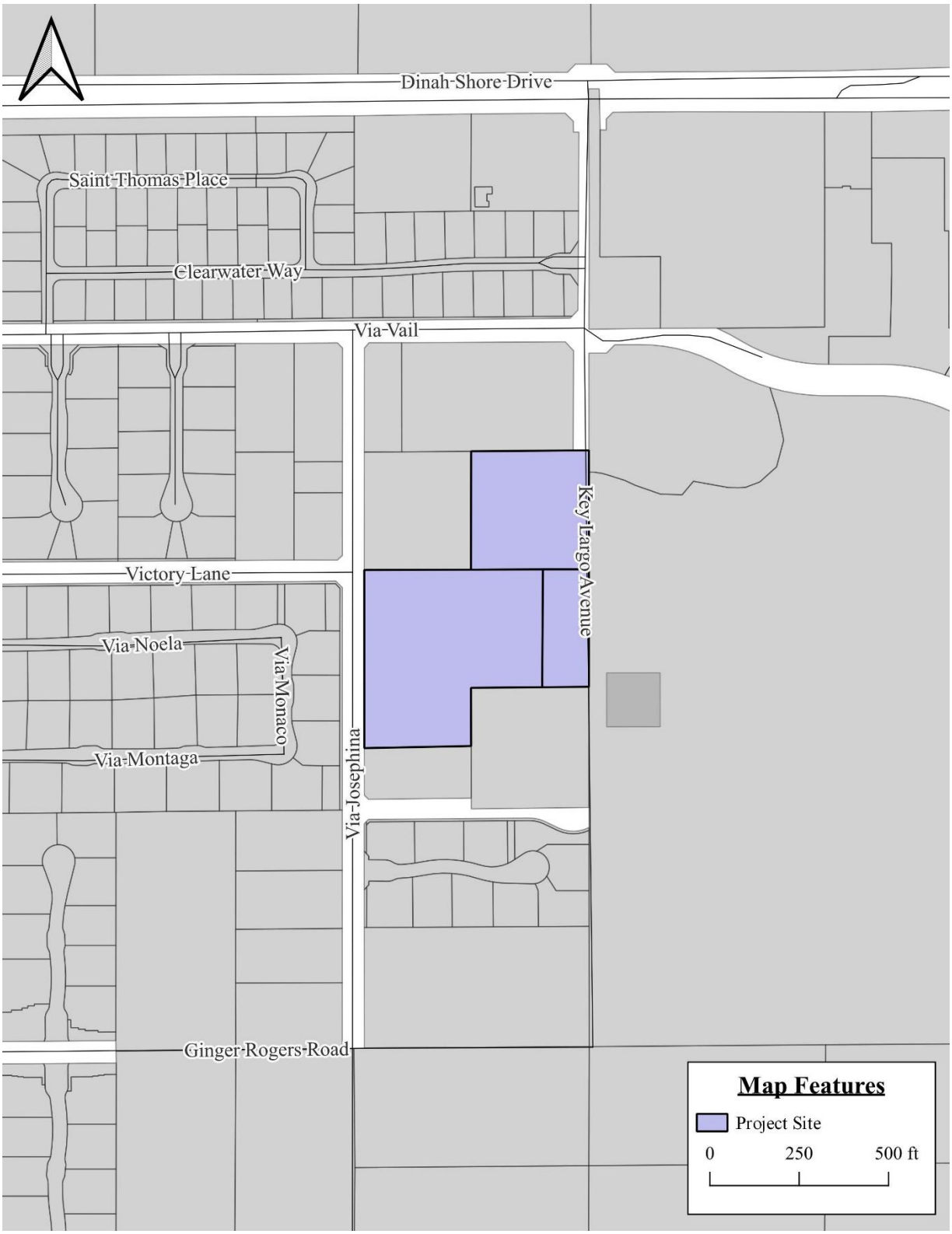

Exhibit 3 Local Map

SOURCE: BLODGETT BAYLOSIS ENVIRONMENTAL PLANNING

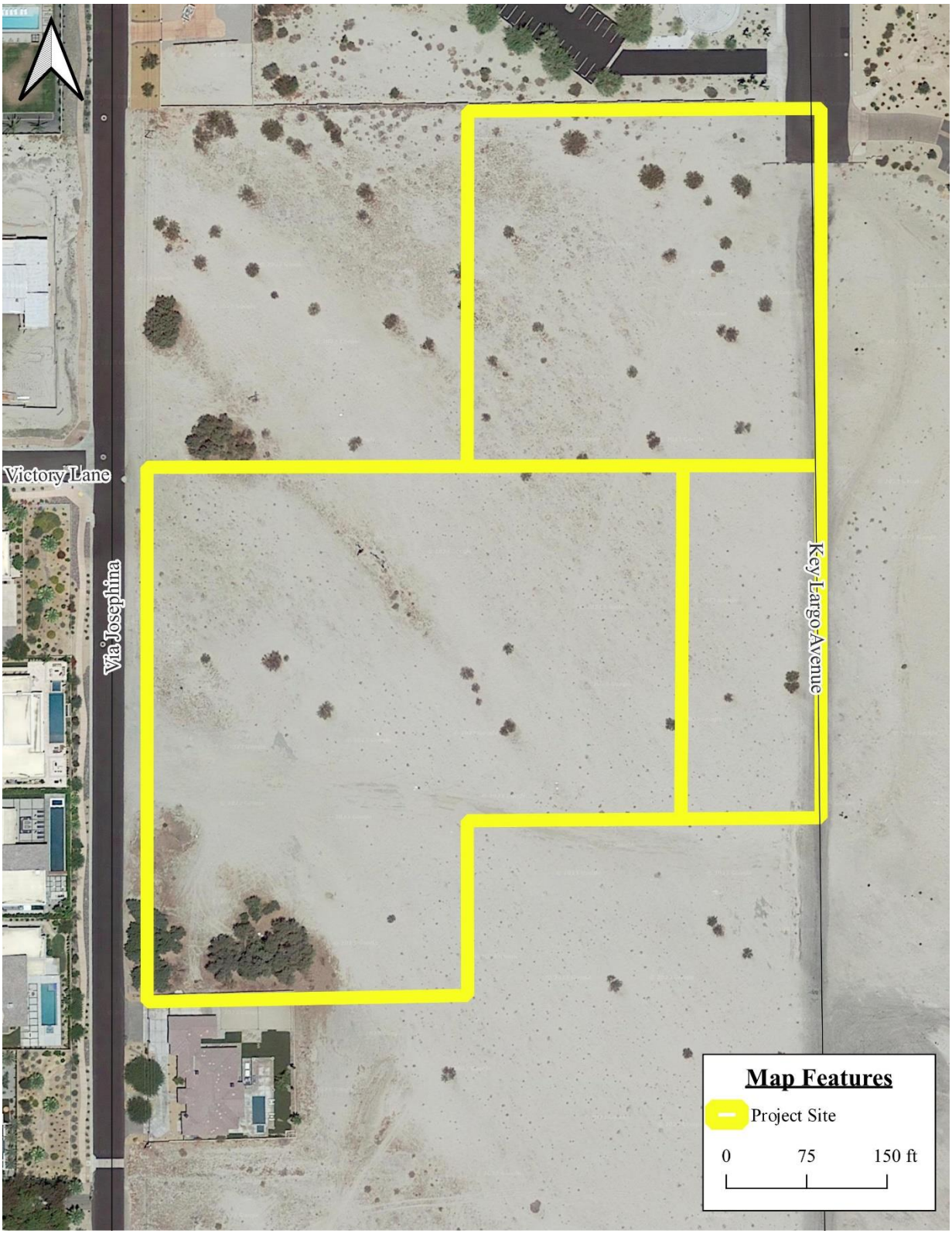

Exhibit 4 Aerial Photograph

SOURCE: BLODGETT BAYLOSIS ENVIRONMENTAL PLANNING

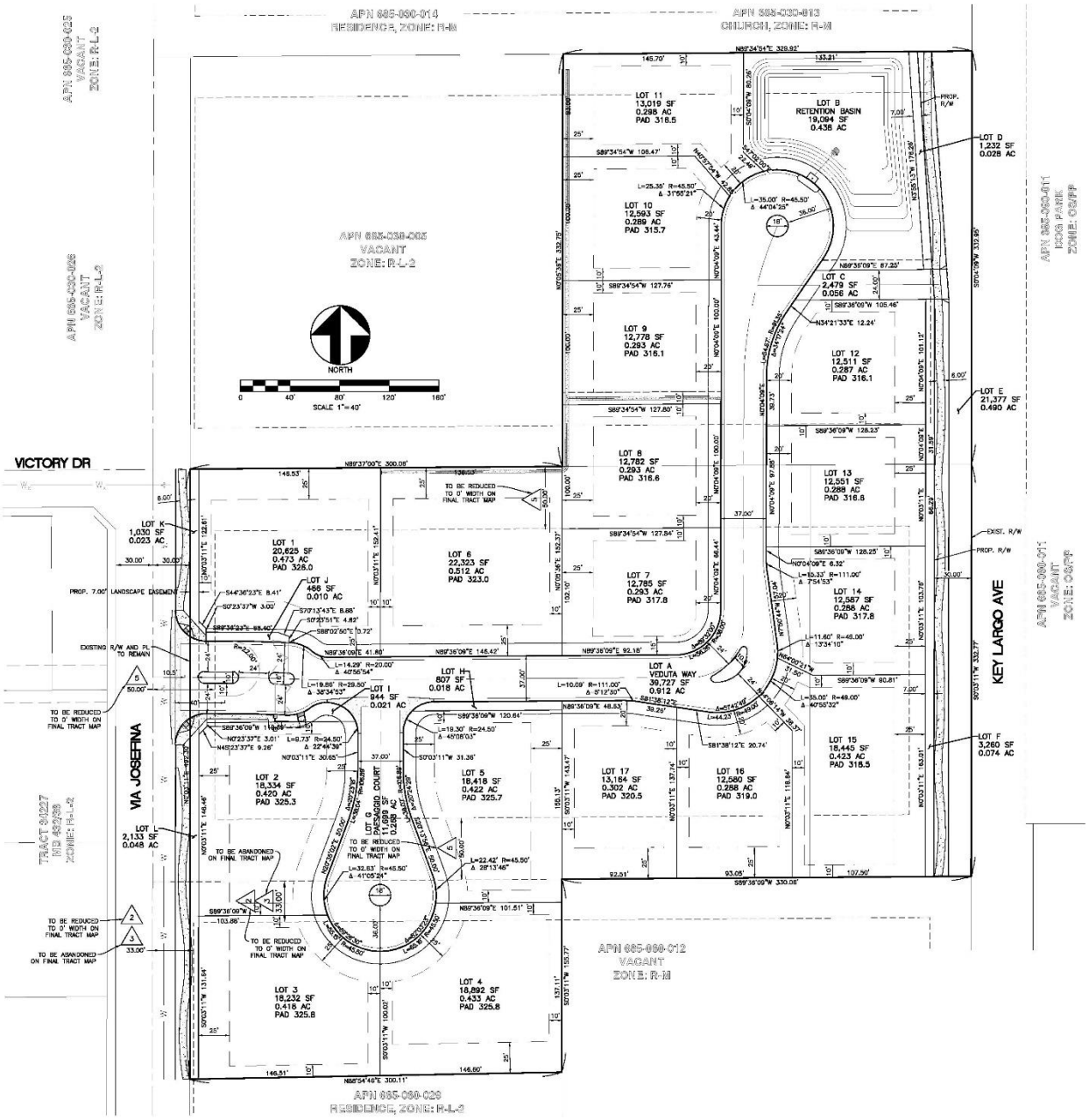

Exhibit 5 Site Plan

SOURCE: Fomotor Engineering. *Preliminary Grading Plan.* Sheet C.01. January 29, 2024.

Exhibit 6 Existing and Proposed Land Use Designations

SOURCE: CITY OF RANCHO MIRAGE AND Fomotor Engineering.

CHAPTER 2: ENVIRONMENTAL ANALYSIS AND DETERMINATION

Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

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

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 projects 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 on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) Negative Declaration: Less Than Significant With 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 (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a) Earlier Analysis Used. Identify and state where they are available for review.

    b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references 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.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify: a) the significance criteria or threshold, if any, used to evaluate each question; and b) the mitigation measure identified, if any, to reduce the impact to less than significance.

DETERMINATION: (To be completed by the Lead Agency) On the basis of this initial evaluation:

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

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

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

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

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

5-02-2024

Ben Torres, Planning Manager — Date

City of Rancho Mirage

Environmental Checklist and Discussion:

The following checklist evaluates the proposed Project's potential adverse impacts. For those environmental topics for which a potential adverse impact may exist, a discussion of the existing site environment related to the topic is presented followed by an analysis of the Project's potential adverse impacts. When the project does not have any potential for adverse impacts for an environmental topic, the reasons why there are no potential adverse impacts are described.

1 - AESTHETICS

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

SOURCES:
Fomotor Engineering. *Preliminary Grading Plan TTM 38041.* Sheet C.01. January 29, 2024.
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.
Rancho Mirage, City of. *City of Rancho Mirage Municipal Code.* As amended 2023.

1.1 SETTING

The evaluation of aesthetics and aesthetic impacts is generally subjective, and it typically requires the identification of key visual features in the area and their importance. The characterization of aesthetic impacts involves establishing the existing visual characteristics including visual resources and scenic vistas that are unique to the area. Visual resources are determined by identifying existing landforms (e.g., topography and grading), views (e.g., scenic resources such as natural features or urban characteristics), and existing light and glare characteristics (e.g., nighttime illumination). Changes to the existing aesthetic environment associated with the proposed project's implementation are identified and *qualitatively* evaluated based on the proposed modifications to the existing setting and the viewers' sensitivity. The project-related

impacts are then compared to the context of the existing setting, using the threshold criteria discussed above.

The natural setting of the Rancho Mirage area is critical to its overall visual character and provides scenic vistas for the community. The Santa Rosa Mountains and the foothills (including the Indio Hills), provide a natural, scenic backdrop to the Rancho Mirage community. The Santa Rosa Mountains are part of the Santa Rosa and San Jacinto Mountains National Monument. The base of the aforementioned mountains is located just over 10 miles to the west of the project site. The San Bernardino Mountains are located to the north and east of the City (approximately 16 miles).

1.2 DISCUSSION OF IMPACTS:

a) No Impact.

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

The natural setting of the Rancho Mirage area is critical to its overall visual character and provides scenic vistas for the community. The Santa Rosa Mountains provide a natural, scenic backdrop to the Rancho Mirage community. The Santa Rosa Mountains are part of the Santa Rosa and San Jacinto Mountains National Monument. The base of the aforementioned mountains is located just over 10 miles to the west of the project site. The foothills of the Santas Rosa Mountains along with the Indio Hills extend into the southern portion of the City. The San Bernardino Mountains are located to the north and east of the City (approximately 16 miles). The proposed development would not obstruct any significant views of the aforementioned mountains of the existing or future homes located to the east of the development site. Once developed, views of the aforementioned mountains would continue to be visible from the public right-of-way. As a result, no impacts would occur.

b) No Impact.

According to the California Department of Transportation, none of the improved or unimproved roads located adjacent to the project site are designated as scenic highways. Highway 111, located approximately 3.3 miles to the southwest of the site, is considered to be an *Eligible State Scenic Highway*, though this roadway is not officially designated as such. According to the Rancho Mirage General Plan, Bob Hope Drive (located approximately 2,400 feet to the west of the site), is a *City-designated Scenic road*. In addition to the foregoing, the project property is currently absent of any historic buildings, structures or other former permanent improvements that would have any aesthetic value. The site's development would also facilitate the site's ongoing

maintenance and rehabilitation. Lastly, the project site does not contain any buildings listed in the State or National registrar. As a result, no impacts would occur.

c) No Impact.

There are no protected views in the vicinity of the project site (refer to Subsection A). In addition, the City does not have any zoning regulations or other regulations governing scenic quality other that the development standards for which the new residential units would conform to. As a result, no impacts would occur.

d) Less Than Significant Impact.

The nearest light sensitive receptors are the existing residential units located to the west of the project site. In addition, the properties located to the north, west, and east are zoned for residential development. The project's lighting would be required to comply with Chapter 17.18.050 of the Rancho Mirage Municipal Code. The proposed project's lighting must be designed so as to prevent emissions of glare or light beyond the property line. All exterior lighting at the project site would be conditioned to be Dark-Sky compliant, in order to reduce the amount of light emitted at the project site at night. This would keep the night skies in the City of Rancho Mirage visible to residents and visitors. Riverside County Ordinance Number 655 regulates light pollution in the County. Ordinance No. 655 restricts the use of certain light fixtures emitting into the night sky undesirable light rays which have a detrimental effect on astronomical observation and research. The project would be required to comply to these County's standards. Since the proposed project would be required to adhere to both the City's and County's light and glare requirements, the impacts would be less than significant.

1.3 Mitigation Measures:

None required.

2 - AGRICULTURE AND FORESTRY RESOURCES

AGRICULTURE AND FORESTRY RESOURCES – In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of forest land, timberland, or timberland zoned Timberland Production?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

SOURCES:
California Department of Conservation, Division of Land Resource Protection, Farmland Mapping, and Monitoring Program. *California Important Farmland Finder*.
California Department of Conservation. *State of California Williamson Act Contract Land.*

2.1 SETTING

The California Department of Conservation Farmland Mapping and Monitoring Program (FMMP) was established in 1982 to track changes in agricultural land use and to help preserve areas of Important Farmland. It divides the state's land into eight categories of land use designation based on soil quality and existing agriculture uses to produce maps and statistical data. These maps and data are used to help preserve productive farmland and to analyze impacts on farmland. Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance are all Important Farmland and are collectively referred to as Important Farmland in this analysis. The highest rated Important Farmland is Prime Farmland. The California Land Conservation Act of 1965, or the Williamson Act, allows a city or county government to preserve agricultural land or open space through contracts with landowners. Contracts last 10 years and

are automatically renewed unless a notice of nonrenewal is issued.

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

According to the California Department of Conservation, the project site and the adjacent properties do not contain any areas of Farmland of Statewide Importance, and no agricultural uses are located onsite or adjacent to the property. The project site is indicated as *Other Land*. The developed single family homes located to the west of the project site are indicated as *Urban and Built-Up Land*.

2.2 Discussion of Impacts:

a) No Impact:

According to the California Department of Conservation, the project site and the adjacent properties do not contain any areas of Farmland of Statewide Importance, and no agricultural uses are located onsite or adjacent to the property. According to the California Farmland Mapping and Monitoring Program the proposed project is located in a portion of Rancho Mirage designated as *Other Land*. Other Land is land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than forty acres. The project site, east of the site, and parts of the north and south side of the site are classified as *Other Land.* The west side and parts of north and south side of the site are classified as *Urban and Built-Up Land*. Urban and Built-Up Land is land that is occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. Common examples include residential, industrial, commercial, institutional facilities, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, and water control structures. The project site is not located in an area where the existing zoning promote agricultural uses or is otherwise classified as farmland. Therefore, the implementation of the proposed project would not involve the conversion of any prime farmland, unique farmland, or farmland of statewide importance to urban uses. As a result, no impacts would occur.

b) No Impact:

The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the

westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M). There are no agricultural uses located within the site that would be affected by the project's implementation. According to the California Department of Conservation Division of Land Resource Protection, the project site is not subject to a Williamson Act Contract. As a result, no impacts on existing Williamson Act Contracts would result from the proposed project's implementation.

c) No Impact:

There are no forest lands or timber lands located within or adjacent to the site. Furthermore, the site's existing zoning designation does not contemplate forest land or timber land uses. As a result, no impacts will occur.

d) No Impact:

No forest lands are located within the project site. The proposed use would be restricted to the site and would not affect any land under the jurisdiction of the BLM. As a result, no loss or conversion of forest lands to urban uses would result from the proposed project's implementation.

e) No Impact:

The project would not involve the disruption or damage of the existing environment that would result in a loss of farmland to nonagricultural use or conversion of forest land to non-forest use because the project site does not contain any significant vegetation. As a result, no farmland conversion impacts would occur.

2.3 MITIGATION MEASURES:

None required.

3 - AIR QUALITY

AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

SOURCES:

California Air Pollution Control Officers Association. *California Emissions Estimator Model*. Version 2022. (Used in Appendix A)
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.
Rancho Mirage, City of. *City of Rancho Mirage Municipal Code.* As amended 2023.
South Coast Air Quality Management District. *2022 Air Quality Management Plan*. Adopted December 2, 2022.
South Coast Air Quality Management District. *Air Quality Analysis Handbook*. 1993.
Southern California Association of Governments. The 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy of the Southern California Association of Governments. *Adopted September 3, 2020.*
State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties, and the State — January 1, 2021-2023*. Sacramento, California, May 2023.

3.1 SETTING

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M). The following criteria pollutants are evaluated in this ISMND:

- *Ozone (O_3)* is a nearly colorless gas that irritates the lungs, and damages vegetation. Ozone is formed a by photochemical reaction (when nitrogen dioxide is broken down by

sunlight).

- *Carbon Monoxide (CO)* is a colorless, odorless toxic gas that interferes with the transfer of oxygen to the brain and is produced by the incomplete combustion of carbon-containing fuels emitted as vehicle exhaust.
- *Nitrogen Oxide (NO_x)* is a yellowish-brown gas, which at high levels can cause breathing difficulties. NO_x is formed when nitric oxide (a pollutant from burning processes) combines with oxygen.
- *Sulfur Dioxide* (SO_2) is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Health effects include acute respiratory symptoms.
- *PM_{10} and $PM_{2.5}$* refers to particulate matter less than ten microns and two and one-half microns in diameter, respectively. Particulates of this size cause a greater health risk than larger-sized particles since fine particles can more easily cause irritation.
- *Reactive Organic Gasses (ROG)* refers to organic chemicals that, with the interaction of sunlight photochemical reactions may lead to the creation of “smog.”

Projects in the Salton Sea Air Basin (SSAB) generating construction-related emissions that exceed any of the following emissions thresholds are considered to be significant under CEQA:

- 75 pounds per day of reactive organic compounds;
- 100 pounds per day of nitrogen dioxide;
- 550 pounds per day of carbon monoxide;
- 150 pounds per day of PM_{10};
- 55 pounds per day of $PM_{2.5}$; or,
- 150 pounds per day of sulfur oxides.

A project would have a significant effect on air quality if any of the following operational emissions thresholds for criteria pollutants are exceeded:

- 55 pounds per day reactive organic compounds;
- 55 pounds per day of nitrogen dioxide;
- 550 pounds per day of carbon monoxide;
- 150 pounds per day of PM_{10};
- 55 pounds per day of $PM_{2.5}$; or,
- 150 pounds per day of sulfur oxides.

3.2 Discussion of Impacts:

a) No Impact:

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map

Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

Measures to improve regional air quality are outlined in the SCAQMD's Air Quality Management Plan (AQMP). The most recent AQMP was adopted in 2022 and was jointly prepared with the California Air Resources Board (CARB) and the Southern California Association of Governments (SCAG). The AQMP will help the SCAQMD maintain focus on the air quality impacts of major projects associated with goods movement, land use, energy efficiency, and other key areas of growth. Key elements of the 2022 AQMP include enhancements to existing programs to meet the 24-hour $PM_{2.5}$ Federal health standard and a proposed plan of action to reduce ground-level Ozone. The primary criteria for pollutants that remain non-attainment in the local area include $PM_{2.5}$ and Ozone. Specific criteria to determine a project's conformity with the AQMP is defined in Section 12.3 of the SCAQMD's CEQA Air Quality Handbook.

The proposed Project is consistent with the assumptions underlying the AQMP and the 2003 Coachella Valley PM10 State Implementation Plan and will not conflict with or obstruct implementation of the applicable air quality plan. Projects that are consistent with the projections of employment and/or population forecasts identified in the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) prepared by SCAG are considered consistent with the SCAQMD growth projections, since the RTP/SCS forms the basis of the land use and transportation control portions of the SCAQMD. According to the Demographics and Growth Forecast Technical Report Adopted on September 3, 2020 by SCAG, the City of Rancho Mirage's population is projected to increase from the year 2016 figure of 18,200 to 25,200 in the year 2045, an increase of 7,000. The proposed 17-unit project would potentially result in 32 new residents assuming an average household size of 1.85 persons per unit derived from the most recent California Department of Finance. Therefore, the proposed project is not in conflict with the growth projections established for the City by SCAG. The project's construction emissions would be below the thresholds of significance established by the SCAQMD (the project's daily construction emissions are summarized in Table 2). In addition, the proposed project's long-term (operational) airborne emissions would be below levels that the SCAQMD considers to be a significant impact (refer to Table 3). As a result, no impacts would occur.

b) Less Than Significant Impact:

According to the SCAQMD, any project is significant if it triggers or exceeds the SCAQMD daily emissions threshold identified previously and noted at the bottom of Tables 2 and 3. The proposed project's construction and operation would not lead to a violation of the above-mentioned criteria. The analysis of daily construction and operational emissions was prepared utilizing the California Emissions Estimator Model (CalEEModV.2022.1.1.21). For air quality modeling purposes, a twelve-month period of construction for all construction phases was assumed.

Table 2 Estimated Daily Construction Emissions (lbs./day)

Construction Phase	ROG	NOx	CO	SO2	PM10	PM2.5
Maximum Daily Emissions	10.5	31.7	31.1	0.05	9.26	5.25
Daily Thresholds	75	100	550	150	150	55
Significant Impact?	No	No	No	No	No	No

California Air Pollution Control Officers Association. *California Emissions Estimator Model*. Version 2022.1.1.21 (Used in Appendix A)

Long-term emissions refer to those air quality impacts that would occur once the proposed project has been constructed and is operational. These impacts would continue over the operational life of the project. The two main sources of operational emissions include mobile emissions and area emissions related to off-site electrical generation. The analysis of long-term operational impacts summarized in Table 3 also used the CalEEModV.2022.1.1.21 computer model. The analysis summarized in Table 3 indicates that the operational (long-term) emissions would be below the SCAQMD daily emissions thresholds.

Table 3 Estimated Operational Emissions in lbs./day

Emission Source	ROG	NOx	CO	SO2	PM10	PM2.5
Maximum Daily Emissions	1.57	1.05	9.48	0.02	1.64	0.43
Daily Thresholds	55	55	550	150	150	55
Significant Impact?	No	No	No	No	No	No

California Air Pollution Control Officers Association. *California Emissions Estimator Model*. Version 2022.1.1.21 (Used in Appendix A)

The analysis presented in Tables 2 and 3 reflects projected emissions that are typically higher during the summer months and represent a worse-case scenario. As indicated in Tables 2 and 3, the impacts are considered to be less than significant. In addition, the SCAQMD Rule Book contains numerous regulations governing various activities undertaken within the district. Among these regulations is Rule 403.2 – Fugitive Dust Control for the South Coast Planning Area, which was adopted in 1996 for the purpose of controlling fugitive dust. Adherence to Rule 403.2 regulations is required for all projects undertaken within the district. Future construction truck drivers must also adhere to Title 13 - §2485 of the California Code of Regulations, which limits the idling of diesel-powered vehicles to less than five minutes. Adherence to the aforementioned standard condition would minimize odor impacts from diesel trucks. Adherence to Rule 403 Regulations and Title 13 - §2485 of the California Code of Regulations would further reduce the potential impacts. As a result, the impacts would be less than significant.

c) Less Than Significant Impact:

According to the SCAQMD, residences, schools, daycare centers, playgrounds, and medical facilities are considered sensitive receptor land uses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M). As indicated in the previous section (refer to Tables 2 and 3, the

proposed residential development would not result in an exceedance of SCAQMD thresholds. As indicated in Table 4, the project is not anticipated to exceed construction LSTs for particulates. Further analysis of the CalEEMod worksheets indicated that the primary source of construction PM emissions is fugitive dust. Adherence to additional mandatory Rule 403 regulations would reduce fugitive dust emissions by approximately 50% to levels that are less than significant. Rule 403 requires that temporary dust covers be used on any piles of excavated or imported earth to reduce wind-blown dust. In addition, all clearing, earthmoving, or excavation activities must be discontinued during periods of high winds (i.e., greater than 15 mph), so as to prevent excessive amounts of fugitive dust.

Table 4 Local Significance Thresholds Exceedance SRA 30 for 5 Acres of Disturbance (site is 8.42 acres)

Emissions	Maximum Emissions (lbs./day)	Type	Allowable Emissions Threshold (lbs./day) and a Specified Distance from Receptor (in meters)				
			25	50	100	200	500
NO_x	**1.05**	Operation	**304**	340	425	547	875
NO_x	**31.7**	Construction	**304**	340	425	547	875
CO	**9.48**	Operation	**2,292**	3,237	5,331	10,178	31,115
CO	**31.1**	Construction	**1,480**	3,237	5,331	10,178	31,115
PM_{10}	**1.64**	Operation	**4**	11	16	27	60
PM_{10}	**9.26**	Construction	**14**	44	67	112	248
$PM_{2.5}$	**0.43**	Operation	**2**	3	5	9	31
$PM_{2.5}$	**5.25**	Construction	**8**	11	19	37	128

California Air Pollution Control Officers Association. *California Emissions Estimator Model*. Version 2022.1.1.21 (Used in Appendix A)

The Coachella Valley is currently designated as a serious nonattainment area for PM10 (particulate matter with an aerodynamic diameter of 10 microns or less). The U.S. EPA-approved Coachella Valley PM_{10} State Implementation Plan is in place with an attainment strategy for meeting the PM_{10} standard. Some of the existing measures include the requirement of detailed dust control plans from builders that specify the use of more aggressive and frequent watering, soil stabilization, wind screens, and phased development to minimize fugitive dust. Appropriate air quality measures to prevent fugitive dust are required by the City's Fugitive Dust Control ordinance and plan implementation requirements, which are consistent with SCAQMD Rules 403 and 403.1 that apply to the Coachella Valley strategy for reducing fugitive dust emissions. Under the City's dust control regulations, a Local Air Quality Management Plan (LAQMP) must be prepared and approved prior to any earth-moving operations. Consistent with SCAQMD Rules 403 and 403.1, implementation of the Fugitive Dust Control Plan is required to occur under the supervision of an individual with training on Dust Control in the Coachella Valley. The plan would include methods to prevent sediment track-out onto public roads, prevent visible dust emissions from exceeding a 20-percent opacity, and prevent visible dust emissions from extending more than 100 feet (vertically or horizontally from the origin of a source) or crossing any property line.

The project's contractors must comply with other SCAQMD regulations governing equipment idling and emissions controls as well as mandatory SCAQMD regulations governing fugitive dust (Rule 403) and odors (Rule 1401). In addition, future truck drivers visiting the site during the project's construction must adhere to Title 13 - §2485 of the California Code of Regulations, which

limits the idling of diesel-powered vehicles to less than five minutes. These regulations would reduce particulate emissions by as much as 50%. As a result, the impacts would be less than significant.

d) No Impact:

The SCAQMD has identified those land uses that are typically associated with odor complaints. These uses include activities involving livestock, rendering facilities, food processing plants, chemical plants, composting activities, refineries, landfills, and businesses involved in fiberglass molding. The proposed residential project would not result in the generation of any odors. In addition, construction truck drivers must adhere to Title 13 - §2485 of the California Code of Regulations, which limits the idling of diesel-powered vehicles to less than five minutes. Furthermore, the project's contractors must adhere to SCAQMD rules and regulations that govern fugitive dust during site preparation which would significantly reduce the generation of fugitive dust. As a result, no odor-related impacts would occur.

3.3 MITIGATION MEASURES:

None required.

4 - BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES – Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☒	☐	☐

SOURCES:

Rancho Mirage, City of. City of Rancho Mirage 2017 General Plan Update. Adopted November 16, 2017.
Coachella Valley Association of Governments. Coachella Valley Multiple Species Habitat Conservation Plan.
City of Rancho Mirage Municipal Code. As amended. August 2016
RCA Associates, Inc. *General Biological Resources Assessment (TTM 38041)*. April 26, 2023.

4.1 SETTING

Sensitive biological resources include a variety of plant and animal species that are specialized and endemic to a particular habitat type. Due to loss of habitat, some of these species have been designated by either, or both, the federal and state government resource agencies as threatened or endangered. Species listed as threatened include those whose numbers have dropped to such low levels and/or whose populations are so isolated that the continuation of the species could be jeopardized. Endangered species are those with such limited numbers or subject to such extreme circumstances that they are considered in imminent danger of extinction. Other government agencies and resource organizations also identify sensitive species, those that are naturally rare and that have been locally depleted and put at risk by human activities. While not in imminent danger of jeopardy or extinction, sensitive species are considered vulnerable and can become candidates for future listing as threatened or endangered.

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The site contains a few species of plant which include the creosote bush (Larrea tridentata), hairy sand verbena (*Abronia villosa var. villosa*), Desert palafox (*Palafoxia arida*), whitestem blazingstar (*Mentzelia albicaulis*), Flatspine burr ragweed (*Ambrosia acanthicarpa*), London rocket (*Sisymbrium irio*), Dyebush (*Psorothamnus emoryi*) and cheatgrass (*Bromus tectorum*).

4.2 DISCUSSION OF IMPACTS:

a) Less Than Significant Impact With Mitigation:

Birds observed included Says phoebe (Sayornis saya), white throated swift (Aeronautes saxatalis), ravens (Corvus corax), rock pigeon (Columba livia), mourning dove (Zenaida macroura), northern mocking bird (Mimus polyglottos) and house finch (Haemorhous mexicanus). Only a single mammal was observed, the black tailed jackrabbit (Lepus californicus) was seen during the April 2023 survey. The Antelope Ground squirrel (Ammospermophilus leucurus) and California ground squirrel (Otospermophilus beecheyi) were not observed during the field investigation, we can assume they are in the area due to current conditions and population distributions. Other wildlife species that may occur on site include desert cottontails (Sylvilagus audubonii) and California ground squirrels (Otospermophilus beecheyi), and Merriam's kangaroo rats (Dipodomys merriami) may also occur on the site given their wide-spread distribution in the region. No distinct wildlife corridors were identified on the site or in the immediate area.

The Western Joshua tree (*Yucca brevifolia*), a candidate threatened species under the California Endangered Species Act (CESA), was not observed on site. The following are the listed and special status species that have the ability to occur on the project site. It is not a comprehensive list of all the species in the quad. This information has been taken from the California Natural Diversity Database and is using the most current version.

Desert Tortoise: The property supports no suitable habitat for the desert tortoise based on the location of the site in a developed area of Rancho Mirage. No tortoises were observed anywhere within the property boundaries during the April 2023 surveys. In addition, Rancho Mirage falls outside the standard range of the Desert Tortoise. The protocol survey results are valid for one year as per CDFW and USFWS requirements.

Burrowing Owl: The site is located within documented burrowing owl habitat according to CNDDB (2023). No owls were seen on the property during the survey, and minimal suitable habitat was observed. Burrowing owls are not expected to occur on the site due to lack of suitable vegetation and burrows.

Coachella Valley fringe-toed lizard: Coachella Valley fringe-toed lizard have not been recently observed in the area according to CNDDB (2023). The lizards are not expected to occur on the site due to its location being bordered by numerous developments and roadways that act as natural barriers to entry. The Coachella Valley fringe-toed lizard may be very infrequent in this specific area due to the area being highly developed and the amount of human traffic around the project site.

Sensitive Plants: There are four plant species of special concern, these species are the Flat-seeded spurge, Coachella Valley milk-vetch, Horn's milk-vetch and Chaparral sand-verbena. There is marginal suitable habitat for three of the four species being the Flat-seeded spurge, Coachella Valley milk-vetch and Chaparral sand-verbena. These species occur in desert scrub or creosote bush scrub habitats. The horn's milk-vetch occurs in wetland/riparian habitats which are not present on site. Even with some marginally suitable habitat, none of the four plant species of special concern were observed on site and are not expected to occur on site in the future.

Future development activities include the grading and removal of all vegetation from the 8.4-acre parcel; however, cumulative impacts to the general biological resources (plants and animals) in the surrounding area are expected to be negligible. This assumption is based on the habitat containing scarce vegetation of non-native species. As discussed above, the site does not support any desert tortoises or burrowing owls due to the lack of suitable habitat and potential burrows. Joshua trees (a state candidate species) were not observed in the field investigations during April 2023 survey. Landscaping would be provided along the roadway frontages and sidewalks and would include acacias and date palm trees, would include date palm and acacia trees, agave shrubs, and drought tolerant (xeriscape) ground cover. To establish the existing environmental setting with respect to biological resources, CDFW recommends that the following mitigation measure, as well as any necessary mitigation measures:

- **(Biological Resources Mitigation No. 1)** Prior to project construction activities, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511), will be completed by the Applicant and a qualified biologist. Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary.

- **(Biological Resources Mitigation No. 2)** In the event there is a delay in the project's construction (i.e. pauses in construction activities such as utility extensions and stormwater improvements) the Applicant shall retain the service of a qualified biologist to reassess biological resources resulting from an extended timeline for the project activities. Wildlife may move into disturbed or graded sites when construction is paused. These preconstruction surveys for biological resources will need to be repeated prior to project activities and after pauses in construction to assess the presence of biological resources and to avoid or reduce impacts to less than significant.

As stated above, future development activities include the grading and removal of all vegetation from the 8.4-acre parcel; however, cumulative impacts to the general biological resources (plants and animals) in the surrounding area are expected to be negligible. This assumption is based on the habitat containing scarce vegetation of non-native species. The following mitigation measures should be considered:

- **(Biological Resources Mitigation No. 3)** Prior to project construction activities, a thorough, recent, floristic-based assessment of special status plants and natural communities, following CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (see https://www.wildlife.ca.gov/Conservation/Plants) shall be performed by a qualified biologist. Should any state-listed plant species be present in the project area, the project proponent shall obtain appropriate CESA authorization for those species prior to the start of project activities. Should other special-status plants or natural communities be present in the project area, on-site or off-site habitat restoration (whichever is applicable) and/or enhancement and preservation should be evaluated and discussed in detail. Where habitat preservation is not available on-site, off-site land acquisition, management, and preservation should be evaluated.
- **(Biological Resources Mitigation No. 4)** Prior to construction and issuance of any grading permit, the project Applicant shall oversee the preparation and submittal to the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service, for

review and approval, a plan to salvage sand-dependent CVMSHCP Covered Species within the project area. The plan shall be prepared by a qualified biologist experienced in surveying for and handling sand-dependent Covered Species. The plan shall include, but not be limited to, the species-specific salvage methods and timing for each sand-dependent Covered Species identified within the project site and the location(s) where each species will be translocated. Only qualified biologist(s) with appropriate state and federal permits to handle special-status species shall carry out salvage activities.

- **(Biological Resources Mitigation No. 5)** Very limited suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities. If burrowing owls are detected during the focused surveys, the qualified biologist and Project proponent shall prepare a Burrowing Owl Plan that shall be submitted to CDFW for review and approval prior to commencing Project activities. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites, acres of burrowing owl habitat that will be impacted, details of site monitoring, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been evaluated as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. If impacts to occupied burrows cannot be avoided, information shall be provided regarding adjacent or nearby suitable habitat available to owls. The project proponent shall implement the Burrowing Owl Plan following CDFW and USFWS review and approval. Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of project-related activities and within 24 hours prior to ground disturbance, in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version). Preconstruction surveys should be performed by a qualified biologist following the recommendations and guidelines provided in the Staff Report on Burrowing Owl Mitigation. If the preconstruction surveys confirm occupied burrowing owl habitat, Project activities shall be immediately halted. The qualified biologist shall coordinate with CDFW and prepare a Burrowing Owl Plan that shall be submitted to CDFW and USFWS for review and approval prior to commencing Project activities.
- **(Biological Resources Mitigation No. 6)** Regardless of the time of year, nesting bird surveys shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys, a qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the

qualified biologist familiar with the nesting phenology of the nesting species and based on nest and buffer monitoring results. Construction activities may not occur inside the established buffers, which shall remain on site until a qualified biologist determines the young have fledged or the nest is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the Project has been completed. The qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance.

- **(Biological Resources Mitigation No. 7)** During all project construction activities, the Applicant and the construction contractors shall restrict use of generators except for temporary use in emergencies. The Applicant and the construction contractors shall ensure the use of noise suppression devices such as mufflers or enclosures for generators. Sounds generated from any means must be below the 55-60 dB range within 50-feet from the source.
- **(Biological Resources Mitigation No. 8)** During project construction and operation, the project Applicant and construction contractors shall eliminate all nonessential lighting throughout the project area and avoid or limit the use of artificial light during the hours of dawn and dusk when many wildlife species are most active. The City shall ensure that lighting for Project activities is shielded, cast downward, and does not spill over onto other properties or upward into the night sky. The City and project Applicant shall ensure use of LED lighting with a correlated color temperature of 3,000 Kelvins or less.

The above mitigation measures would reduce the impacts to levels that are less than significant.

b) No Impact:

No drainage channels were observed within the site boundaries. As a result, no impacts are anticipated.

c) No Impact:

No sensitive habitats (e.g., wetlands, vernal pools, critical habitats for sensitive species, etc.) were observed on the site during the field investigations. No riparian vegetation (e.g., cottonwoods, willows, etc.) exist on the site. No potential channels were observed on the property and it is the opinion of RCA Associates that no further surveys will be necessary. As a result, no impacts are anticipated.

d) No Impact:

The site's utility as a habitat and a migration corridor is constrained by the presence of an adjacent roadway and the development that is present in the neighboring areas. As a result, no impacts are anticipated.

e) No Impact:

Future development activities include the grading and removal of all vegetation from the 8.4-acre parcel; however, cumulative impacts to the general biological resources (plants and animals) in the surrounding area are expected to be negligible. This assumption is based on the habitat containing scarce vegetation of non-native species. As discussed above, the site does not support any desert tortoises or burrowing owls due to the lack of suitable habitat and potential burrows. Joshua trees (a state candidate species) were not observed in the field investigations during April 2023 survey. As a result, no impacts are anticipated.

f) Less than Significant Impact with Mitigation:

The Project occurs within the CVMSHCP plan area and is subject to provisions and policies of the CVMSHCP. To comply with Local Permittee obligations under the CVMSHCP, CDFW recommends the following mitigation measure:

- **(Biological Resources Mitigation No. 9)** Prior to construction and issuance of any grading permit, the City of Rancho Mirage and project applicant shall ensure compliance with the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) and its associated Implementing Agreement and the City shall ensure the collection of payment of the CVMSHCP Local Development Mitigation Fee.

The proposed project's implementation would not be in conflict with the provisions of any other adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plans.

Although the site is located within the CVMSHCP boundary, the site is not located within a biological sensitive or any conservation areas. As a result, impacts are less than significant with mitigation.

4.3 MITIGATION MEASURES:

The analysis of biological impacts determined that the following mitigation measures would be required to reduce the project's impacts to levels that would be less than significant.

Biological Resources Mitigation Measure No. 1. Prior to Project construction activities, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the Project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511), will be completed by the Applicant and a qualified biologist. Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary.

Biological Resources Mitigation Measure No. 2. In the event there is a delay in the project's construction (i.e. pauses in construction activities such as utility extensions and stormwater improvements) the Applicant shall retain the service of a qualified biologist to reassess biological resources resulting from an extended timeline for the project activities. Wildlife may move into disturbed or graded sites when construction is paused. These preconstruction surveys for biological resources will need to be repeated prior to project activities and after pauses in construction to assess the presence of biological resources and to avoid or reduce impacts to less than significant.

Biological Resources Mitigation Measure No. 3. Prior to Project construction activities, a thorough, recent, floristic-based assessment of special status plants and natural communities, following CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (see https://www.wildlife.ca.gov/Conservation/Plants) shall be performed by a qualified biologist. Should any state-listed plant species be present in the Project area, the Project proponent shall obtain appropriate CESA authorization for those species prior to the start of Project activities. Should other special-status plants or natural communities be present in the Project area, on-site or off-site habitat restoration (whichever is applicable) and/or enhancement and preservation should be evaluated and discussed in detail. Where habitat preservation is not available on-site, off-site land acquisition, management, and preservation should be evaluated.

Biological Resources Mitigation Measure No. 4. Prior to construction and issuance of any grading permit, the project Applicant shall oversee the preparation and submittal to the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service, for review and approval, a plan to salvage sand-dependent CVMSHCP Covered Species within the Project area. The plan shall be prepared by a qualified biologist experienced in surveying for and handling sand-dependent Covered Species. The plan shall include, but not be limited to, the species-specific salvage methods and timing for each sand-dependent Covered Species identified within the Project site and the location(s) where each species will be translocated. Only qualified biologist(s) with appropriate state and federal permits to handle special-status species shall carry out salvage activities.

Biological Resources Mitigation Measure No. 5. Very limited suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities. If burrowing owls are detected during the focused surveys, the qualified biologist and Project proponent shall prepare a Burrowing Owl Plan that shall be submitted to CDFW for review and approval prior to commencing Project activities. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites, acres of burrowing owl habitat that will be impacted, details of site monitoring, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been evaluated

as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. If impacts to occupied burrows cannot be avoided, information shall be provided regarding adjacent or nearby suitable habitat available to owls. The Project proponent shall implement the Burrowing Owl Plan following CDFW and USFWS review and approval. Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of Project-related activities and within 24 hours prior to ground disturbance, in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version). Preconstruction surveys should be performed by a qualified biologist following the recommendations and guidelines provided in the Staff Report on Burrowing Owl Mitigation. If the preconstruction surveys confirm occupied burrowing owl habitat, Project activities shall be immediately halted. The qualified biologist shall coordinate with CDFW and prepare a Burrowing Owl Plan that shall be submitted to CDFW and USFWS for review and approval prior to commencing Project activities.

Biological Resources Mitigation Measure No. 6. Regardless of the time of year, nesting bird surveys shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys, a qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the qualified biologist familiar with the nesting phenology of the nesting species and based on nest and buffer monitoring results. Construction activities may not occur inside the established buffers, which shall remain on site until a qualified biologist determines the young have fledged or the nest is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the Project has been completed. The qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance.

Biological Resources Mitigation Measure No. 7. During all Project construction activities, the Applicant and the construction contractors shall restrict use of generators except for temporary use in emergencies. The Applicant and the construction contractors shall ensure the use of noise suppression devices such as mufflers or enclosures for generators. Sounds generated from any means must be below the 55-60 dB range within 50-feet from the source.

Biological Resources Mitigation Measure No. 8. During Project construction and operation, the project Applicant and construction contractors shall eliminate all nonessential lighting throughout the Project area and avoid or limit the use of artificial light during the hours of dawn and dusk when many wildlife species are most active. The City shall ensure that lighting for Project activities is shielded, cast downward, and does not spill over onto other properties or upward into the night sky. The City and project Applicant shall ensure use of LED lighting with a correlated color temperature of 3,000 Kelvins or less.

Biological Resources Mitigation Measure No. 9. Prior to construction and issuance of any grading permit, the City of Rancho Mirage and project Applicant shall ensure compliance with the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) and its associated Implementing Agreement and the City shall ensure the collection of payment of the CVMSHCP Local Development Mitigation Fee.

5 - CULTURAL RESOURCES

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

SOURCES:

Southern California Association of Governments. The 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy of the Southern California Association of Governments. *Adopted September 3, 2020.*
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.
U. S. Department of the Interior, National Park Service. National Register of Historic Places. http://nrhp.focus.nps.gov. 2023.
CRM TECH. *Addendum to Historical/Archaeological Resources Survey Report for Tentative Tract Map No. 38041*. June 6, 2023.

5.1 SETTING

Historic structures and sites are defined by local, State, and Federal criteria. A site or structure may be historically significant if it is locally protected through a General Plan or historic preservation ordinance. In addition, a site or structure may be historically significant according to State or Federal criteria even if the locality does not recognize such significance. To be considered eligible for the National Register, a property's significance may be determined if the property is associated with events, activities, or developments that were important in the past, with the lives of people who were important in the past, or represents significant architectural, landscape, or engineering elements. Specific criteria include the following:

- Districts, sites, buildings, structures, and objects that are associated with the lives of significant persons in or past;
- Districts, sites, buildings, structures, and objects that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or,
- Districts, sites, buildings, structures, and objects that have yielded or may be likely to yield, information important in history or prehistory.

Ordinarily, properties that have achieved significance within the past 50 years are not considered eligible for the National Register. However, such properties *would qualify* if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- A religious property deriving primary significance from architectural or artistic distinction or historical importance;

- Districts, sites, buildings, structures, and objects that are associated with events that have made a significant contribution to the broad patterns of our history;
- A building or structure removed from its original location that is significant for architectural value, or which is the surviving structure is associated with a historic person or event;
- A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building associated with his or her productive life;
- A cemetery that derives its primary importance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events;
- A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived;
- A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or,
- A property achieving significance within the past 50 years if it is of exceptional importance.

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

5.2 Discussion of Impacts:

a) No Impact:

Historical sources consulted during this study yielded no evidence of any settlement or development activities in the project area throughout the historic period. In the surrounding area, the earliest such activities evidently took place in the early post-WWII period, when several scattered buildings appeared across much of Section 30 and along newly constructed roads, including the forerunner of present-day Via Florencia. Archival records indicate that these buildings were the results of a wave of five-acre homestead claims on public land under the provisions of the Small Tract Act of 1938, a practice that was widespread in the southern California desert region at the time. However, none of these so-called “jackrabbit homesteads” were found within the project area itself, which has remained vacant, undeveloped, and apparently unused to the present time despite accelerated growth in the surrounding area since the 1980s. The intensive-level field survey of the project area produced negative results for potential “historical resources,” and no buildings, structures, objects, site, or artifact deposits dating to the prehistoric or historic period were encountered throughout the course of the survey. Since the project’s

implementation would not impact any Federal, State, or locally designated historic resources, no impacts would occur.

b) Less Than Significant Impact:

On September 22, 2022, CRM TECH submitted a written request to the State of California Native American Heritage Commission (NAHC) for a records search in the commission's Sacred Lands File. The NAHC is the State of California's trustee agency for the protection of "tribal cultural resources," as defined by California Public Resources Code §21074, and is tasked with identifying and cataloging properties of Native American cultural value throughout the state. In the meantime, CRM TECH notified the nearby Agua Caliente Band of Cahuilla Indians of the upcoming archaeological field survey and invited tribal participation. The responses from the NAHC and the Agua Caliente Band are summarized in the remainder of this section.

On November 1, 2022, Daniel Ballester carried out the field survey of the project area with the assistance of Nicole Raslich, archaeological technician with the Agua Caliente Tribal Historic Preservation Office. The survey was conducted at an intensive level by walking a series of parallel north-south transects at 15-meter (approximately 50-foot) intervals. In this way, the entire project area was systematically and carefully examined for any evidence of human activities dating to the prehistoric or historic period (i.e., 50 years or older). Ground visibility was excellent (95 to 100 percent) as the vegetation growth of the property was generally sparse, although a small portion of the project area was obscured by large creosote bushes. In this environment, however, shifting sands are more likely to contribute to obscured cultural remains than vegetation would.

CRM TECH has completed a historical/archaeological resources survey on approximately 1.7 acres of vacant land that have been added to Tentative Tract Map (TTM) No. 38041 since the completion of the Phase I cultural resources study for the project in March 2023 (Ballester 2023). The additional project area consists of the western portion of Assessor's Parcel No. 685-080-031, which was previously excluded from TTM 38041. It is located on the east side of Via Josefina at the intersection of Victory Lane, adjacent to the western boundary of the original project area, and in the northwest quarter of Section 30, T4S R6E, San Bernardino Baseline and Meridian (Figure 1).

On May 18, 2023, CRM TECH field director Daniel Ballester completed the intensive-level field survey of the additional project area by walking a series of parallel north-south transects spaced 15 meters (approximately 50 feet) apart. Like the original project area, the additional acreage lies across generally level terrain with fine dune sands mixed with some rocks covering the ground surface. Elevations on the property range approximately from 315 feet to 330 feet above mean sea level. The scattered vegetation growth consists mainly of creosote, brittlebush, wild mustard, and other small desert shrubs and grasses. Ground visibility was good to excellent (90-100%) throughout the area (Figure 2).

The survey encountered no potential "historical resources" within or adjacent to the additional project area. The building that once occupied the southernmost portion of the property did not leave any identifiable archaeological remains. Other than two clusters of tamarisk trees, no features survive to mark the former location of the building. The area around the tamarisk trees has evidently been used to dump refuse (primarily landscaping waste) in relatively recent times, but none of the items is of any historical/archaeological interest.

According to EIC records, the project area had not been surveyed for cultural resources prior to this study (Fig. 5), and no cultural resources had been recorded on or adjacent to the property. Within the one-mile scope of the records search, EIC records show at least 34 previous studies on various tracts of land and linear features, which collectively covered roughly 40 percent of the land within the scope of the records search (Fig. 5). As a result of these and other studies in the vicinity, five prehistoric sites, seven historic-period sites, and five isolates—i.e., localities with fewer than three artifacts— have been identified within the one-mile radius.

The prehistoric sites in the vicinity consisted mainly of lithic and ceramic scatters and seasonal resource processing locations, but two of the sites, 33-017009 and 33-017010, also contained human remains. The historic-period sites were all fairly common for the Coachella Valley area, such as a refuse scatter, a ranch, and infrastructure features associated with roads, irrigation works, and the Southern Pacific (now Union Pacific) Railroad. All of these sites and isolates were located to the north of the project location, at distances of at least a half-mile at the nearest spot. Therefore, none of them requires further consideration during this study.

In response to CRM TECH's inquiry, the NAHC reported in a letter dated November 3, 2022, that the Sacred Lands File search did not identify any Native American cultural resources in the project vicinity. Noting that the absence of specific information would not necessarily indicate the absence of cultural resources, however, the NAHC recommended that local Native American groups be consulted for further information and provided a referral list potential contacts in the region.

As a result, the impacts would be less than significant.

c) Less Than Significant Impact:

There are no dedicated cemeteries located within or in the vicinity of the project site. The proposed project would be restricted to the project site and therefore would not affect any dedicated cemeteries in the vicinity. Notwithstanding, the following mitigation is mandated by the California Code of Regulations (CCR) Section 15064.5(b)(4):

> "A lead agency shall identify potentially feasible measures to mitigate significant adverse changes in the significance of an historical resource. The lead agency shall ensure that any adopted measures to mitigate or avoid significant adverse changes are fully enforceable through permit conditions, agreements, or other measures."

Additionally, Section 5097.98 of the Public Resources Code states:

> "In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with (b) Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27491 of the Government Code or any other related provisions of law concerning investigation of the circumstances, 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. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner

of the discovery or recognition of the human remains. If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission."

Adherence to the standard condition would ensure potential impacts remain at levels that are less than significant.

5.3 MITIGATION MEASURES:

None Required.

6 - ENERGY

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

SOURCES:
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.
SCAQMD. SCAQMD Air Quality Handbook. 1993.
California Air Resources Board and the Southern California Air Quality Management District. California Emissions Estimator Model (CalEEModV.2022.1.1.21).

6.1 SETTING

Imperial Irrigation District (IID) would provide electricity to the project site. Natural gas service is provided by the Southern California Gas Company. Currently, the existing site is vacant and does not use electricity or natural gas. Electricity and natural gas are the primary sources of energy in the City of Rancho Mirage. Electricity is provided primarily by Southern California Edison (SCE) and Imperial Irrigation District (IID) provides services for everything north of Gerald Ford Drive and east of Bob Hope Drive in the City of Rancho Mirage.

The Rancho Mirage City Council started RMEA for the purpose of helping to reduce the community's IID electricity bills. Pursuant to CCA law, RMEA is an all-new, locally-run, not-for-profit power program created by the City of Rancho Mirage. RMEA purchases power directly from power providers, pays consultants for compliance functions, and sets electricity rates based on costs. The RMEA's power is delivered through IID poles and wires. IID is still the utility and would continue to bill and collect from customers but using RMEA's lower electricity rates would allow businesses and residents to save 5 percent. IID facilities include 12 kV transmission lines for local distribution. High voltage lines for more distant transmission range up to 115 kV and 230 kV. Substations step down voltage for local distribution and use. The IID operates 133 substations within its service area and two substations are located near the City of Rancho Mirage: one on Interstate 10 and Monterey Avenue (Edom Substation) and one on East Ramon Road (Ramon Substation). These substations would serve the project site.

6.2 Discussion of Impacts:

a) Less than Significant Impact:

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level

site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

During construction, the proposed project would consume energy related to the use of fuels used to power construction vehicles and other equipment that would be used during site clearing, grading, and construction. Fuel use associated with construction vehicle trips generated by the proposed project was also estimated; trips include construction worker trips, haul truck trips for material transport, and vendor trips for construction material deliveries. Energy consumed during construction would be temporary in nature and would not present a significant demand on energy resources. The proposed project would be constructed pursuant to the 2022 energy standards of Title 24. Construction equipment greater than 150 horsepower (hp), is also required to comply with the Environmental Protection Agency (EPA)/California Air Resources Board (CARB) Tier 3 emissions standards and shall ensure that all construction equipment is tuned and maintained in accordance with the manufacturer's specifications. For engines from 175 to less than 750 hp, the Tier 4 Final regulations took effect on January 1, 2014. For engines from 49 to less than 75 hp, it took effect on January 1, 2013. Finally, for engines from 75 to less than 175 hp, the Tier 4 regulations took effect on January 1, 2015. In addition, the project would be required to comply with the California Code of Regulations, Title 13, Sections 2449(d)(3) and 2485, which minimizes the idling time of construction equipment either by shutting it off when not in use or by reducing the time of idling to no more than five minutes. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption. Therefore, no significant impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction are anticipated and no mitigation measures are required.

The increased demand is expected to be sufficiently served by the existing Imperial Irrigation District (IID) facilities. As shown in Table 5, the proposed project is anticipated to consume 262 kWh daily. The proposed project is located within the service area of the Southern California Gas Company. The project site currently has no demand for natural gas. Therefore, the development of the proposed project would create a permanent increase in the demand for natural gas. As shown in Table 5, the proposed project is anticipated to consume 3,776.8 cubic feet of natural gas on a daily basis.

Table 5 Proposed Project's Energy Consumption

Energy Type	Consumption Rate	Daily Energy Consumption
Electrical Consumption	9,339.24 kWh/unit/year	434.98 kWh/Day
Natural Gas Consumption	35,564.29 BTU/unit/year	1656.42 BTU/Day

California Air Pollution Control Officers Association. *California Emissions Estimator Model*. Version 2022.1.1.21 (Used in Appendix A)

According to the CalEEMod air quality emissions model, the 17 units would consume 158,767 kWh of electricity on an annual basis. According to the same model, the 17 units would consume 604,593 BTUs on an annual basis. The proposed project's energy consumption would be related to energy that would be used for lighting and other household activities. Lighting would be required to follow the City's Outdoor Lighting Policy, which includes the use of energy efficient lighting. For these reasons, the project would not result in the wasteful, inefficient, or unnecessary use of energy. The project applicant would be required to work with the local electrical utility company to identify existing and future strategies that would be effective in reducing energy consumption. As a result, the impact would be less than significant.

b) Less than significant impact:

The State Building Standards Commission adopted updates to the California Green Building Standards Code (Code) which became effective on January 1, 2023. The California Code of Regulations (CCR) Title 24, Part 11: California Green Building Standards (Title 24) became effective to aid efforts to reduce GHG emissions associated with energy consumption. Title 24 now requires 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. The proposed project as well as any future development within the remainder of the project site would be required to conform to all pertinent energy conservation requirements. The proposed project would be required to comply with all pertinent Title 24 requirements along with other Low Impact Development (LID) requirements.

The project would provide for, and promote, energy efficiencies required under other applicable Federal and State of California standards and regulations, and in doing so, 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 single family homes 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. Further, the project would not cause or result in the need for additional energy producing facilities or energy delivery systems. As a result, the potential impacts would be less than significant.

6.3 Mitigation Measures:

None required.

7 - GEOLOGY AND SOILS

GEOLOGY AND SOILS – Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☒	☐
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

SOURCES:
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.
UC Davis. *SoilWeb.* Website accessed October 10, 2023.
United States Department of Agriculture. Natural Resources Conservation Service. Website accessed October 10, 2023.
Landmark Geo Engineers and Geologists. Geotechnical Report for APNs 685-030-006, 685-080-010, and 685-080-031. December 16, 2023.

7.1 SETTING

The City of Rancho Mirage is located in a seismically active region. Earthquakes from several active and potentially active faults in the Southern California region could affect the proposed project site. In 1972, the Alquist-Priolo Earthquake Zoning Act was passed in response to the damage sustained in the 1971 San Fernando Earthquake. The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The closest active fault to the project site is at the San Andreas Fault, approximately 3.6 miles northeast. Therefore, due to the distance of the fault zone, it can be concluded that the potential fault-rupture risk is low. Surface ruptures are visible instances of horizontal or vertical displacement, or a combination of the two. The amount of ground shaking depends on the intensity of the earthquake, the duration of shaking, soil conditions, type of building, and distance from epicenter or fault.

The potential impacts from fault rupture and ground shaking are considered no greater for the project site than for the surrounding areas given the distance between the site and the fault trace. However, the deep groundwater in Rancho Mirage does not allow the saturation of the sediments; therefore, the potential for liquefaction to occur at the project site is less than significant. Windblown sand and other recently deposited sediments are typically loose and, therefore, potentially subject to seismically induced settlement.

7.2 DISCUSSION OF IMPACTS:

a) Less Than Significant Impact:

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

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on the surface trace of active faults. closest active fault to the project site is at the San Andreas Fault, approximately 3.5 miles northeast. Therefore, due to the distance of the fault zone, it can be concluded that the potential fault-rupture risk is low. Surface ruptures are visible instances of horizontal or vertical displacement, or a combination of the two. The amount of ground shaking depends on the intensity of the earthquake, the duration of shaking, soil conditions, type of building, and distance from epicenter or fault. The potential impacts from fault rupture and ground shaking are considered no greater for the project site than for the surrounding areas given the distance between the site and the fault trace. However, the deep groundwater in Rancho Mirage does not allow the saturation of the sediments; therefore, the potential for liquefaction to occur at the project site is less than significant. Windblown sand and other recently deposited sediments are typically loose and, therefore, potentially subject to seismically induced settlement.

According to the City's General Plan, the project area has a moderate susceptibility to seismically induced settlement. Strong seismic shaking, the 2017 General Plan states, can cause densification or compaction of soils resulting in local or regional settlement of the ground surface, which can cause damage to foundations and structures. To ensure the safety of the project against seismically induced hazards, the project site shall adhere to the standard design requirements stated in the most recent California Building Code (CBC), and the City's building standards. Overall, impacts from seismically induced ground failure such as liquefaction and settlement are anticipated to be less than significant at the project site. As a result, the potential impacts regarding liquefaction and landslides are less than significant.

b) Less Than Significant Impact:

The University of California, Davis SoilWeb database was consulted to determine the nature of the soils that underlie the project site. According to the University of California, Davis SoilWeb database, the property is underlain by Myoma fine sand and composed of Myoma, Coachella, Carsitas, and Riverwash soils associations with 0 to 5 percent slopes. The proposed project's contractors would be required to adhere to specific requirements that govern wind and water erosion during site preparation and construction activities. Following development, the project site would be paved and landscaped, which would minimize soil erosion. The project's construction would not result in soil erosion with adherence to those development requirements that restrict storm water runoff (and the resulting erosion) and require soil stabilization. In addition, stormwater discharges from construction activities that disturb one or more acres, or smaller sites disturbing less than one acre that are part of a common plan of development or sale, are regulated under the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program.

Prior to initiating construction, contractors must obtain coverage under an NPDES permit, which is administered by the State. In order to obtain an NPDES permit, the project Applicant must prepare a Stormwater Pollution Prevention Plan (SWPPP). Riverside County has identified sample construction Best Management Practices (BMPs) that may be included in the mandatory SWPPP. The use of these construction BMPs identified in the mandatory SWPPP would prevent soil erosion and the discharge of sediment into the local storm drains during the project's construction phase. As a result, the impacts would be less than significant.

c) Less Than Significant Impact:

The proposed project's construction would not result in soil erosion since the project's contractors must implement the construction BMPs identified in the mandatory SWPPP. The BMPs would

minimize soil erosion and the discharge of sediment off-site. Additionally, the project site is not located within an area that could be subject to landslides or liquefaction. The soils that underlie the project site possess a low potential for shrinking and swelling. Soils that exhibit certain shrink swell characteristics become sticky when wet and expand according to the moisture content present at the time. Since the soils have a low shrink-swell potential, lateral spreading resulting from an influx of groundwater is slim. Moreover, the project will not result in the direct extraction of groundwater. As a result, the potential impacts would be less than significant.

d) Less Than Significant Impact:

The University of California, Davis SoilWeb database was consulted to determine the nature of the soils that underlie the project site. According to the University of California, Davis SoilWeb database, the property is underlain by Myoma fine sand and composed of Myoma, Coachella, Carsitas, and Riverwash soils associations with 0 to 5 percent slopes. According to the U.S. Department of Agriculture, these soils are acceptable for residential development. The applicant is required to adhere to all requirements detailed by the USDA. As a result, the potential impacts would be less than significant.

e) Less Than Significant Impact:

The proposed project would be required to connect to and utilize the sanitary sewer system. No septic tanks systems would be used. As a result, the impacts would be less than significant.

f) Less Than Significant Impact:

The surface deposits in the proposed project area are composed entirely of younger Quaternary Alluvium. This younger Quaternary Alluvium is unlikely to contain significant vertebrate fossils, at least in the uppermost layers. Paleontological resources provide evidence of past life forms and their biota, which is valued for the information they yield about the history of earth and its past ecological settings. According to Figure 4.9.3, Paleontological Sensitivity, in the Riverside County General Plan, the property is recognized for having low potential for Paleontological Sensitivity. Areas recognized for having a “low” potential have a reduced likelihood of containing significant non-renewable paleontological resources, including vertebrate or significant invertebrate fossils. Moreover, the site is currently developed as a paved parking lot and is not recognized as a unique paleontological or a unique geologic feature. Additionally, the project property lies in an urbanized context within the City, surrounded by residential uses, office buildings, and commercial buildings. No known paleontological sites are found within the project site. The potential for uncovering any significant resources during construction activities is unlikely, since the site has already been cleared, graded, and significantly disturbed from the construction of the existing development. Therefore, less than significant impacts are anticipated.

7.3 MITIGATION MEASURES:

None required.

8 – GREENHOUSE GAS EMISSIONS

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

SOURCES:
California Air Pollution Control Officers Association. *California Emissions Estimator Model*. Version 2020. (Used in Appendix A)
South Coast Air Quality Management District. *2022 Air Quality Management Plan*. Adopted December 2, 2022.
South Coast Air Quality Management District. *Air Quality Analysis Handbook*. 1993.
Southern California Association of Governments. The 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy of the Southern California Association of Governments. *Adopted September 3, 2020.*
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.
Rancho Mirage, City of. 2012 Sustainability Plan: Leadership in Energy Efficiency. 2013.

8.1 SETTING

Examples of greenhouse gasses (GHG) that are produced both by natural and industrial processes include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The accumulation of GHG in the atmosphere regulates the earth's temperature. Without these natural GHG, the Earth's surface would be about 61°F cooler. However, emissions from fossil fuel combustion have elevated the concentrations of GHG in the atmosphere to above natural levels. These man-made GHG will have the effect of warming atmospheric temperatures with the attendant impacts of changes in the global climate, increased sea levels, and changes to the worldwide biome. The major GHG that influences global warming are described below.

- *Water Vapor.* Water vapor is the most abundant GHG present in the atmosphere. While water vapor is not considered a pollutant, while it remains in the atmosphere it maintains a climate necessary for life. Changes in the atmospheric concentration of water vapor are directly related to the warming of the atmosphere rather than a direct result of industrialization. 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. When water vapor increases in the atmosphere, more of it would eventually also condense into clouds, which are more able to reflect incoming solar radiation. This would allow less energy to reach the Earth’s surface thereby affecting surface temperatures.
- *Carbon Dioxide (CO_2).* The natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean. Manmade sources of CO_2 include the burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid-1700’s, these activities have increased the atmospheric concentrations of CO_2. 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.

- *Methane (CH_4).* CH_4 is an extremely effective absorber of radiation, although its atmospheric concentration is less than that of CO_2. Methane's 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 human-related sources of methane production include fossil-fuel combustion and biomass burning.
- *Nitrous Oxide (N_2O).* Concentrations of N_2O also began to increase 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.
- *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 would 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 and used 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 where 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.

The SCAQMD mass emissions threshold is 3,000 MTCO2E per year. Carbon dioxide equivalent, or CO2E, is a term that is used for describing different greenhouses gases in a common and collective unit.

8.2 Discussion of Impacts:

a) Less Than Significant Impact:

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M). The State of California requires CEQA documents to do an evaluation of greenhouse gas (GHG) emissions or gases that trap heat in the atmosphere. GHG are emitted by both natural processes and human activities. Examples of GHG that are produced both by natural and industrial processes include carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O). Carbon dioxide equivalent, or *CO2E*, is a term that is used for describing different greenhouses gases in a common and collective unit. The SCAQMD established the 3,000 MTCO2 per year threshold for residential land uses. As indicated in Table 6, the operational CO2E is 387 MTCO2E per year, which is well below the threshold.

Table 6 Greenhouse Gas Emissions (MT/yr)

Source	GHG Emissions (Metric Tons/year)			
	CO2	CH4	N2O	CO2E
Long-Term – Mobile Emissions	307	0.01	0.01	312
Long-Term – Area Emissions	0.21	--	--	0.21
Long-Term – Energy Emissions	65	0.01	--	65.2
Long-Term – Total Emissions	377	0.18	0.02	387
Total Construction Emissions Amortized Over 30 Years				10.93
Significance Threshold				**3,000 MTCO2E/year**

California Air Pollution Control Officers Association. *California Emissions Estimator Model*. Version 2022.1.1.21
(Used in Appendix A)

As indicated in Table 6, the majority of the GHG emissions (387 MTCO2E) would originate from mobile sources. As a result, the potential impacts are considered to be less than significant.

b) Less Than Significant Impact:

The City of Rancho Mirage's 2012 Sustainability Plan: Leadership in Energy Efficiency (Plan) serves as a framework for the development and implementation of policies and programs that would reduce the City's GHG emissions. The Plan is within a broader sustainability planning context supported by Southern California Edison (SCE) and its rate payers in a program called “Green for Life.” The Plan addresses climate change at the local level by taking action to reduce GHG emissions within the City's operations and within the City with the target of reducing emissions to 1990 levels by 2020 as set by AB 32. In an effort to stay ahead of impending regulations, this Sustainability Plan defines the City of Rancho Mirage's goal of complying, at a minimum, with statewide mandates to reduce GHG emissions. At the same time, through considered action, Rancho Mirage anticipates the following outcomes:

- Increase energy efficiency in local government operations and in community activities;
- Create new jobs in the community associated with smart energy management;
- Save money now being spent for energy and explore the establishment of a revolving fund whereby energy savings will be available for municipal and community programs to enhance energy efficiency and continue to reduce GHG emissions;
- Maintain or enhance the comfortable desert lifestyle of residents and visitors alike; and
- Bring the CVAG jurisdictions together for effective regional sustainability and climate action planning.

Rancho Mirage completed the 2010 Greenhouse Gas Inventory creating a path to sustainability. The inventory provided a detailed and clear analysis of the City's "carbon footprint," showing the sources and sectors of emissions, highlighting opportunities for emissions reductions that make sense for Rancho Mirage. Highlights of the 2010 GHG Inventory for Rancho Mirage are included below. (The full Inventory can be found in Section Ill of the Rancho Mirage Sustainability Plan):

- In 2010, Rancho Mirage emitted 277,698 metric tons of C02e. To meet AB 32 targets, by 2020 the City needed to reduce its annual emissions by 54,272 mertric tons.
- In 2010, the largest percentage of emissions - over 43% - came from the electricity used to power the City's homes, businesses, resorts, fountains, and streetlights.
- In 2010, the largest percentage of emissions -over 43%- came from the electricity used to power the City’s homes, businesses, resorts, fountains, and streetlights. 8.2 Discussion of Impacts: a) Less than Significant Impact. The proposed project would allow for the development of seventeen single-family residential units.

The Rancho Mirage General Plan's Safety Element in its section on Climate Change includes Goals, Policies and Programs with a preamble identifying the City's efforts to coordinate with state, regional, and County agencies to establish and maintain an up to date database on climate change conditions in the region, legislation affecting the City's regulatory responsibilities, and changing technical assessments that refine or re-characterize the climate change impacts affecting the region. The City would also monitor the effectiveness of its adaptation strategies. The City's development review process is designed to assure that development proposals are thoroughly evaluated regarding climate change and that comprehensive mitigation measures are developed and implemented. The City is also taking a proactive role to assure the public is safe by informing them about severity of climate change impacts and what resources are available to them to mitigate these impacts. Therefore, the project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The project would also comply with applicable Green Building Standards and City of Rancho Mirage's policies regarding sustainability (as dictated by the City's General Plan, Sustainability Plan, and Energy Action Plan). The previous section evaluated the proposed project's GHG emissions. The analysis determined that the GHG emissions would be below the regionally accepted thresholds. The calculated emissions would not exceed the GHG and criteria air pollutant thresholds and therefore would not interfere with the City's efforts to monitor and do its part to address climate change. The proposed project would not involve or require any variance from an adopted plan, policy, or regulation governing GHG emissions. As a result, no potential conflict with an applicable greenhouse gas policy plan, policy, or regulation would occur and the potential impacts are considered to be less than significant.

8.3 Mitigation Measures:

None required.

9 - HAZARDS AND HAZARDOUS MATERIALS

HAZARDS AND HAZARDOUS MATERIALS – Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

SOURCES:
CalEPA. *DTSC's Hazardous Waste and Substances Site List - Site Cleanup (Cortese List*).
CalFire. *Very High Fire Hazard Severity Zone Map*.
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.

9.1 SETTING

Hazardous materials refer generally to hazardous substances that exhibit corrosive, poisonous, flammable, and/or reactive properties and have the potential to harm human health and/or the environment. Hazardous materials are used in a wide variety of products (household cleaners, industrial solvents, paint, pesticides, etc.) and in the manufacturing of products (e.g., electronics, newspapers, plastic products). Hazardous materials can include petroleum, natural gas, synthetic gas, acutely toxic chemicals, and other toxic chemicals that are used in agriculture, commercial, and industrial uses; businesses; hospitals; and households. Accidental releases of hazardous materials can occur from a variety of causes, including highway incidents, warehouse fires, train derailments, shipping accidents, and industrial incidents.

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

9.2 Discussion of Impacts:

a) Less Than Significant Impact:

The project's construction would require the use of diesel fuel to power the construction equipment. The diesel fuel would be properly sealed in tanks and would be transported to the site by truck. Other hazardous materials that would be used on-site during the project's construction phases include, but are not limited to, gasoline, solvents, architectural coatings, and equipment lubricants. These products are strictly controlled and regulated and in the event of any spill, cleanup activities would be required to adhere to all pertinent protocols. As a result, less than significant impacts would occur.

b) Less Than Significant Impact:

The project's construction would require the use of diesel fuel to power the construction equipment. The diesel fuel would be properly sealed in tanks and would be transported to the site by truck. Other hazardous materials that would be used on-site during the project's construction phase include, but are not limited to, gasoline, solvents, architectural coatings, and equipment lubricants. These products are strictly controlled and regulated and in the event of any spill, cleanup activities would be required to adhere to all pertinent protocols. As indicated in Subsection D, the project site is not listed in either the CalEPA's Cortese List or the Environstor database. As a result, the likelihood of encountering contamination or other environmental

concerns during the project's construction phase is remote. As a result, the impacts would be less than significant.

c) No Impact:

There are no schools located within one-quarter of a mile from the project site. The nearest school is Della S Lindley Elementary School, located approximately 1.55 miles north of the project site. The next nearest schools to the project site include Palm Valley School, Rancho Mirage High school, and Xavier College Preparatory High School. The proposed residential project would not create a hazard to any local school. As a result, no impacts are anticipated.

d) No Impact:

Government Code Section 65962.5 refers to the Hazardous Waste and Substances Site List, commonly known as the Cortese List. The Cortese List is a planning document used by the State and other local agencies to comply with CEQA requirements that require the provision of information regarding the location of hazardous materials release sites. A search was conducted through the California Department of Toxic Substances Control Envirostor website to identify whether the project site is listed in the database as a Cortese site. The project site is not identified as a Cortese site. Therefore, no impacts would occur.

e) No Impact:

The project site is not located within an airport land use plan and the site is not located within two miles of a public airport or public use airport. The nearest airports to the project site include the Palm Springs International Airport is located approximately 5.8 miles northwest of the project site and the Bermuda Dunes Airport is located approximately 7.4 miles southeast of the project. The project would not introduce a structure that would interfere with the approach and take off of aircraft utilizing any regional airports. As a result, no impacts related to this issue would occur.

f) No Impact:

At no time would any adjacent street be completely closed to traffic during the proposed project's construction. In addition, all construction staging must occur on-site. As a result, no impacts are associated with the proposed project's implementation.

g) No Impact:

The project site is not located within a "moderate fire hazard severity zone." As a result, no impacts would result.

9.3 Mitigation Measures:

None required.

10 - HYDROLOGY AND WATER QUALITY

HYDROLOGY AND WATER QUALITY – Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would: i) Result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	☐	☐	☒	☐
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
iv) Impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

SOURCES:
FEMA. Glossary. Flood Zones. Website accessed October 10, 2023.
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.
Fomotor Engineering. *Preliminary Hydrology Study for Tentative Parcel Map 38081.* June 7, 2023.

10.1 SETTING

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

10.2 DISCUSSION OF IMPACTS:

a) Less Than Significant Impact:

During construction, compliance with waste discharge requirements would be met through the permit registration and coverage process under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, as amended by 2010- 0014-DWQ and 2012-006-DWQ. This permit is otherwise known as the Construction General Permit (CGP), applicable to any construction activity that results in a land disturbance of equal to or greater than one acre. In addition, stormwater discharges from construction activities that disturb one or more acres, or smaller sites disturbing less than one acre that are part of a common plan of development or sale, are regulated under the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program. As a result, the construction impacts would be less than significant.

b) Less Than Significant Impact:

Water used to control fugitive dust would be transported to the site via truck. No direct ground water extraction would occur. Furthermore, the construction and post-construction BMPs would address contaminants of concern from excess runoff, thereby preventing the contamination of local groundwater. These BMP controls may include, but not be limited to, the following:

- Stabilization practices for all areas disturbed by construction and grading.
- Structural practices for all drainage/discharge locations.
- Stormwater management controls, including measures used to control pollutants occurring in stormwater discharges after construction activities are complete.
- Velocity dissipation devices to provide nonerosive flow conditions from the discharge point along the length of any outfall channel.
- Other controls, including waste disposal practices that prevent discharge of solid materials.

In addition, there would be no direct groundwater withdrawals associated with the proposed project's implementation. As a result, the impacts would be less than significant.

c) Less Than Significant Impact:

The proposed project's location would be restricted to the proposed project site and would not alter the course of any stream or river that would lead to on- or off-site siltation or erosion. As a result, the potential impacts would be less than significant.

d) No Impact:

According to the Federal Emergency Management Agency (FEMA) flood insurance maps obtained for the City of Rancho Mirage, the proposed project site is located in a flood hazard zone, labeled as "Zone X." Thus, properties located in "Zone X" are areas of minimal flood hazard. The proposed project site is not located in an area that is subject to inundation by seiche or tsunami. In addition, the project site is located inland approximately 70 miles from the Pacific Ocean and the project site would not be exposed to the effects of a tsunami. As a result, no impacts are anticipated.

e) No Impact:

The project's construction would not interfere with any groundwater management or recharge plan since there are no active groundwater management recharge activities on-site or in the vicinity.

According to the hydrology study prepared for the project site, the project with a 6-hour / 100 year Synthetic Unit Hydrograph analysis produced a total net peak (after infiltration) proposed runoff volume of 43,736 cubic-feet for the contributing onsite and offsite run-on area under post-construction conditions, which was determined to be the worst case of the 1, 3, 6, and 24-hour duration events when considering infiltration. The surface retention basin was sized to hold 47,001 cubic-feet with 3 to 1 side slops. The peak runoff volume would have a 100-year peak onsite basin water depth of 4.74 feet (See Preliminary Hydrology Plan in the reference Materials).

There are two offsite run-on areas (See Preliminary Hydrology Plan in the Reference Materials) directed toward the site. Offsite WS-1 directs 1.98-acres of runoff at 5.55 cubic-feet per second to a proposed channel between lots 7, 8, and 2 which would allow the flow to be directed into the proposed retention basin. Offsite WS-2 directs 0.80-acres toward the south boundary of the site. The retention basin has been sized with capacity to hold both offsite areas along with the proposed onsite runoff. We will look to obtain adjacent property owner permission for drainage alteration to remove the need for WS-2 to enter the site. All proposed storm drains, inlets and streets will be sized to adequately convey their respective 100-year Rational Method discharges to the proposed surface retention basin. Basin overflow beyond the basin capacity would spill to the south and flow along the existing flow pattern for this location.

In general, the storm drain and inlet system would more than adequately convey the post-development 100- year peak discharge to the proposed retention basin, which would be sized to more than handle the required post-development 100-year event / 3-hour duration runoff (See City of Cathedral City Municipal Code 8.24.070 in the Reference Materials).

As a result, no impacts are anticipated.

10.3 MITIGATION MEASURES:

None required.

11 - LAND USE AND PLANNING

LAND USE AND URBAN PLANNING – Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

SOURCES:
Google Maps. Site Accessed May 23, 2023, and Rancho Mirage Zoning Map, Site Accessed, October 10, 2023.
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.

11.1 SETTING

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

11.2 DISCUSSION OF IMPACTS:

a) No Impact:

Land uses and development located in the vicinity of the proposed project site are outlined below:

- *North of the project site:* A vacant land, single family home, and Unitarian Universalist Church abuts the north side of the project site. These parcels are designated as *Very Low Density Residential* (R-L-2) and *Medium Density Residential* (R-M).

- *East of the project site:* Key Largo Avenue abuts the project's east side. Further east of the road is Rancho Mirage Dog Park as well as vacant, undeveloped lands. These parcels are designated as *Open Space / Public Park* (OS/PP), Medium Density Residential (R-M), and *High Density Residential* (R-M).

- *South of the project site:* A single-family residential development and vacant, undeveloped land abuts the project site's south side. These parcels are designated as *Very Low Density Residential* (R-L-2) and *Medium Density Residential* (R-M).

- *West of the project site:* Via Josefina abuts the west side of the project. Further west of the road are single family homes. These parcels are designated as *Very Low Density Residential* (R-L-2).

The granting of the requested entitlements and subsequent construction of the proposed project would not result in any expansion of the use beyond the current boundaries. As a result, the project will not lead to any division of an existing established neighborhood. As a result, no impacts would occur.

b) Less than Significant Impact:

The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M). According to the Rancho Mirage Land Use Element, the *Medium Density Residential (*R-M) designation provides for a variety of housing types. The allowable maximum density is four units per gross acre. The R-M zoning district is intended to encourage the development of a variety of residential development, including garden apartments and affordable housing. The proposed development would be consistent with this land use designation. As a result, less than significant impact would occur.

11.3 MITIGATION MEASURES:

None required.

12 - MINERAL RESOURCES

MINERAL RESOURCES – Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

SOURCES:
California, State of. Department of Conservation. California *Oil, Gas, and Geothermal Resources Well Finder*.
California Department of Conservation. *Mineral Land Classification Map for Riverside County* accessed May 28, 2023.
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.

12.1 SETTING

The Surface Mining and Reclamation Act of 1975 (SMARA) has developed mineral land classification maps and reports to assist in the protection and development of mineral resources. According to the SMARA, the following four mineral land use classifications are identified:

- *Mineral Resource Zone 1 (MRZ-1):* This land use classification refers to areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- *Mineral Resource Zone 2 (MRZ-2):* This land use classification refers to areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists.
- *Mineral Resource Zone 3 (MRZ-3):* This land use classification refers to areas where the significance of mineral deposits cannot be evaluated from the available data. Hilly or mountainous areas underlain by sedimentary, metamorphic, or igneous rock types and lowland areas underlain by alluvial wash or fan material are often included in this category. Additional information about the quality of material in these areas could either upgrade the classification to MRZ-2 or downgrade it to MRZ-1.
- *Mineral Resource Zone 4 (MRZ-4):* This land use classification refers to areas where available information is inadequate for assignment to any other mineral resource zone.

12.2 DISCUSSION OF IMPACTS:

a). No Impact:

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level

site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

A review of California Division of Oil, Gas, and Geothermal Resources well finder indicates that there are no wells located in the vicinity of the project site. The project site is not located in a Significant Mineral Aggregate Resource Area (SMARA) nor is it located in an area with active mineral extraction activities. A review of California Division of Oil, Gas, and Geothermal Resources well finder indicates that there are no wells located within or in the vicinity of the project site. The project site is not located within a designated Mineral Resource Zone (MRZ) which means there are no significant mineral resources present on-site. As indicated previously, there are no active mineral extraction activities occurring on-site or in the adjacent properties. As a result, no impacts to mineral resources would occur.

b) No Impact:

As previously mentioned, no mineral, oil, or energy extraction and/or generation activities are located within the project site. Moreover, the proposed project would not interfere with any resource extraction activity. Therefore, no impacts would result from the implementation of the proposed project.

12.3 MITIGATION MEASURES:

None required.

13 - NOISE

NOISE – Would the project result in:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 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?	☐	☐	☐	☒

SOURCES:
Toll-Free Airline. Riverside*, California.*
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.

13.1 SETTING

Noise levels may be described using several methods designed to evaluate the “loudness” of a particular noise. The most commonly used unit for measuring the level of sound is the decibel (dB). Zero on the decibel scale represents the lowest limit of sound that can be heard by humans. The eardrum may rupture at 140 dB. In general, an increase of between 3.0 dB and 5.0 dB in the ambient noise level is considered to represent the threshold for human sensitivity. Noise level increases of 3.0 dB or less are not generally perceptible to persons with average hearing abilities. The most commonly used unit for measuring the level of sound is the decibel (dB). Zero on the decibel scale represents the lowest limit of sound that can be heard by humans.

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

13.2 DISCUSSION OF IMPACTS:

a) Less Than Significant Impact:

The City regulates noise-generating activities through the Municipal Code and requires that daytime noise levels be 60 dBA CNEL or less at the property line for residential land uses and 45 dBA CNEL or less for all interior areas. Existing land uses in the vicinity of the project site include vacant undeveloped land and residential development. Construction activities would result in localized and temporary increases in ambient noise levels and may impact sensitive receptors. Construction noise sources are regulated within Sections 8.45.050 and 15.04.030(A) 117.1 of the Rancho Mirage Municipal Code which prohibit construction activities other than the hours of 7:00 a.m. to 7:00 p.m., with no construction occurring on Sundays or federal holidays. The project's construction will occur during the hours permitted by the City of Rancho Mirage. These restrictions, muffling of construction equipment, and other measures will reduce, to some extent, construction noise impacts on surrounding land uses. Impacts will be temporary and will end once construction is complete. Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the scheduled proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work. The project's construction noise levels were estimated using the Federal Highway Administration's (FHWA) Roadway Construction Noise Model Version 1.1. The distance used between the construction activity and the nearest sensitive receptors varied depending on the individual pieces of equipment but a distance of 100 feet was used. The model assumes a 10.0 dBA reduction due to attenuation from the existing walls located along the street frontages of the nearby residential development. The results of the construction noise modeling are presented in Table 7 below. The middle column ("Baseline) indicates the anticipated noise levels adjacent to the construction equipment. The last column indicates the anticipated daytime noise levels 100 feet from the equipment.

Table 7 Construction Noise Levels at the Nearest Sensitive Receptors

Construction Equipment	Baseline Max Lmax)	Projected Noise Levels (in Lmax)
Backhoe	77.6 dBA	60.6 dBA
Compactor (Earth)	83.2 dBA	63.2 dBA
Concrete Mixer	78.8 dBA	61.8 dBA
Dump Truck	76.5	59.5 dBA
Excavator	80.7 dBA	63.7 dBA
Grader	85.0 dBA	68.0 dBA
Roller	80.0 dBA	60.0 dBA
Paver	77.2 dBA	61.2 dBA
Tractor	84.0 dBA	67.0 dBA
Flat Bed Truck	74.3 dBA	57.3 dBA

Source: Roadway Construction Noise Model

As shown in Table 11, the majority of the equipment would result in noise levels under 65 dBA at a distance of 100 feet from the equipment generating the noise. All of the adjacent residences are located more than 100 feet from where the equipment would be operating. As a result, the proposed project will

not expose sensitive receptors to excessive noise levels. As a result, the impacts would be less than significant.

b) Less Than Significant Impact:

Construction activities would produce varying degrees of ground vibration, depending on the equipment and methods employed. While ground vibrations from typical construction activities very rarely reach levels high enough to cause damage to structures, special consideration must be made when sensitive or historic land uses are near the construction site. The construction activities that typically generate the highest levels of vibration are blasting and impact pile driving and the use of a vibratory roller. However, the project would not require blasting, pile driving, or vibratory rollers. The largest piece of vibration-generating equipment that could be used for project construction is a large bulldozer. Large bulldozers generate a vibration level of 0.089 in/sec PPV at 25 feet. Existing or potential noise sensitive residential development is located on all sides of the project site. Ground vibrations associated with construction activities using modern construction methods and equipment rarely reach the levels that result in damage to nearby buildings though vibration related to construction activities may be discernible in areas located near the construction site. A possible exception is in older buildings where special care must be taken to avoid damage. Table 7 summarizes the levels of vibration and the usual effect on people and buildings. The U.S. Department of Transportation (U.S. DOT) has guidelines for vibration levels from construction related to their activities and recommends that the maximum peak-particle-velocity (PPV) levels remain below 0.05 inches per second at the nearest structures. PPV refers to the movement within the ground of molecular particles and not surface movement. Vibration levels above 0.5 inches per second have the potential to cause architectural damage to normal dwellings. The U.S. DOT also states that vibration levels above 0.015 inches per second (in/sec) are sometimes perceptible to people, and the level at which vibration becomes an irritation to people is 0.64 inches per second. The effects of vibration on buildings are summarized in Table 8.

Table 8 Common Effects of Construction Vibration

Peak Particle Velocity (in/sec)	Effects on Humans	Effects on Buildings
<0.005	Imperceptible	No effect on buildings
0.005 to 0.015	Barely perceptible	No effect on buildings
0.02 to 0.05	Level at which continuous vibrations begin to annoy occupants of nearby buildings	No effect on buildings
0.1 to 0.5	Vibrations considered unacceptable for persons exposed to continuous or long-term vibration.	Minimal potential for damage to weak or sensitive structures
0.5 to 1.0	Vibrations considered bothersome by most people, tolerable if short-term in length	Threshold at which there is a risk of architectural damage to buildings with plastered ceilings and walls. Some risk to ancient monuments and ruins.
1.0 to 2.0	ibrations considered unpleasant by most people.	U.S. Bureau of Mines data indicates that blasting vibration in this range will not harm most buildings. Most construction vibration limits are in this range.
>3.0	Vibration is unpleasant	Potential for architectural damage and possible minor structural damage

Source: U.S. Department of Transportation

Various types of construction equipment have been measured under a wide variety of construction activities with an average of source levels reported in terms of velocity levels as shown in Table 9. Although the table gives one level for each piece of equipment, it should be noted that there is a considerable variation in reported ground vibration levels from construction activities. The data in Table 9 does provide a reasonable estimate for a wide range of soil conditions. Based on Transit Noise and Vibration Impact Assessment, a vibration level of 102 VdB (vibration decibels, or 0.5 inches per second [in/sec]) is considered safe and would not result in any construction vibration damage.

Table 9 Vibration Source Levels for Typical Construction Equipment

Construction Equipment		PPV @25 ft. (inches/sec.)	Vibration (VdB) @ 25 ft.
Pile Driver (impact)	Upper range	1.58	112
	Typical	0.644	104
Pile Drive (Sonic)	Upper range	0.734	105
	Typical	0.170	93
Clam Shovel Drop		0.202	94
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Loaded Trucks		0.076	86
Small Bulldozer		0.035	79

Source: Federal Highway Administration FHWA Noise and Vibration During Construction

The project will be required to adhere to all pertinent City noise control regulations. The limited duration of construction activities and the City's construction-related noise control requirements will reduce the potential impacts. A vibration level of 0.089 in/sec PPV at 25 feet would be 0.53 in/sec PPV at 40 feet and 0.089 in/sec PPV at 25 feet (refer to Table 8). These vibration levels would be less than the FTA thresholds. Additionally, construction equipment would move throughout the entire site and would only be located near the project boundaries for short periods of time. Thus, vibration levels at the receptors located near the project boundaries would be less than these maximum levels for a majority of the construction period. Although vibration levels may be perceptible for short periods of time, maximum vibration levels would not exceed FTA thresholds. Therefore, project construction would not generate excessive ground borne vibration or ground borne noise levels, and impacts would be less than significant. As a result, the impacts would be less than significant.

c) No Impact:

The project site is not located within an airport land use plan and is located within two miles of a public airport or public use airport. The nearest airports to the project site include the Palm Springs International Airport is located approximately 5.8 miles northwest of the project site and the Bermuda Dunes Airport is located approximately 7.4 miles southeast of the project. As a result, the proposed project will not expose people residing or working in the project area to excessive noise levels related to airport uses. As a result, no impacts would occur.

13.3 MITIGATION MEASURES:

None required.

14 - POPULATION AND HOUSING

POPULATION AND HOUSING – Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐

SOURCES:

Southern California Association of Governments. The 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy of the Southern California Association of Governments. *Adopted September 3, 2020.*
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.
State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2021-2023*. Sacramento, California, May 2023.

14.1 SETTING

The existing population of the City, according to the most recent Department of Finance Data (2023), is 17,898 persons. The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

14.2 DISCUSSION OF IMPACTS:

a) Less Than Significant Impact:

Growth-inducing impacts are generally associated with the provision of urban services to an undeveloped or rural area. Growth-inducing impacts include the following:

- *New development in an area presently undeveloped and economic factors which may influence development.* The site is currently undeveloped. All land use surrounding the property are designated for residential development.

- *Extension of roadways and other transportation facilities.* Future roadway and infrastructure connections will serve the proposed project site only.
- *Extension of infrastructure and other improvements.* The installation of any new utility lines will not lead to subsequent offsite development since these utility connections will serve the site only.
- *Major off-site public projects (treatment plants, etc.).* The project's increase in demand for utility services can be accommodated without the construction or expansion of landfills, water treatment plants, or wastewater treatment plants.
- *The removal of housing requiring replacement housing elsewhere.* The site contains a single older dilapidated housing unit. As a result, no replacement housing will be required.
- *Additional population growth leading to increased demand for goods and services.* The proposed 17 unit project would potentially result in 32 new residents assuming an average household size of 1.85 persons per unit derived from the most recent California Department of Finance.
- *Short-term growth-inducing impacts related to the project's construction.* The project will result in temporary employment during the construction phase.

The newly established roads and existing utility lines will serve the project site only and will not extend into undeveloped areas. According to the Demographics and Growth Forecast Technical Report Adopted on September 3, 2020 by SCAG, the City of Rancho Mirage's population is projected to increase from the year 2016 figure of 18,200 to 25,200 in the year 2045, an increase of 7,000. The 2022 population estimate of the City of Rancho Mirage is 17,633, According to the United States Census Bureau. The proposed project will not result in any unplanned growth. Therefore, the impacts would be less than significant.

b) Less Than Significant Impact:

The project site's General Plan and Zoning designation is Very Low Density Residential (R-L-2). The proposed 17 unit project would potentially result in 32 new residents assuming an average household size of 1.85 persons per unit derived from the most recent California Department of Finance. *Therefore, the impacts would be less than significant.*

14.3 MITIGATION MEASURES:

None required.

15 - PUBLIC SERVICES

PUBLIC SERVICES – Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☒	☐
ii) Police protection?	☐	☐	☒	☐
iii) Schools?	☐	☐	☒	☐
iv) Parks?	☐	☐	☒	☐
v) Other public facilities?	☐	☐	☒	☐

SOURCES:
Toll-Free Airline. Riverside*, California.*
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.

15.1 SETTING

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

15.2 DISCUSSION OF IMPACTS:

i) Less Than Significant Impact:

The Riverside County Fire Department (RCFD), under contract with the City of Rancho Mirage, provides a full range of 24-hour fire protection and emergency medical services to the City. The City's Fire Department is made up of 27 sworn, 2 full time non-sworn and 1 part time nonsworn personnel, serving 24.7 square miles with an estimated service population of 17,504 (Riverside County Fire Department for Rancho Mirage). RCFD maintains two fire stations within the City of Rancho Mirage, Fire Station 50, and Fire Station 69. Fire Station 50 is located at 70-801 Highway 111 and this station covers the southern portion of the City and is equipped with a Medic Engine and Paramedic Ambulance. Five firefighters are staffed at this station daily and three of the five firefighters are paramedics. Fire Station 69 is located at 71-751 Gerald Ford Drive and covers the northern portion of Rancho Mirage and is also staffed with five firefighters daily, with three of the five fire fighters being paramedics. The Riverside County Fire Department operates under a Regional Fire Protection Program, which allows all of its fire stations to provide support as needed regardless of jurisdictional boundaries.

The RCFD currently reviews all new development plans. The proposed project would be required to conform to all fire protection and prevention requirements, including, but not limited to, building setbacks, emergency access, and fire flow (or the flow rate of water that is available for extinguishing fires). The proposed project would only place an incremental demand on fire services since the including the installation of fire hydrants and sprinkler systems inside the buildings. Furthermore, the project will be reviewed by County Fire officials to ensure adequate fire service and safety as a result of project implementation. Development of the proposed project would result in a minimal increase in demand for fire services. Service calls could place an additional demand on fire personnel, fire apparatus and equipment. project will be constructed with strict adherence to all pertinent building and fire codes. In addition, the proposed project would be required to implement all pertinent Fire Code Standards. As a result, the impacts would be less than significant.

ii) Less Than Significant Impact:

Law enforcement services in the City of Rancho Mirage are provided under a contractual agreement with Riverside County Sheriff's Department (RCSD). Their staff consists of 29 full time officers (24 sworn and 5 non-sworn). The officers have a daily staffing of 7 officers that work in two, 12-hour shifts. Four deputy patrol officers work the day shift, and 3 deputy patrol officers work the night shift. The City currently provides 1.77 officers per 1,000 residents. The Sheriff's department provides 24-hour police law enforcement services and operates a small police substation at the Rancho Mirage Public Library. The main County sheriff's station is located Palm Desert at 73-705 Gerald Ford Drive. This station is approximately 4.4 miles from the project site. The City's police department patrols 7 days a week, 365 days a year and 24-hours a day. The RCSD contract provides for a staff of 30 full time officers (25 sworn and 5 non-sworn). The officers have a daily staffing of 7 officers that work in two, 12-hour shifts. Four deputy patrol officers work the day shift, and 3 deputy patrol officers work the night shift. The City's contract currently provides 1.65 officers per 1,000 residents, which is well above the commonly used and accepted ratio of one officer per 1,000 residents. Emergency response times vary and are dependent on the location of patrol cars. The average response time for priority 1 calls in the City of Rancho Mirage was 5 to 6 minutes.

The project site is located in an existing urban area and is currently serviced by the Sheriff's Department. Therefore, the proposed project would not substantially increase the need for new or expanded police facilities and response times are not expected to be impacted. Additionally, all new construction in the City will be required to pay Development Impact Fees to assist in offsetting impacts to police services. As a result, the impacts would be less than significant.

iii) Less Than Significant Impact:

The project site is within the boundary of the Palm Springs Unified School District (PSUSD). The construction of the proposed 17 single family units would not create a significant increase in school enrollments. The project would be required to pay *School Impact Fees* to the PSUSD. Current impact fees at the time of writing are $4.79 per square foot for residential development. The payment of these fees is considered to be mitigation of potential impacts. As a result, the impacts would be less than significant.

iv) Less Than Significant Impact:

City of Rancho Mirage provides public parks, open space, and multi-city recreational facilities with various amenities. The proposed project would be required to comply with the City's parkland in lieu fee (Quimby) and other development impact fees requirements. The future residents generated by project implementation may lead to an incremental increase in physical deterioration of City public recreational facilities. The occupancy of the 17-units would not substantially increase the use of existing parks as to accelerate their physical deterioration since the site is relatively small and it would provide private open space amenities. Additionally, the project will be required to comply with the City's development impact fee requirements. As a result, the impacts would be less than significant.

v) Less Than Significant Impact:

The proposed project would not create direct demand for other governmental service. As a result, the impacts would be less than significant.

15.3 MITIGATION MEASURES:

None required.

16 - RECREATION

RECREATION – Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☒	☐

SOURCES:
Fomotor Engineering. *Preliminary Grading Plan TTM 38041.* Sheet C.01. January 29, 2024.
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.

16.1 SETTING

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

16.2 DISCUSSION OF IMPACTS:

a) Less Than Significant Impact:

The project would be required to comply with the City's parkland in lieu fee (Quimby) and other development impact fees requirements. The occupancy of the 17 units would not substantially increase the use of existing parks as to accelerate their physical deterioration since the site is relatively small and it would provide private open space amenities. As a result, the impacts would be less than significant.

b) Less Than Significant Impact:

As previously indicated, the implementation of the proposed project would not physically impact any existing parks and recreational facilities in the City. No such facilities are located adjacent to the project site. As a result, the impacts would be less than significant.

16.3 MITIGATION MEASURES:

None required.

17 - TRANSPORTATION

TRANSPORTATION – Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☐	☒

SOURCES:
Fomotor Engineering. *Preliminary Grading Plan TTM 38041.* Sheet C.01. January 29, 2024.
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.

17.1 SETTING

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

17.2 DISCUSSION OF IMPACTS:

a) Less Than Significant Impact:

The trip generation for the proposed project is based on the trip generation rates for Land Use 210 – “Single-Family Detached Housing” included in the Institute of Transportation Engineers’

(ITE) *Trip Generation*, 11th Edition. As shown in Table 10, the proposed project is forecast to generate 13 total trips in the a.m. peak hour, 17 total trips in the p.m. peak hour, and 160 daily trips.

Table 10 Project Trip Generation

Land Use	Units	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Single Family	ITE Code 210	0.19	0.56	0.74	0.62	0.37	0.99	9.44
Project	17 units	3	10	13	11	6	17	160

Source: Institute of Transportation Engineers' (ITE) *Trip Generation*, 11th Edition

The total trip generation assumed 160 trip ends per day for 17 single family units. Of this total, 13 trips would occur during the AM peak hour and 17 trips would occur during the PM peak hour. The proposed project would not create a level of service deficiency at any area intersection due to the limited trip generation. As a result, the impacts will be less than significant.

b) Less than Significant Impact:

Rancho Mirage's Transportation Analysis Policy (Policy) was updated and approved on February 2021 per Resolution No. 2021-06. This Policy aligns the City's transportation analysis with California Senate Bill 743 (SB 743) and the City's goals as set forth in the Rancho Mirage General Plan updated in 2017. This policy establishes the thresholds for transportation impacts under CEQA by introducing Vehicle Miles Traveled (VMT.) As required by SB 743, VMT will replace the former metric used to analyze traffic impacts which was LOS. According to Table 1 of the Policy, retail project types (including hotel) would result in a significant impact if the project caused a net increase in the total existing VMT for the region. City Resolution 2021-06 aligns the City's VMT analysis policy with SB-743.

The City's Transportation Analysis Policy identifies three types of screening criteria under which projects are not required to submit a detailed VMT analysis and a presumption of a less than significant transportation impact can be made based on the facts of the project. Project Type Screening Certain types of projects are exempt from the need to prepare a detailed VMT and may be presumed to result in a less than significant VMT impact as they are local serving by nature, thus shortening travel distances by introducing shopping/services within the community, or they are small enough to not warrant assessment. As specified in the City's Transportation Analysis Policy, the following types of projects may be presumed to result in a less than significant VMT impact:

- Local serving retail projects less than 50,000 square feet
- Day care centers
- Local parks;
- Local-serving public facilities;
- Ministerial projects;
- Small infill projects;

- Restricted affordable, transit supportive residential projects in planned growth areas with high-quality Transit;
- Transportation projects that do not increase VMT ; and
- Projects that generate less than 110 daily vehicle trips. This provision generally correlates to typical development as listed as follows: 11 single-family residential dwelling units; 16 multi-family condominium or townhouse residential dwelling units; or 10,000 square feet of office.

The proposed project's trip daily generation is 160 trips. However, the proposed 17-unit residential development is considered to be a small infill project. As a result, no significant VMT impacts would occur. According to the VMT legislation (SB 743) an "Infill site" means a lot located within an urban area that has been previously developed, or on a vacant site where at least 75 percent of the perimeter of the site adjoins, or is separated only by an improved public right-of-way from, parcels that are developed with qualified urban uses.

The nearest major intersections to the project site are listed below. The proposed project is anticipated to generate 160 daily trips with 13 morning (AM) peak hour trips and 17 evening (PM) peak hour trips. Assuming that 50% of the project peak hour trips would use the four study intersections, to AM peak hour trips at the four study intersections would increase by 6 trips while the PM traffic at the four intersections would increase by 8 trips. The current morning (AM) and evening PM) levels of service (Rancho Mirage General Plan Traffic Impact Analysis) at the four nearest intersections are summarized below:

- Dinah Shore Dr./Monterey Ave. (LOS C AM and LOS D PM);
- Gerald Ford Dr./Monterey Ave. (LOS C AM and LOS C PM);
- Dinah Shore Dr./Bob Hope Dr. (LOS C AM and LOS C PM);
- Bob Hope Dr./Gerald Ford Dr. (LOS C AM and LOS C PM).

All four of the nearest intersections are operating at an acceptable level of service (LOS D or better). The addition of 6 to 7 additional local trips during the peak hours would not result in a significant traffic impact at these intersections. Furthermore, Dinah Shore Drive, Monterey Drive, and Bob Hope Drive are all included as Sunline Transit Routes. As a result, the impacts would be less than significant.

c) Less Than Significant Impact:

The individual units would be arranged around the proposed cul-de-sac roadway. Each unit would be provided with an enclosed garage that would accommodate two vehicles. The driveway apron would accommodate an additional two vehicles. The entry way would be gated and would have a curb-to-curb width of 60 feet (30-feet for the ingress travel land and 30-feet for the egress travel lane. The internal roadway would have a curb-to-curb width of approximately 25 feet. The proposed project will not expose future drivers to dangerous intersections or sharp curves and the proposed project will not introduce incompatible equipment or vehicles to the adjacent roads. As a result, the potential impacts would be less than significant.

d) No Impact:

The proposed project would not affect emergency access to any adjacent parcels. At no time during construction will adjacent streets be completely closed to traffic. All construction staging must occur on-site. As a result, no impacts are associated with the proposed project's implementation.

17.3 MITIGATION MEASURES:

None required.

18 - TRIBAL CULTURAL RESOURCES

TRIBAL CULTURAL RESOURCES – Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 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:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section5020.1(k), or	☐	☐	☒	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

SOURCES:
CRM TECH. *Historical/Archaeological Resources Survey Report.* March 14, 2023.
Fomotor Engineering. *Preliminary Grading Plan TTM 38041.* Sheet C.01. January 29, 2024.
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.

18.1 SETTING

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

On September 22, 2022, CRM TECH submitted a written request to the State of California Native American Heritage Commission (NAHC) for a records search in the commission's Sacred Lands File. The NAHC is the State of California's trustee agency for the protection of "tribal cultural resources," as defined by California Public Resources Code §21074, and is tasked with identifying and cataloging properties of Native American cultural value throughout the state. In the meantime,

CRM TECH notified the nearby Agua Caliente Band of Cahuilla Indians of the upcoming archaeological field survey and invited tribal participation.

18.2 DISCUSSION OF IMPACTS:

a) Less Than Significant Impact with Mitigation:

A Tribal Resource is defined in Public Resources Code section 21074 and includes the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following: included or determined to be eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision I of Section 5024.1. In applying the criteria set forth in subdivision I of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.
- A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
- A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a “non-unique archaeological resource” as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms to the criteria of subdivision (a).

All potentially interested tribes identified by the NAHC were also contacted pursuant to AB-52 and SB-18 for information regarding their knowledge of cultural resources that were within or near the project area. Tribal consultation was completed on February 22, 2024. The tribal consultation letters are attached as Appendix H – Tribal Consultation Letters. All potentially interested tribes identified by the NAHC were also contacted pursuant to AB-52 for information regarding their knowledge of cultural resources that were within or near the project area. These groups include the Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Mission Indians, Cabazon Band of Mission Indians, Cahuilla Band of Indians, Campo Band of Diegueno Mission Indians, Ewiiaapaayp Band of Kumeyaay Indians, La Posta Band of Duegueno Mission Indians, Los Coyotes Band of Mission Indians, Manzanita Band of Kumeyaay Nation, Mesa Grand Band of Diegueno Mission Indians, Morongo Band of Mission Indians, Quechan Tribe of the Fort Yuma, Quechan Tribe of the Fort Yuma Reservation, Ramona Band of Cahuilla, Santa Rosa Band of Cahuilla Indians, Soboba Band of Luiseno Indians, and Torres Martinez Desert Cahuilla Indians. One tribe, Augustine Band of Cahuilla Indians, responded they are “unaware of specific cultural resources that may be affected by the proposed project.”

Although the Augustine Band of Cahuilla Indians stated the proposed project would not affect specific cultural resources, the applicant would be required to follow the mitigation measures to reduce potential impacts to tribal cultural resources:

(Tribal Cultural Resources Mitigation No. 1) If buried cultural materials are discovered during the earth-moving operations, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds and, if necessary, develop a treatment plan in consultation with the project Applicant, City of Rancho Mirage, and the appropriate Native American Tribes. The presence of an archaeologist shall meet the Secretary of the Interior's standards during any ground disturbing activities.

(Tribal Cultural Resources Mitigation No. 2) During any ground disturbing activities (including any archaeological testing and surveys) the presence of an approved Agua Caliente or Cahuilla Native American Cultural Resource Monitor(s) is required. Should buried cultural deposits be encountered, the Monitor shall request that destructive construction halt and the Monitor shall notify a Qualified Archaeologist (Secretary of the Interior's Standards and Guidelines) to investigate and, if necessary, prepare a mitigation plan for submission to the State Historic Preservation Officer and the Agua Caliente Tribal Historic Preservation Office.

b) Less Than Significant Impact:

The project site is located within or on the Agua Caliente Band of Cahuilla Indians territory. A search of the National Register of Historic Places and the list of California Historical Resources was conducted, and it was determined that no Native historic resources was listed within the City of Rancho Mirage. Since the project's implementation would not impact any Federal, State, or locally designated historic resources. As a result, no impacts would occur.

18.3 MITIGATION MEASURES:

The analysis of tribal cultural resources impacts determined that the following mitigation measures would be required to reduce the project's impacts to levels that would be less than significant.

Tribal Cultural Resources Mitigation Measure No. 1. If buried cultural materials are discovered during the earth-moving operations, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds and, if necessary, develop a treatment plan in consultation with the project Applicant, City of Rancho Mirage, and the appropriate Native American Tribes. The presence of an archaeologist shall meet the Secretary of the Interior's standards during any ground disturbing activities.

Tribal Cultural Resources Mitigation Measure No. 2. During any ground disturbing activities (including any archaeological testing and surveys) the presence of an approved Agua Caliente or Cahuilla Native American Cultural Resource Monitor(s) is required. Should buried cultural deposits be encountered, the Monitor shall request that destructive construction halt and the Monitor shall notify a Qualified Archaeologist (Secretary of the Interior's Standards and Guidelines) to investigate and, if necessary, prepare a mitigation plan for submission to the State Historic Preservation Officer and the Agua Caliente Tribal Historic Preservation Office.

19 - UTILITIES AND SERVICE SYSTEMS

UTILITIES AND SERVICE SYSTEMS – Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the projects projected demand in addition to the providers existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statues and regulations related to solid waste?	☐	☐	☐	☒

SOURCES:
California Department of Resources Recycling and Recovery (CalRecycle). *Jurisdiction Review Reports.* 2023.
Coachella Valley Water District. *2022-23 Annual Review.* 2023.
Fomotor Engineering. *Preliminary Grading Plan TTM 38041.* Sheet C.01. January 29, 2024.
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.

19.1 SETTING

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and

Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2) to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

19.2 DISCUSSION OF IMPACTS:

a) Less Than Significant Impact:

There are no existing water or wastewater treatment plants, electric power plants, telecommunications facilities, natural gas facilities, or stormwater drainage infrastructure located on-site. Therefore, the project's implementation will not require the relocation of any of the aforementioned facilities. The existing unit located on the property is dilapidated and would be replaced. As a result, the potential impacts would be less than significant.

b) Less Than Significant Impact:

Groundwater is the primary source of domestic water supply in the Coachella Valley. The Coachella Valley Water District (CVWD) is the largest provider of potable water in the valley and currently provides potable water in the project vicinity. CVWD operates more than 100 wells and serves a population of 290,000 in its service areas. CVWD's 2012 adopted Water Management Plan and 2015 Urban Water Management Plan (UWMP) have been developed to assist the agency in reliably meeting current and future water demands in a cost-effective manner. The 2015 UWMP serves as a planning tool that documents actions in support of long-term water resources planning and ensures adequate water supplies are available to meet the existing and future urban water demands. There are no existing water infrastructure located on-site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. As indicated in Table 11, the proposed project is projected to consume approximately 9,632 gallons of water on a daily basis.

Table 11 Water Consumption (gals/day)

Use	Unit	Factor	Generation
Single-family Home	17 units	566.6 gals./unit/day*	9,632 gals./day
Total	17 units		9,632 gals./day

Source: Coachella Valley Water District. *2022-23 Annual Review.* 2023.
*Based on 301 gals./capita/day

The existing water supply facilities and infrastructure will be able to accommodate this additional demand. In addition, the proposed project will be equipped with water efficient fixtures and drought tolerant landscaping will be planted throughout the project site. As a result, the impacts are considered to be less than significant. As a result, the impacts will be less than significant.

c) Less Than Significant Impact:

The CVWD operates 6 water reclamation plants and maintains more than 1,000 miles of sewer pipelines and more than 30 lift stations that transport wastewater to the nearest treatment facility

and nearly 6.3 billion gallons of wastewater is treated yearly. CVWD's peak flow factor of 200 gallons per day per equivalent dwelling unit (EDU), was used to determine the proposed wastewater generation for the project. The site was found to provide approximately 55 EDU and estimates a total wastewater demand of approximately 11,000 gallons per day (gpd), or 0.011 MGD. In addition, wastewater generated by the Project will be conveyed to CVWD Wastewater Reclamation Plant Number 10 in Palm Desert (WRP-10). Per the 2015 CVWD Urban Water Management Plan, WRP-10 has a capacity to treat 18 million gallons per day (MGD). This plant treats an annual average flow of 10.8 MGD (12,000 AFY) from the activated sludge plant. There are no existing water infrastructure located on-site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. According to Table 12, the proposed project is expected to generate approximately 2,227 gallons of sewage per day.

Table 12 Wastewater (Effluent) Generation (gals/day)

Use	Unit	Factor	Generation
Single Family Residential	17 units	131 gals./unit/day*	2,227 gals./day
Total	17 units		2,227 gals./day

Source: Coachella Valley Water District. *2022-23 Annual Review.* 2023.
*Based on 69.6 gals./capita/day

The proposed project's sewage generation will likely be lower since the new plumbing fixtures that will be installed will consist of water conserving fixtures as is required by the current City Code requirements. As a result, the impacts are expected to be less than significant.

d) Less Than Significant Impact:

Solid waste disposal and recycling services for the City of Rancho Mirage is provided by Burrtec. Solid waste and recycling collected from the proposed project will be hauled to the Edom Hill Transfer Station. Waste from this transfer station is then sent to a permitted landfill or recycling facility outside of the Coachella Valley. These include Badlands Disposal Site, El Sobrante Sanitary Landfill and Lamb Canyon Disposal Site. Cal-Recycle data indicates the Bandlands Disposal site has 15,748,799 cubic yards of remaining capacity, the El Sobrante Landfill has a remaining capacity of 143,977,170 tons of solid waste, and Lamb Canyon Disposal has a remaining solid waste capacity of 19,242,950 cubic yards.

The proposed project is anticipated to generate approximately 275 pounds per day of solid waste (refer to Table 13). The projected quantify of solid waste is limited and can be accommodate by the existing capacity. As a result, the potential impacts are considered to be less than significant.

Table 13 Solid Waste Generation (lbs/day)

Use	Unit	Factor	Generation
Single Family Residential	17 units	16.2 lbs./unit/day*	275 lbs./day
Total	17 units		275 lbs./day

Source: California Department of Resources Recycling and Recovery (CalRecycle). *Jurisdiction Review Reports.* 2023.
*Based on 8.60 lbs./capita/day

e) No Impact:

The proposed project, like all other development in Rancho Mirage and Riverside County, would be required to adhere to City and County ordinances with respect to waste reduction and recycling. As a result, no impacts related to State and local statutes governing solid waste are anticipated.

19.3 MITIGATION MEASURES:

None required.

20 - WILDFIRE

WILDFIRE – Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

SOURCES:
Fomotor Engineering. *Preliminary Grading Plan TTM 38041.* Sheet C.01. January 29, 2024.
Rancho Mirage, City of. *City of Rancho Mirage 2017 General Plan Update.* Adopted November 16, 2017.
Rancho Mirage, City of. Local Hazard Mitigation Plan. https://ranchomirageca.gov/wp-content/uploads/2022/07/Rancho-Mirage-2017-LHMP-Final-Adopted.pdf

20.1 SETTING

The proposed project would involve the subdivision of a seventeen lot residential development within the 8.42 acre project site. The proposed development would connect to a new 8 inch sewer line on the internal roadways and a new 12 inch sewer line on Via Josefina. The relatively level site is approximately 272 feet above mean sea level (AMSL) and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The project site is comprised of 3 vacant, undeveloped parcels. These parcels are subject to the Section 30 Design Guidelines and Master Circulation Plan. The Zoning designation for the westernmost parcel is *Very Low Density Residential* (R-L-2). A 1.5-acre portion of this parcel would require a General Plan Zoning Map Amendment (GPZMA) to change the current zoning from *Very Low Density Residential* (R-L-2)

to *Medium Density Residential* (R-M). The remaining two parcels are designated as *Medium Density Residential* (R-M).

According to the City's Local Hazard Mitigation Plan, The risk of fire in Rancho Mirage is considered moderate to very high due to a combination of hot dry summers, steep mountain terrain and sparse scrub vegetation. Although the majority of land within the City includes urbanized land such as golf courses, manicured lawns and street parkways, the northernmost area of the City (generally north of Ramon Road) is moderately susceptible to fire. Rows of Tamarisk trees flank both Interstate 10 and the UPRR as a wind break, which are highly prone to fire. Due to this relatively flat area being within the "blowsand" and wind corridor, fires can quickly spread to sparse desert vegetation.

20.2 DISCUSSION OF IMPACTS:

a) No Impact:

Surface streets that would be improved would serve the project site and adjacent area. Furthermore, the proposed project would not involve the closure or alteration of any existing evacuation routes that would be important in the event of a wildfire. At no time during construction will adjacent streets be completely closed to traffic. All construction staging must occur on-site. As a result, no impacts would occur.

b) No Impact:

The project site is located in the midst of an undeveloped area. The proposed project may be exposed to particulate emissions generated by wildland fires in the mountains located to the west of the site. However, the potential impacts would not be exclusive to the project site since criteria pollutant emissions from wildland fires may affect the entire City as well as the surrounding cities and unincorporated county areas. As a result, no impacts would occur.

c) No Impact:

The project site is not located in an area that is classified as a moderate fire risk severity within a State Responsibility Area (SRA), and therefore will not require the installation of specialized infrastructure such *as fire roads, fuel breaks, or emergency water* sources. As a result, no impacts would occur.

d) No Impact:

There is no risk from wildfire within the project site or the surrounding area given the project site's distance from any area that may be subject to a wildfire event. In addition, the site is not located within a moderate fire risk and state responsibility area. Therefore, the project would not expose future residents to flooding or landslides facilitated by runoff flowing down barren and charred slopes. As a result, no impacts would occur.

20.3 MITIGATION MEASURES:

None required.

21 - MANDATORY FINDINGS OF SIGNIFICANCE

MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

21.1 SETTING

The following findings can be made regarding the Mandatory Findings of Significance set forth in Section 15065 of the CEQA Guidelines based on the results of this environmental assessment.

21.2 DISCUSSION OF IMPACTS:

a) Less than Significant Impact with Mitigation:

The proposed project *would not* 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. *As indicated in Chapter 2.1 through 2.20, the proposed project will not result in any significant unmitigable environmental impacts.*

Biological Resources Mitigation Measure No. 1. Prior to Project construction activities, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the Project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511), will be completed by the Applicant and a qualified biologist. Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary.

Biological Resources Mitigation Measure No. 2. In the event there is a delay in the project's construction (i.e. pauses in construction activities such as utility extensions and stormwater improvements) the Applicant shall retain the service of a qualified biologist to reassess biological resources resulting from an extended timeline for the project activities. Wildlife may move into disturbed or graded sites when construction is paused. These preconstruction surveys for biological resources will need to be repeated prior to project activities and after pauses in construction to assess the presence of biological resources and to avoid or reduce impacts to less than significant.

Biological Resources Mitigation Measure No. 3. Prior to Project construction activities, a thorough, recent, floristic-based assessment of special status plants and natural communities, following CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (see https://www.wildlife.ca.gov/Conservation/Plants) shall be performed by a qualified biologist. Should any state-listed plant species be present in the Project area, the Project proponent shall obtain appropriate CESA authorization for those species prior to the start of Project activities. Should other special-status plants or natural communities be present in the Project area, on-site or off-site habitat restoration (whichever is applicable) and/or enhancement and preservation should be evaluated and discussed in detail. Where habitat preservation is not available on-site, off-site land acquisition, management, and preservation should be evaluated.

Biological Resources Mitigation Measure No. 4. Prior to construction and issuance of any grading permit, the project Applicant shall oversee the preparation and submittal to the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service, for review and approval, a plan to salvage sand-dependent CVMSHCP Covered Species within the Project area. The plan shall be prepared by a qualified biologist experienced in surveying for and handling sand-dependent Covered Species. The plan shall include, but not be limited to,

the species-specific salvage methods and timing for each sand-dependent Covered Species identified within the Project site and the location(s) where each species will be translocated. Only qualified biologist(s) with appropriate state and federal permits to handle special-status species shall carry out salvage activities.

Biological Resources Mitigation Measure No. 5. Very limited suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities. If burrowing owls are detected during the focused surveys, the qualified biologist and Project proponent shall prepare a Burrowing Owl Plan that shall be submitted to CDFW for review and approval prior to commencing Project activities. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites, acres of burrowing owl habitat that will be impacted, details of site monitoring, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been evaluated as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. If impacts to occupied burrows cannot be avoided, information shall be provided regarding adjacent or nearby suitable habitat available to owls. The Project proponent shall implement the Burrowing Owl Plan following CDFW and USFWS review and approval. Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of Project-related activities and within 24 hours prior to ground disturbance, in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version). Preconstruction surveys should be performed by a qualified biologist following the recommendations and guidelines provided in the Staff Report on Burrowing Owl Mitigation. If the preconstruction surveys confirm occupied burrowing owl habitat, Project activities shall be immediately halted. The qualified biologist shall coordinate with CDFW and prepare a Burrowing Owl Plan that shall be submitted to CDFW and USFWS for review and approval prior to commencing Project activities.

Biological Resources Mitigation Measure No. 6. Regardless of the time of year, nesting bird surveys shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys, a qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the qualified biologist familiar with the nesting phenology of the nesting species and based on nest and buffer monitoring results. Construction activities may not occur inside the established buffers, which shall remain on site until a qualified biologist determines the young have fledged or the nest

is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the Project has been completed. The qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance.

Biological Resources Mitigation Measure No. 7. During all Project construction activities, the project Applicant and construction contractors shall restrict use of generators except for temporary use in emergencies. The project Applicant and construction contractors shall ensure the use of noise suppression devices such as mufflers or enclosures for generators. Sounds generated from any means must be below the 55-60 dB range within 50-feet from the source.

Biological Resources Mitigation Measure No. 8. During Project construction and operation, the project Applicant and construction contractors shall eliminate all nonessential lighting throughout the Project area and avoid or limit the use of artificial light during the hours of dawn and dusk when many wildlife species are most active. The City shall ensure that lighting for Project activities is shielded, cast downward, and does not spill over onto other properties or upward into the night sky. The City and project Applicant shall ensure use of LED lighting with a correlated color temperature of 3,000 Kelvins or less.

Biological Resources Mitigation Measure No. 9. Prior to construction and issuance of any grading permit, the City of Rancho Mirage and project Applicant shall ensure compliance with the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) and its associated Implementing Agreement and the City shall ensure the collection of payment of the CVMSHCP Local Development Mitigation Fee.

Tribal Cultural Resources Mitigation Measure No. 1. If buried cultural materials are discovered during the earth-moving operations, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds and, if necessary, develop a treatment plan in consultation with the project Applicant, City of Rancho Mirage, and the appropriate Native American Tribes. The presence of an archaeologist shall meet the Secretary of the Interior's standards during any ground disturbing activities.

Tribal Cultural Resources Mitigation Measure No. 2. During any ground disturbing activities (including any archaeological testing and surveys) the presence of an approved Agua Caliente or Cahuilla Native American Cultural Resource Monitor(s) is required. Should buried cultural deposits be encountered, the Monitor shall request that destructive construction halt and the Monitor shall notify a Qualified Archaeologist (Secretary of the Interior's Standards and Guidelines) to investigate and, if necessary, prepare a mitigation plan for submission to the State Historic Preservation Officer and the Agua Caliente Tribal Historic Preservation Office.

b) No Impact:

The proposed project *would not* have impacts that are individually limited, but cumulatively considerable. *The environmental impacts will not lead to a cumulatively significant impact on any of the issues analyzed herein.*

c) No Impact:

The proposed project *would not* have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

Table 13 Mitigation Monitoring and Reporting Program			
Mitigation Measure	**Responsible Agency**	**Timing**	**Verification (Date and Initials)**
AESTHETICS			
No Mitigation was required.			
AGRICULTURAL RESOURCES			
No Mitigation was required.			
AIR QUALITY			
No Mitigation was required.			
BIOLOGICAL RESOURCES			
Biological Resources Mitigation Measure No. 1. Prior to Project construction activities, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the Project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511), will be completed by the project Applicant and a qualified biologist. Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary.	Project Developer Qualified Biologist City of Rancho Mirage	Prior to commencement of Construction	
Biological Resources Mitigation Measure No. 2. In the event there is a delay in the project's construction (i.e. pauses in construction activities such as utility extensions and stormwater improvements) the Applicant shall retain the service of a qualified biologist to reassess biological resources resulting from an extended timeline for the project activities. Wildlife may move into disturbed or graded sites when construction is paused. These preconstruction surveys for biological resources will need to be repeated prior to project activities and after pauses in construction to assess the presence of biological resources and to avoid or reduce impacts to less than significant.	Project Developer Qualified Biologist City of Rancho Mirage	Prior to commencement of Construction	

Biological Resources Mitigation Measure No. 3. Prior to Project construction activities, a thorough, recent, floristic-based assessment of special status plants and natural communities, following CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (see https://www.wildlife.ca.gov/Conservation/ Plants) shall be performed by a qualified biologist. Should any state-listed plant species be present in the Project area, the Project proponent shall obtain appropriate CESA authorization for those species prior to the start of Project activities. Should other special-status plants or natural communities be present in the Project area, on-site or off-site habitat restoration (whichever is applicable) and/or enhancement and preservation should be evaluated and discussed in detail. Where habitat preservation is not available on-site, off-site land acquisition, management, and preservation should be evaluated.	Project Developer Qualified Biologist City of Rancho Mirage	Prior to commencement of Construction	
Biological Resources Mitigation Measure No. 4. Prior to construction and issuance of any grading permit, the project Applicant shall oversee the preparation and submittal to the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service, for review and approval, a plan to salvage sand-dependent CVMSHCP Covered Species within the Project area. The plan shall be prepared by a qualified biologist experienced in surveying for and handling sand-dependent Covered Species. The plan shall include, but not be limited to, the species-specific salvage methods and timing for each sand-dependent Covered Species identified within the Project site and the location(s) where each species will be translocated. Only qualified biologist(s) with appropriate state and federal permits to handle special-status species shall carry out salvage activities.	Project Developer Qualified Biologist City of Rancho Mirage	Prior to commencement of Construction	
Biological Resources Mitigation Measure No. 5. Very limited suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities. If burrowing owls are detected during the focused surveys, the qualified biologist and Project proponent shall prepare a Burrowing Owl Plan that shall be submitted to CDFW for review and approval prior to commencing Project activities. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites, acres of burrowing owl habitat that will be impacted, details of site monitoring, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been evaluated as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. If impacts to occupied burrows cannot be avoided, information shall be provided regarding adjacent or nearby suitable habitat available to owls. The Project proponent shall implement the Burrowing Owl Plan following CDFW and USFWS review and approval. Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of Project-related activities and within 24 hours prior to ground disturbance, in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version). Preconstruction surveys should be performed by a qualified biologist following the recommendations and guidelines provided in the Staff Report on Burrowing Owl Mitigation. If the preconstruction surveys confirm occupied burrowing owl habitat, Project activities shall be immediately halted. The qualified biologist shall coordinate with CDFW and prepare	Project Developer Qualified Biologist City of Rancho Mirage	Prior to commencement of Construction	

a Burrowing Owl Plan that shall be submitted to CDFW and USFWS for review and approval prior to commencing Project activities.			
Biological Resources Mitigation Measure No. 6. Regardless of the time of year, nesting bird surveys shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys, a qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the qualified biologist familiar with the nesting phenology of the nesting species and based on nest and buffer monitoring results. Construction activities may not occur inside the established buffers, which shall remain on site until a qualified biologist determines the young have fledged or the nest is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the Project has been completed. The qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance.	Project Developer Qualified Avian Biologist City of Rancho Mirage	Prior to commencement of Construction	
Biological Resources Mitigation Measure No. 7. During all Project construction activities, the project applicant and construction contractors shall restrict use of generators except for temporary use in emergencies. The project applicant and construction contractors shall ensure the use of noise suppression devices such as mufflers or enclosures for generators. Sounds generated from any means must be below the 55-60 dB range within 50-feet from the source.	Project Developer City of Rancho Mirage	During the Project's construction phase	
Biological Resources Mitigation Measure No. 8. During Project construction and operation, the project applicant and construction contractors shall eliminate all nonessential lighting throughout the Project area and avoid or limit the use of artificial light during the hours of dawn and dusk when many wildlife species are most active. The City shall ensure that lighting for Project activities is shielded, cast downward, and does not spill over onto other properties or upward into the night sky. The City and project Applicant shall ensure use of LED lighting with a correlated color temperature of 3,000 Kelvins or less.	Project Developer City of Rancho Mirage	During the Project's construction phase	
Biological Resources Mitigation Measure No. 9. Prior to construction and issuance of any grading permit, the City of Rancho Mirage and project applicant shall ensure compliance with the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) and its associated Implementing Agreement and the City shall ensure the collection of payment of the CVMSHCP Local Development Mitigation Fee.	Project Developer Coachella Valley Conservation Commission City of Rancho Mirage	Prior to commencement of Construction	
CULTURAL RESOURCES			
No Mitigation was required.			
GEOLOGY AND SOILS			
No Mitigation was required.			
GREENHOUSE GAS EMISSIONS			
No Mitigation was required.			

HAZARDS AND HAZARDOUS MATERIALS			
No Mitigation was required.			
HYDROLOGY AND WATER QUALITY			
No Mitigation was required.			
LAND USE AND PLANNING			
No Mitigation was required.			
MINERAL RESOURCES			
No Mitigation was required.			
NOISE			
No Mitigation was required.			
POPULATION AND HOUSING			
No Mitigation was required.			
PUBLIC SERVICES			
No Mitigation was required.			
RECREATION			
No Mitigation was required.			
TRANSPORTATION/TRAFFIC			
No Mitigation was required.			
TRIBAL CULTURAL RESOURCES			
Tribal Cultural Resources Mitigation Measure No. 1. If buried cultural materials are discovered during the earth-moving operations, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds and, if necessary, develop a treatment plan in consultation with the project Applicant, City of Rancho Mirage, and the appropriate Native American Tribes. The presence of an archaeologist shall meet the Secretary of the Interior's standards during any ground disturbing activities.	Project Developer Cultural Monitor City of Rancho Mirage	Prior to commencement of Construction	
Tribal Cultural Resources Mitigation Measure No. 2. During any ground disturbing activities (including any archaeological testing and surveys) the presence of an approved Agua Caliente or Cahuilla Native American Cultural Resource Monitor(s) is required. Should buried cultural deposits be encountered, the Monitor shall request that destructive construction halt and the Monitor shall notify a Qualified Archaeologist (Secretary of the Interior's Standards and Guidelines) to investigate and, if necessary, prepare a mitigation plan for submission to the State Historic Preservation Officer and the Agua Caliente Tribal Historic Preservation Office.	Project Developer Cultural Monitor City of Rancho Mirage	Prior to commencement of Construction	
UTILITIES AND SERVICE SYSTEMS			
No Mitigation was required.			
Wildfire			

No Mitigation was required.			

CHAPTER 3: REFERENCES

The references that were consulted have been identified using footnotes.

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CHAPTER 5: REPORT PREPARERS

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4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.2.2. Mitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.3.2. Mitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.9.2. Mitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.10.4. Landscape Equipment - Mitigated

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.11.2. Mitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.12.2. Mitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.13.2. Mitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.14.2. Mitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.15.2. Mitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

5.18.2.2. Mitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	RNCH 004
Construction Start Date	1/1/2025
Operational Year	2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.30
Precipitation (days)	0.80
Location	33.79812665174441, -116.39780073267862
County	Riverside-Salton Sea
City	Rancho Mirage
Air District	South Coast AQMD
Air Basin	Salton Sea
TAZ	5671
EDFZ	19
Electric Utility	Imperial Irrigation District
Gas Utility	Southern California Gas
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Single Family Housing	17.0	Dwelling Unit	5.52	33,150	199,119	—	55.0	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-9	Use Dust Suppressants
Construction	C-10-A	Water Exposed Surfaces
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads

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.	1.38	1.16	10.5	13.7	0.02	0.43	0.10	0.53	0.40	0.02	0.42	—	2,546	2,546	0.10	0.03	0.47	2,558
Mit.	1.38	1.16	10.5	13.7	0.02	0.43	0.10	0.53	0.40	0.02	0.42	—	2,546	2,546	0.10	0.03	0.47	2,558
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.02	10.5	31.7	31.1	0.05	1.37	19.9	21.3	1.26	10.2	11.4	—	5,516	5,516	0.23	0.05	0.02	5,538
Mit.	4.02	10.5	31.7	31.1	0.05	1.37	7.89	9.26	1.26	3.99	5.25	—	5,516	5,516	0.23	0.05	0.02	5,538
% Reduced	—	—	—	—	—	—	60%	56%	—	61%	54%	—	—	—	—	—	—	—

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.18	0.99	9.01	10.7	0.02	0.37	1.01	1.38	0.34	0.48	0.83	—	1,974	1,974	0.08	0.02	0.16	1,983
Mit.	1.18	0.99	9.01	10.7	0.02	0.37	0.44	0.82	0.34	0.20	0.55	—	1,974	1,974	0.08	0.02	0.16	1,983
% Reduced	—	—	—	—	—	—	56%	41%	—	59%	34%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.21	0.18	1.64	1.96	< 0.005	0.07	0.18	0.25	0.06	0.09	0.15	—	327	327	0.01	< 0.005	0.03	328
Mit.	0.21	0.18	1.64	1.96	< 0.005	0.07	0.08	0.15	0.06	0.04	0.10	—	327	327	0.01	< 0.005	0.03	328
% Reduced	—	—	—	—	—	—	56%	41%	—	59%	34%	—	—	—	—	—	—	—

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.38	1.16	10.5	13.7	0.02	0.43	0.10	0.53	0.40	0.02	0.42	—	2,546	2,546	0.10	0.03	0.47	2,558
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.02	3.38	31.7	31.1	0.05	1.37	19.9	21.3	1.26	10.2	11.4	—	5,516	5,516	0.23	0.05	0.02	5,538
2026	1.31	10.5	9.95	13.3	0.02	0.38	0.20	0.52	0.35	0.05	0.37	—	2,530	2,530	0.10	0.03	0.02	2,541
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.18	0.99	9.01	10.7	0.02	0.37	1.01	1.38	0.34	0.48	0.83	—	1,974	1,974	0.08	0.02	0.16	1,983
2026	0.14	0.69	1.04	1.47	< 0.005	0.04	0.02	0.06	0.04	< 0.005	0.04	—	256	256	0.01	< 0.005	0.03	257
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2025	0.21	0.18	1.64	1.96	< 0.005	0.07	0.18	0.25	0.06	0.09	0.15	—	327	327	0.01	< 0.005	0.03	328
2026	0.03	0.13	0.19	0.27	< 0.005	0.01	< 0.005	0.01	0.01	< 0.005	0.01	—	42.3	42.3	< 0.005	< 0.005	< 0.005	42.5

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.38	1.16	10.5	13.7	0.02	0.43	0.10	0.53	0.40	0.02	0.42	—	2,546	2,546	0.10	0.03	0.47	2,558
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.02	3.38	31.7	31.1	0.05	1.37	7.89	9.26	1.26	3.99	5.25	—	5,516	5,516	0.23	0.05	0.02	5,538
2026	1.31	10.5	9.95	13.3	0.02	0.38	0.20	0.52	0.35	0.05	0.37	—	2,530	2,530	0.10	0.03	0.02	2,541
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.18	0.99	9.01	10.7	0.02	0.37	0.44	0.82	0.34	0.20	0.55	—	1,974	1,974	0.08	0.02	0.16	1,983
2026	0.14	0.69	1.04	1.47	< 0.005	0.04	0.02	0.06	0.04	< 0.005	0.04	—	256	256	0.01	< 0.005	0.03	257
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.21	0.18	1.64	1.96	< 0.005	0.07	0.08	0.15	0.06	0.04	0.10	—	327	327	0.01	< 0.005	0.03	328
2026	0.03	0.13	0.19	0.27	< 0.005	0.01	< 0.005	0.01	0.01	< 0.005	0.01	—	42.3	42.3	< 0.005	< 0.005	< 0.005	42.5

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.	0.89	1.57	0.99	9.48	0.02	0.03	1.61	1.64	0.03	0.41	0.43	9.73	2,453	2,463	1.08	0.09	7.10	2,524
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.66	1.35	1.05	5.64	0.02	0.03	1.61	1.64	0.03	0.41	0.43	9.73	2,221	2,231	1.08	0.10	0.42	2,287
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.73	1.41	1.00	6.85	0.02	0.03	1.57	1.60	0.03	0.40	0.42	9.73	2,270	2,280	1.08	0.09	3.14	2,337
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.13	0.26	0.18	1.25	< 0.005	< 0.005	0.29	0.29	< 0.005	0.07	0.08	1.61	376	377	0.18	0.02	0.52	387

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	0.78	0.71	0.82	8.45	0.02	0.01	1.61	1.63	0.01	0.41	0.42	—	2,036	2,036	0.07	0.09	6.86	2,070
Area	0.09	0.85	0.01	0.96	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.58	2.58	< 0.005	< 0.005	—	2.59
Energy	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	392	392	0.03	< 0.005	—	394
Water	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Waste	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	0.89	1.57	0.99	9.48	0.02	0.03	1.61	1.64	0.03	0.41	0.43	9.73	2,453	2,463	1.08	0.09	7.10	2,524
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.64	0.57	0.90	5.57	0.02	0.01	1.61	1.63	0.01	0.41	0.42	—	1,806	1,806	0.07	0.09	0.18	1,835

Area	—	0.77	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	392	392	0.03	< 0.005	—	394
Water	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Waste	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	0.66	1.35	1.05	5.64	0.02	0.03	1.61	1.64	0.03	0.41	0.43	9.73	2,221	2,231	1.08	0.10	0.42	2,287
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.67	0.59	0.84	6.31	0.02	0.01	1.57	1.59	0.01	0.40	0.41	—	1,854	1,854	0.07	0.09	2.90	1,884
Area	0.05	0.81	< 0.005	0.47	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.27	1.27	< 0.005	< 0.005	—	1.28
Energy	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	392	392	0.03	< 0.005	—	394
Water	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Waste	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	0.73	1.41	1.00	6.85	0.02	0.03	1.57	1.60	0.03	0.40	0.42	9.73	2,270	2,280	1.08	0.09	3.14	2,337
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.12	0.11	0.15	1.15	< 0.005	< 0.005	0.29	0.29	< 0.005	0.07	0.08	—	307	307	0.01	0.01	0.48	312
Area	0.01	0.15	< 0.005	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.21	0.21	< 0.005	< 0.005	—	0.21
Energy	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	65.0	65.0	0.01	< 0.005	—	65.2
Water	—	—	—	—	—	—	—	—	—	—	—	0.22	3.72	3.94	0.02	< 0.005	—	4.68
Waste	—	—	—	—	—	—	—	—	—	—	—	1.39	0.00	1.39	0.14	0.00	—	4.87
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Total	0.13	0.26	0.18	1.25	< 0.005	< 0.005	0.29	0.29	< 0.005	0.07	0.08	1.61	376	377	0.18	0.02	0.52	387

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	0.78	0.71	0.82	8.45	0.02	0.01	1.61	1.63	0.01	0.41	0.42	—	2,036	2,036	0.07	0.09	6.86	2,070
Area	0.09	0.85	0.01	0.96	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.58	2.58	< 0.005	< 0.005	—	2.59
Energy	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	392	392	0.03	< 0.005	—	394
Water	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Waste	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	0.89	1.57	0.99	9.48	0.02	0.03	1.61	1.64	0.03	0.41	0.43	9.73	2,453	2,463	1.08	0.09	7.10	2,524
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.64	0.57	0.90	5.57	0.02	0.01	1.61	1.63	0.01	0.41	0.42	—	1,806	1,806	0.07	0.09	0.18	1,835
Area	—	0.77	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	392	392	0.03	< 0.005	—	394
Water	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Waste	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	0.66	1.35	1.05	5.64	0.02	0.03	1.61	1.64	0.03	0.41	0.43	9.73	2,221	2,231	1.08	0.10	0.42	2,287
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.67	0.59	0.84	6.31	0.02	0.01	1.57	1.59	0.01	0.40	0.41	—	1,854	1,854	0.07	0.09	2.90	1,884
Area	0.05	0.81	< 0.005	0.47	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.27	1.27	< 0.005	< 0.005	—	1.28
Energy	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	392	392	0.03	< 0.005	—	394
Water	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Waste	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	0.73	1.41	1.00	6.85	0.02	0.03	1.57	1.60	0.03	0.40	0.42	9.73	2,270	2,280	1.08	0.09	3.14	2,337

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.12	0.11	0.15	1.15	< 0.005	< 0.005	0.29	0.29	< 0.005	0.07	0.08	—	307	307	0.01	0.01	0.48	312
Area	0.01	0.15	< 0.005	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.21	0.21	< 0.005	< 0.005	—	0.21
Energy	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	65.0	65.0	0.01	< 0.005	—	65.2
Water	—	—	—	—	—	—	—	—	—	—	—	0.22	3.72	3.94	0.02	< 0.005	—	4.68
Waste	—	—	—	—	—	—	—	—	—	—	—	1.39	0.00	1.39	0.14	0.00	—	4.87
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Total	0.13	0.26	0.18	1.25	< 0.005	< 0.005	0.29	0.29	< 0.005	0.07	0.08	1.61	376	377	0.18	0.02	0.52	387

3. Construction Emissions Details

3.1. Demolition (2025) - 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	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
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	0.16	0.13	1.22	1.09	< 0.005	0.05	—	0.05	0.05	—	0.05	—	188	188	0.01	< 0.005	—	188
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
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	0.03	0.02	0.22	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	31.1	31.1	< 0.005	< 0.005	—	31.2
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
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	0.07	0.06	0.08	0.81	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	190	190	0.01	0.01	0.02	192
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	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.1	11.1	< 0.005	< 0.005	0.02	11.2
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	< 0.005	< 0.005	—	1.84	1.84	< 0.005	< 0.005	< 0.005	1.86
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

3.2. Demolition (2025) - 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	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
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	0.16	0.13	1.22	1.09	< 0.005	0.05	—	0.05	0.05	—	0.05	—	188	188	0.01	< 0.005	—	188
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
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	0.03	0.02	0.22	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	31.1	31.1	< 0.005	< 0.005	—	31.2
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
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	0.07	0.06	0.08	0.81	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	190	190	0.01	0.01	0.02	192
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	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.1	11.1	< 0.005	< 0.005	0.02	11.2
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	< 0.005	< 0.005	—	1.84	1.84	< 0.005	< 0.005	< 0.005	1.86
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

3.3. Site Preparation (2025) - 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	3.94	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314

Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
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	0.11	0.09	0.87	0.83	< 0.005	0.04	—	0.04	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	—	0.54	0.54	—	0.28	0.28	—	—	—	—	—	—	—
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	0.02	0.16	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Dust From Material Movement	—	—	—	—	—	—	0.10	0.10	—	0.05	0.05	—	—	—	—	—	—	—
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	0.07	0.10	0.95	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	221	221	0.01	0.01	0.02	224
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	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.48	6.48	< 0.005	< 0.005	0.01	6.56
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	< 0.005	< 0.005	—	1.07	1.07	< 0.005	< 0.005	< 0.005	1.09
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. Site Preparation (2025) - 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	3.94	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.87	0.83	< 0.005	0.04	—	0.04	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146

Dust From Material Movement	—	—	—	—	—	—	0.21	0.21	—	0.11	0.11	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.16	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.10	0.95	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	221	221	0.01	0.01	0.02	224
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	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.48	6.48	< 0.005	< 0.005	0.01	6.56
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	< 0.005	< 0.005	—	1.07	1.07	< 0.005	< 0.005	< 0.005	1.09
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 (2025) - 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	2.07	1.74	16.3	17.9	0.03	0.72	—	0.72	0.66	—	0.66	—	2,959	2,959	0.12	0.02	—	2,970
Dust From Material Movement	—	—	—	—	—	—	7.08	7.08	—	3.42	3.42	—	—	—	—	—	—	—
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	0.11	0.10	0.89	0.98	< 0.005	0.04	—	0.04	0.04	—	0.04	—	162	162	0.01	< 0.005	—	163
Dust From Material Movement	—	—	—	—	—	—	0.39	0.39	—	0.19	0.19	—	—	—	—	—	—	—
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	0.02	0.16	0.18	< 0.005	0.01	—	0.01	0.01	—	0.01	—	26.8	26.8	< 0.005	< 0.005	—	26.9

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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.08	0.81	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	190	190	0.01	0.01	0.02	192
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	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.1	11.1	< 0.005	< 0.005	0.02	11.2
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	< 0.005	< 0.005	—	1.84	1.84	< 0.005	< 0.005	< 0.005	1.86
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 (2025) - 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	2.07	1.74	16.3	17.9	0.03	0.72	—	0.72	0.66	—	0.66	—	2,959	2,959	0.12	0.02	—	2,970
Dust From Material Movement	—	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—	—
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	0.11	0.10	0.89	0.98	< 0.005	0.04	—	0.04	0.04	—	0.04	—	162	162	0.01	< 0.005	—	163
Dust From Material Movement	—	—	—	—	—	—	0.15	0.15	—	0.07	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.16	0.18	< 0.005	0.01	—	0.01	0.01	—	0.01	—	26.8	26.8	< 0.005	< 0.005	—	26.9
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	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	0.07	0.06	0.08	0.81	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	190	190	0.01	0.01	0.02	192
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	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.1	11.1	< 0.005	< 0.005	0.02	11.2
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	< 0.005	< 0.005	—	1.84	1.84	< 0.005	< 0.005	< 0.005	1.86
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 (2025) - 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	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	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	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	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	0.77	0.64	5.97	7.45	0.01	0.25	—	0.25	0.23	—	0.23	—	1,370	1,370	0.06	0.01	—	1,375
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	0.14	0.12	1.09	1.36	< 0.005	0.05	—	0.05	0.04	—	0.04	—	227	227	0.01	< 0.005	—	228
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	0.04	0.03	0.03	0.58	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	90.9	90.9	< 0.005	< 0.005	0.31	92.2
Vendor	< 0.005	< 0.005	0.06	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	57.5	57.5	< 0.005	0.01	0.16	60.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.03	0.33	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	77.3	77.3	< 0.005	< 0.005	0.01	78.3
Vendor	< 0.005	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	57.6	57.6	< 0.005	0.01	< 0.005	59.9
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	0.02	0.01	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	47.2	47.2	< 0.005	< 0.005	0.08	47.9
Vendor	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	32.9	32.9	< 0.005	< 0.005	0.04	34.2
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	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.82	7.82	< 0.005	< 0.005	0.01	7.92
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.44	5.44	< 0.005	< 0.005	0.01	5.67
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 (2025) - 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	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	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	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	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	0.77	0.64	5.97	7.45	0.01	0.25	—	0.25	0.23	—	0.23	—	1,370	1,370	0.06	0.01	—	1,375

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	0.14	0.12	1.09	1.36	< 0.005	0.05	—	0.05	0.04	—	0.04	—	227	227	0.01	< 0.005	—	228
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	0.04	0.03	0.03	0.58	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	90.9	90.9	< 0.005	< 0.005	0.31	92.2
Vendor	< 0.005	< 0.005	0.06	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	57.5	57.5	< 0.005	0.01	0.16	60.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.03	0.33	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	77.3	77.3	< 0.005	< 0.005	0.01	78.3
Vendor	< 0.005	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	57.6	57.6	< 0.005	0.01	< 0.005	59.9
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	0.02	0.01	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	47.2	47.2	< 0.005	< 0.005	0.08	47.9
Vendor	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	32.9	32.9	< 0.005	< 0.005	0.04	34.2
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	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.82	7.82	< 0.005	< 0.005	0.01	7.92
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.44	5.44	< 0.005	< 0.005	0.01	5.67
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. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	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	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.06	0.60	0.79	< 0.005	0.02	—	0.02	0.02	—	0.02	—	145	145	0.01	< 0.005	—	146
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	0.11	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	24.1	24.1	< 0.005	< 0.005	—	24.2
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	0.03	0.02	0.03	0.31	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	75.7	75.7	< 0.005	< 0.005	0.01	76.7
Vendor	< 0.005	< 0.005	0.06	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	56.5	56.5	< 0.005	0.01	< 0.005	58.8
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	< 0.005	< 0.005	—	4.91	4.91	< 0.005	< 0.005	0.01	4.97
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.43	3.43	< 0.005	< 0.005	< 0.005	3.57
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	< 0.005	< 0.005	—	0.81	0.81	< 0.005	< 0.005	< 0.005	0.82
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.57	0.57	< 0.005	< 0.005	< 0.005	0.59
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. Building Construction (2026) - 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	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.08	0.06	0.60	0.79	< 0.005	0.02	—	0.02	0.02	—	0.02	—	145	145	0.01	< 0.005	—	146
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	0.11	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	24.1	24.1	< 0.005	< 0.005	—	24.2
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	0.03	0.02	0.03	0.31	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	75.7	75.7	< 0.005	< 0.005	0.01	76.7
Vendor	< 0.005	< 0.005	0.06	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	56.5	56.5	< 0.005	0.01	< 0.005	58.8
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	< 0.005	< 0.005	—	4.91	4.91	< 0.005	< 0.005	0.01	4.97
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.43	3.43	< 0.005	< 0.005	< 0.005	3.57
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	< 0.005	< 0.005	—	0.81	0.81	< 0.005	< 0.005	< 0.005	0.82
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.57	0.57	< 0.005	< 0.005	< 0.005	0.59
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. Paving (2026) - 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	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.05	0.04	0.39	0.54	< 0.005	0.02	—	0.02	0.02	—	0.02	—	82.8	82.8	< 0.005	< 0.005	—	83.1
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.07	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.7	13.7	< 0.005	< 0.005	—	13.8
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.06	0.06	0.08	0.75	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	186	186	< 0.005	0.01	0.02	188
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	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.9	10.9	< 0.005	< 0.005	0.02	11.0
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	< 0.005	< 0.005	—	1.80	1.80	< 0.005	< 0.005	< 0.005	1.82
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. Paving (2026) - 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	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	0.05	0.04	0.39	0.54	< 0.005	0.02	—	0.02	0.02	—	0.02	—	82.8	82.8	< 0.005	< 0.005	—	83.1
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.07	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.7	13.7	< 0.005	< 0.005	—	13.8
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.06	0.06	0.08	0.75	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	186	186	< 0.005	0.01	0.02	188
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	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.9	10.9	< 0.005	< 0.005	0.02	11.0
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	< 0.005	< 0.005	—	1.80	1.80	< 0.005	< 0.005	< 0.005	1.82

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

3.13. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	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	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	10.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.01	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	—	0.57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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

Architect Coatings	—	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.01	< 0.005	0.01	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.1	15.1	< 0.005	< 0.005	< 0.005	15.3
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	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.89	0.89	< 0.005	< 0.005	< 0.005	0.90
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	< 0.005	< 0.005	—	0.15	0.15	< 0.005	< 0.005	< 0.005	0.15
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

3.14. Architectural Coating (2026) - 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	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	10.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.01	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	—	0.57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	—	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.01	< 0.005	0.01	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.1	15.1	< 0.005	< 0.005	< 0.005	15.3
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	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.89	0.89	< 0.005	< 0.005	< 0.005	0.90
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	< 0.005	< 0.005	—	0.15	0.15	< 0.005	< 0.005	< 0.005	0.15
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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.78	0.71	0.82	8.45	0.02	0.01	1.61	1.63	0.01	0.41	0.42	—	2,036	2,036	0.07	0.09	6.86	2,070

Total	0.78	0.71	0.82	8.45	0.02	0.01	1.61	1.63	0.01	0.41	0.42	—	2,036	2,036	0.07	0.09	6.86	2,070
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.64	0.57	0.90	5.57	0.02	0.01	1.61	1.63	0.01	0.41	0.42	—	1,806	1,806	0.07	0.09	0.18	1,835
Total	0.64	0.57	0.90	5.57	0.02	0.01	1.61	1.63	0.01	0.41	0.42	—	1,806	1,806	0.07	0.09	0.18	1,835
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.12	0.11	0.15	1.15	< 0.005	< 0.005	0.29	0.29	< 0.005	0.07	0.08	—	307	307	0.01	0.01	0.48	312
Total	0.12	0.11	0.15	1.15	< 0.005	< 0.005	0.29	0.29	< 0.005	0.07	0.08	—	307	307	0.01	0.01	0.48	312

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.78	0.71	0.82	8.45	0.02	0.01	1.61	1.63	0.01	0.41	0.42	—	2,036	2,036	0.07	0.09	6.86	2,070
Total	0.78	0.71	0.82	8.45	0.02	0.01	1.61	1.63	0.01	0.41	0.42	—	2,036	2,036	0.07	0.09	6.86	2,070
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.64	0.57	0.90	5.57	0.02	0.01	1.61	1.63	0.01	0.41	0.42	—	1,806	1,806	0.07	0.09	0.18	1,835
Total	0.64	0.57	0.90	5.57	0.02	0.01	1.61	1.63	0.01	0.41	0.42	—	1,806	1,806	0.07	0.09	0.18	1,835
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	0.12	0.11	0.15	1.15	< 0.005	< 0.005	0.29	0.29	< 0.005	0.07	0.08	—	307	307	0.01	0.01	0.48	312
Total	0.12	0.11	0.15	1.15	< 0.005	< 0.005	0.29	0.29	< 0.005	0.07	0.08	—	307	307	0.01	0.01	0.48	312

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	199	199	0.01	< 0.005	—	199
Total	—	—	—	—	—	—	—	—	—	—	—	—	199	199	0.01	< 0.005	—	199
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	199	199	0.01	< 0.005	—	199
Total	—	—	—	—	—	—	—	—	—	—	—	—	199	199	0.01	< 0.005	—	199
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	32.9	32.9	< 0.005	< 0.005	—	33.0
Total	—	—	—	—	—	—	—	—	—	—	—	—	32.9	32.9	< 0.005	< 0.005	—	33.0

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	199	199	0.01	< 0.005	—	199
Total	—	—	—	—	—	—	—	—	—	—	—	—	199	199	0.01	< 0.005	—	199
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	199	199	0.01	< 0.005	—	199
Total	—	—	—	—	—	—	—	—	—	—	—	—	199	199	0.01	< 0.005	—	199
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	32.9	32.9	< 0.005	< 0.005	—	33.0
Total	—	—	—	—	—	—	—	—	—	—	—	—	32.9	32.9	< 0.005	< 0.005	—	33.0

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	194	194	0.02	< 0.005	—	194

Total	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	194	194	0.02	< 0.005	—	194
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	194	194	0.02	< 0.005	—	194
Total	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	194	194	0.02	< 0.005	—	194
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	32.1	32.1	< 0.005	< 0.005	—	32.2
Total	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	32.1	32.1	< 0.005	< 0.005	—	32.2

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	194	194	0.02	< 0.005	—	194
Total	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	194	194	0.02	< 0.005	—	194
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	194	194	0.02	< 0.005	—	194
Total	0.02	0.01	0.15	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	194	194	0.02	< 0.005	—	194
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	32.1	32.1	< 0.005	< 0.005	—	32.2
Total	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	32.1	32.1	< 0.005	< 0.005	—	32.2

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.71	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.09	0.09	0.01	0.96	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.58	2.58	< 0.005	< 0.005	—	2.59
Total	0.09	0.85	0.01	0.96	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.58	2.58	< 0.005	< 0.005	—	2.59
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.71	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.77	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.01	0.01	< 0.005	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.21	0.21	< 0.005	< 0.005	—	0.21
Total	0.01	0.15	< 0.005	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.21	0.21	< 0.005	< 0.005	—	0.21

4.3.2. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.71	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.09	0.09	0.01	0.96	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.58	2.58	< 0.005	< 0.005	—	2.59
Total	0.09	0.85	0.01	0.96	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.58	2.58	< 0.005	< 0.005	—	2.59
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Consumer	—	0.71	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.77	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.01	0.01	< 0.005	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.21	0.21	< 0.005	< 0.005	—	0.21
Total	0.01	0.15	< 0.005	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.21	0.21	< 0.005	< 0.005	—	0.21

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Total	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Total	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.22	3.72	3.94	0.02	< 0.005	—	4.68
Total	—	—	—	—	—	—	—	—	—	—	—	0.22	3.72	3.94	0.02	< 0.005	—	4.68

4.4.2. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Total	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Total	—	—	—	—	—	—	—	—	—	—	—	1.32	22.5	23.8	0.14	< 0.005	—	28.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.22	3.72	3.94	0.02	< 0.005	—	4.68
Total	—	—	—	—	—	—	—	—	—	—	—	0.22	3.72	3.94	0.02	< 0.005	—	4.68

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Total	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Total	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.39	0.00	1.39	0.14	0.00	—	4.87
Total	—	—	—	—	—	—	—	—	—	—	—	1.39	0.00	1.39	0.14	0.00	—	4.87

4.5.2. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Total	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Total	—	—	—	—	—	—	—	—	—	—	—	8.40	0.00	8.40	0.84	0.00	—	29.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.39	0.00	1.39	0.14	0.00	—	4.87
Total	—	—	—	—	—	—	—	—	—	—	—	1.39	0.00	1.39	0.14	0.00	—	4.87

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	1/1/2025	1/29/2025	5.00	20.0	—
Site Preparation	Site Preparation	1/30/2025	2/13/2025	5.00	10.0	—
Grading	Grading	2/14/2025	3/14/2025	5.00	20.0	—
Building Construction	Building Construction	3/15/2025	1/31/2026	5.00	230	—
Paving	Paving	2/1/2026	3/1/2026	5.00	20.0	—
Architectural Coating	Architectural Coating	3/2/2026	3/30/2026	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	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38

Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
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	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
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	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37

Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
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	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
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	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	0.00	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT

Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	6.12	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	1.82	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	1.22	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	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	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	0.00	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2

Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	6.12	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	1.82	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	1.22	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	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

Non-applicable. No control strategies activated by user.

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	67,129	22,376	0.00	0.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	—	—
Site Preparation	—	—	15.0	0.00	—
Grading	—	—	20.0	0.00	—
Paving	0.00	0.00	0.00	0.00	0.19

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	0.19	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	457	0.03	< 0.005
2026	0.00	457	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	160	162	145	57,875	2,255	2,279	2,043	813,387

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	160	162	145	57,875	2,255	2,279	2,043	813,387

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)
67128.75	22,376	0.00	0.00	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00

Summer Days	day/yr	180

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	158,767	457	0.0330	0.0040	604,593

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)
Single Family Housing	158,767	457	0.0330	0.0040	604,593

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	691,454	4,566,944

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	691,454	4,566,944

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	15.6	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	15.6	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0

Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

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	23.4	annual days of extreme heat
Extreme Precipitation	0.00	annual days with precipitation above 20 mm
Sea Level Rise	—	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 (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
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	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	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	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	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 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	88.7
AQ-PM	7.34
AQ-DPM	43.4
Drinking Water	45.4
Lead Risk Housing	1.31

Pesticides	0.00
Toxic Releases	3.08
Traffic	64.6
Effect Indicators	—
CleanUp Sites	0.00
Groundwater	0.00
Haz Waste Facilities/Generators	43.3
Impaired Water Bodies	0.00
Solid Waste	0.00
Sensitive Population	—
Asthma	20.9
Cardio-vascular	16.5
Low Birth Weights	20.3
Socioeconomic Factor Indicators	—
Education	25.9
Housing	86.8
Linguistic	7.38
Poverty	21.5
Unemployment	4.23

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	47.56833055
Employed	15.56525087
Median HI	74.56691903

Education	—
Bachelor's or higher	65.96945977
High school enrollment	100
Preschool enrollment	48.45374054
Transportation	—
Auto Access	37.4566919
Active commuting	25.81804183
Social	—
2-parent households	97.56191454
Voting	86.88566662
Neighborhood	—
Alcohol availability	82.80508148
Park access	2.194276915
Retail density	35.17259079
Supermarket access	45.92583087
Tree canopy	17.8108559
Housing	—
Homeownership	83.62633132
Housing habitability	22.35339407
Low-inc homeowner severe housing cost burden	25.38175286
Low-inc renter severe housing cost burden	6.274862056
Uncrowded housing	70.21686129
Health Outcomes	—
Insured adults	97.45925831
Arthritis	0.0
Asthma ER Admissions	80.6
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	94.6
Cognitively Disabled	39.7
Physically Disabled	49.3
Heart Attack ER Admissions	64.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	19.6
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	79.8
Elderly	0.9
English Speaking	70.5
Foreign-born	10.7
Outdoor Workers	98.2

Climate Change Adaptive Capacity	—
Impervious Surface Cover	47.2
Traffic Density	47.5
Traffic Access	23.0
Other Indices	—
Hardship	34.9
Other Decision Support	—
2016 Voting	92.5

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	7.00
Healthy Places Index Score for Project Location (b)	56.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
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 & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Operations: Hearths	—

GENERAL BIOLOGICAL RESOURCES ASSESSMENT

RANCHO MIRAGE, RIVERSIDE COUNTY, CALIFORNIA
(Township 4 South, Range 6 East, Section 30)
(TTM 38041)

Prepared for:

Fomotor Engineering

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Project: #2023-53 BA

April 26, 2023

TITLE PAGE

Date Report Written:	**April 26, 2023**
Date Field Work Completed:	**April 10, 2023**
Report Title:	**General Biological Resources Assessment**
Project Location:	**Rancho Mirage, California** **APN: 685-030-006, 685-080-010 & 685-080-031** **TTM: 38041**
Prepared for:	**Fomotor Engineering**
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1.0 INTRODUCTION AND SUMMARY

Biological surveys were conducted on an 8.4-acre parcel (Approximate), located at east of the intersection of Via Josefina and Victory Dr. in the City of Rancho Mirage, California (Township 4 South, Range 6 East, Section 30, USGS Cathedral City, California Quadrangle, 1956) (Figures 1 and 2). The property is located in an area zoned for very low density usage (RL-2) in Rancho Mirage, California.

As part of the environmental process, California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS) data sources were reviewed. Following the data review, surveys were performed on the site on April 10, 2023, during which the biological resources on the site and in the surrounding areas were documented by biologists from RCA Associates, Inc. As part of the surveys, the property and adjoining areas were evaluated for the presence of native habitats which may support populations of sensitive wildlife species. The property was also evaluated for the presence of sensitive habitats including wetlands, vernal pools, riparian habitats, and jurisdictional areas.

Habitat assessments were also conducted for the desert tortoise and burrowing owl. Based on data from USFWS, CDFW, and a search of the California Natural Diversity Database (CNDDB, 2023). Scientific nomenclature for this report is based on the following references: Hickman (1993), Munz (1974), Stebbins (2003), Sibley (2016) and Whitaker (1980).

2.0 EXISTING CONDITIONS

The property is approximately 8.4-acres and is located at located at east of the intersection of Via Josefina and Victory Dr. in the City of Rancho Mirage, California (APN: 685-030-006, 685-080-010 & 685-080-031). The site is located in Section 30, Township 4 South, Range 6 East (USGS Cathedral City, CA 7.5-minute quadrangle) (Figures 1 and 2). Vacant land surrounds the property in the south and west, while a community of homes lines the northern and eastern border of the property.

The relatively flat site is approximately 83 meters above sea level and contains no slope. The vegetation community present on site supports a sparse desert dune habitat encompassing mainly smaller native plants and some non-native grasses. The site contains a few species of plant which include the creosote bush (*Larrea tridentata*), hairy sand verbena (*Abronia villosa var. villosa*), Desert palafox (*Palafoxia arida*), whitestem blazingstar (*Mentzelia albicaulis*), Flatspine burr ragweed (*Ambrosia acanthicarpa*), London rocket (*Sisymbrium irio*), Dyebush (*Psorothamnus emoryi*) and cheatgrass (*Bromus tectorum*). Section 5.0 provides a more detailed discussion of the various plant species observed during the surveys.

The site supports a minimal amount of wildlife, with many of them being birds. A single mammalian species was seen on site, the blacktailed jackrabbit (*Lepus californicus*). Species that were not observed, but are expected to occur on site given their abundance in the surrounding areas include California ground squirrel (*Otospermophilus beecheyi*) and antelope ground squirrel (*Ammospermophilus leucurus*).

Birds observed included house finch (*Carpodacus mexicanus*), common ravens (*Corvus corax*), house sparrow (*Passer domesticus*), rock pigeon (*Columba livia*), mockingbird (*Mimus polyglottos*), Say's phoebe (*Sayornis saya*) and Verdin (*Auriparus flaviceps*). Section 5.0 provides a more detailed discussion of the various species observed during the surveys.

No reptiles were observed during the field investigation, due to the temperature and time of day which may have been a factor in their absence. Species that are expected to occur on site include the western whiptail lizard (*Cnemidophorus tigris*) and common side-blotched lizard (*Uta stansburiana*). Table 2 provides a compendium of wildlife species.

There were no observations that indicated that a potential channel is present on the site. It is the opinion of RCA Associates, Inc. that no additional surveys will be required at this time.

In addition, no sensitive habitats (e.g., sensitive species, critical habitats, etc.) have been documented in the immediate area according to the CNDDB (2023) and none were observed during the field investigations.

3.0 METHODOLOGIES

General biological surveys were conducted on April 10, 2023, during which biologists from RCA Associates, Inc. initially walked meandering transects throughout the property. During the surveys, data was collected on the plant and animal species present on the site. All plants and animals detected during the surveys were recorded and are provided in Tables 1 & 2 (Appendix A). The property was also evaluated for the presence of habitats which might support sensitive species. Scientific nomenclature for this report is based on the following references: Hickman (1993), Munz (1974), Stebbins (2003), Sibley (2016) and Whitaker (1980). Following completion of the initial reconnaissance survey, habitat assessments were conducted for the desert tortoise and burrowing owl. Weather conditions consisted of wind speeds of 0 to 5 mph, temperatures in the low to mid 80's (°F) (AM), and 15% cloud cover. The applicable methodologies are summarized below.

General Plant and Animal Surveys: Meandering transects were walked on the site and in surrounding areas (i.e., the zone of influence) where accessible at a pace that allowed for careful documentation of the plant and animal species present on the site. All plants observed were identified in the field or sampled and brought back for further identification. Wildlife was identified through visual observations and/or by vocalizations. Habitat assessments were conducted for the desert tortoise and burrowing owl. Tables 1 and 2 (Appendix A) provides a comprehensive compendium of the various plant and animal; species observed during the field investigations.

4.0 LITERATURE SEARCH

As part of the environmental process, a search of the California Natural Diversity Database (CNDDB) search was performed. Based on this review, it was determined that sixteen special status species have been documented within the Cathedral City quad of the property. The following tables provide data on each special status species which has been documented in the area.

Table 4-1: Federal and State Listed Species and State Species of Special Concern.
E = Endangered; T = Threatened; SSC = Species of special concern; CNPS = California Native Plant Society; CNDDB = California Natural Diversity Data Base

NAME	STATUS	HABITAT REQUIREMENTS	PRESENCE/ ABSENCE ON PROPERTY
Plant Species			
Within Cathedral City Quadrangle			
Chaparral sand-verbena (*Abronia villosa var. aurita*)	Federal: None State: None CNPS: 1B.1	Desert Scrub	The site does support suitable habitat for the species; however none were observed during field surveys.
Horn's milk-vetch (*Diplacus mohavensis*)	Federal: None State: None CNPS: 1B.1	Alkali Sink, wetland-riparian	Site does not support minimum suitable habitat for the species; and no species were observed during the field survey.
Coachella Valley milk-vetch (*Astragalus lentiginosus var. coachellae*)	Federal: Endangered State: None CNPS: 1B.2	Creosote Bush Scrub	The site does support minimum suitable habitat for the species; however none were observed during field surveys.
Arizona spurge (*Euphorbia arizonica*)	Federal: None State: None CNPS: 2B.3	Desert Habitat with compact soils	The site does not support minimum suitable habitat for the species; and none were observed during field surveys.
Flat-seeded spurge (*Euphorbia platysperma*)	Federal: None State: None CNPS: 1B.2	Creosote Bush Scrub	The site does not support minimum suitable habitat for the species; and none were observed during field surveys.
Slender cottonheads (*Nemacaulis denudata var. gracilis*)	Federal: None State: None CNPS: 2B.2	Dunes and sandy areas	The site does support minimum suitable habitat for the species; however none were observed during field surveys.

Desert spike-moss (*Selaginella eremophila*)	Federal: None State: None CNPS: 2B.2	Rocky and sandy slopes, in open rock or crevices, on rock or terrestrial.	The site does not support minimum suitable habitat for the species; and none were observed during field surveys.
Purple stemodia (*Stemodia durantifolia*)	Federal: None State: None CNPS: 2B.1	wetland-riparian	The site does not support minimum suitable habitat for the species; and none were observed during field surveys.

Notes:

Status abbreviations:

CNPS List 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
CNPS List 1B: Plants rare, threatened, or endangered in California and elsewhere
CNPS List 2A: Plants presumed extirpated in California, but more common somewhere else
CNPS List 2B: Plants rare, threatened, or endangered in California, but more common somewhere else
CNPS List 3: Plants about which more information is needed - a review list
CNPS List 4: Plants of limited distribution - a watch list

.1 Seriously threatened in California (over 80% of occurrences threatened/ high degree and immediacy of threat)
.2 Moderately threatened in California (20-80% occurrences threatened/ moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened/ low degree and immediacy of threat or no current threats known)

NAME	STATUS	HABITAT REQUIREMENTS	PRESENCE/ ABSENCE ON PROPERTY
Wildlife Species			
Within Cathedral City Quadrangle			
Western yellow bat (*Lasiurus xanthinus*)	Federal: None State: None CDFW: SSC	Riparian woodland	The site does not support minimum suitable habitat for the species; and none were observed during field surveys.
Burrowing owl (*Athene cunicularia*)	Federal: None State: None CDFW: SSC	Grasslands and desert habitats	The site does not support minimal suitable habitat for the species and no owls or owl sign, or suitable burrows, were observed during field surveys.
Casey's June beetle (Dinacoma caseyi)	Federal: Endangered State: None	Alluvial habitat	The site does not support minimum suitable habitat for the species; and none were observed during field surveys.

Flat-tailed horned lizard (*Phrynosoma mcallii*)	Federal: None State: None CDFW: SSC	Sandy desert hardpan or gravel flats	The site does not support minimum suitable habitat for the species; and none were observed during field surveys.
Le Conte's thrasher (*Toxostoma lecontei*)	Federal: None State: None CDFW: SSC	Desert scrub	The site does not support minimum suitable habitat for the species; and none were observed during field surveys.
Coastal California gnatcatcher (*Polioptila californica californica*)	Federal: Threatened State: None CDFW: SSC	Coastal sage scrub	The site does not support minimum suitable habitat for the species; and none were observed during field surveys.
Coachella Valley fringe-toed lizard (*Uma inornate*)	Federal: Threatened State: Endangered	Sandy desert habitat	The site does support minimum suitable habitat for the species; However, none were observed during field surveys.
Palm Springs round-tailed ground squirrel (*Xerospermophilus tereticaudus chlorus*)	Federal: None State: None CDFW: SSC	Desert succulent shrub, desert wash, desert scrub, alkali desert scrub, and levees in cropland habitat.	The site does not support minimum suitable habitat for the species; and none were observed during field surveys.

5.0 RESULTS

5.1 General Biological Resources

The site supports a desert scrub community which sparsely covers the property (Figure 3). Species present on the site included Tamarisk (*Tamarix*), creosote bush (*Larrea tridentata*), desert twin bugs (*Dicoria canescens*), Puncture vine (*Tribulus terrestris*) and kelch grass (*Schismus barbatus*). Table 1 provides a compendium of all plants occurring on the site and/or in the immediate surrounding area.

Birds observed included Says phoebe (*Sayornis saya*), white throated swift (*Aeronautes saxatalis*), ravens (*Corvus corax*), rock pigeon *(Columba livia*), mourning dove (*Zenaida macroura*), northern mocking bird (*Mimus polyglottos*) and house finch (*Haemorhous mexicanus*). Table 2 provides a complete compendium of wildlife species occurring on site or in the surroundin

g area

Only a single mammal was observed, the black tailed jackrabbit (*Lepus californicus*) was seen during the April 2023 survey. The Antelope Ground squirrel (*Ammospermophilus leucurus*) and California ground squirrel (*Otospermophilus beecheyi*) were not observed during the field investigation, we can assume they are in the area due to current conditions and population distributions. Other wildlife species that may occur on site include desert cottontails (*Sylvilagus audubonii*) and California ground squirrels (*Otospermophilus beecheyi*), and Merriam's kangaroo rats (*Dipodomys merriami*) may also occur on the site given their wide-spread distribution in the region. Tables 1 and 2 (Appendix A) provides a compendium of the various plant and animal species identified during the field investigations and those common to the area. No distinct wildlife corridors were identified on the site or in the immediate area.

No reptiles were observed on site during the April 2023 field investigations. However, some reptiles that may inhabit the site include the Western Whiptail Lizard *(Cnemidophorus tigris)* and Side-blotched lizard *(Uta stansburiana)*.

No sensitive habitats (e.g., wetlands, vernal pools, critical habitats for sensitive species, etc.) were observed on the site during the field investigations.

The following are the listed and special status species that have the ability to occur on the project site. It is not a comprehensive list of all the species in the quad. This information has been taken from the California Natural Diversity Database and is using the most current version.

5.2 Federal and State Listed Species

Desert Tortoise: The property supports no suitable habitat for the desert tortoise based on the location of the site in a developed area of Rancho Mirage. No tortoises were observed anywhere within the property boundaries during the April 2023 surveys. In addition, Rancho Mirage falls outside the standard range of the Desert Tortoise. The protocol survey results are valid for one year as per CDFW and USFWS requirements.

5.3 Species of Special Concern

Burrowing Owl: The site is located within documented burrowing owl habitat according to CNDDB (2023). No owls were seen on the property during the survey, and minimal suitable habitat was observed. Burrowing owls are not expected to occur on the site due to lack of suitable vegetation and burrows.

Coachella Valley fringe-toed lizard: Coachella Valley fringe-toed lizard have not been recently observed in the area according to CNDDB (2023). The lizards are not expected to occur on the site due to its location being bordered by numerous developments and roadways that act as natural barriers to entry. The Coachella Valley fringe-toed lizard may be very infrequent in this specific area due to the area being highly developed and the amount of human traffic around the project site.

Sensitive Plants: There are four plant species of special concern, these species are the Flat-seeded spurge, Coachella Valley milk-vetch, Horn's milk-vetch and Chaparral sand-verbena. There is marginal suitable habitat for three of the four species being the Flat-seeded spurge, Coachella Valley milk-vetch and Chaparral sand-verbena. These species occur in desert scrub or creosote bush scrub habitats. The horn's milk-vetch occurs in wetland/riparian habitats which are not present on site. Even with some marginally suitable habitat, none of the four plant species of special concern were observed on site and are not expected to occur on site in the future.

5.4 Jurisdictional Waters and Riparian Habitat

No riparian vegetation (e.g., cottonwoods, willows, etc.) exist on the site. No potential channels were observed on the property and it is the opinion of RCA Associates that no further surveys will be necessary.

5.5 Protected Plants

As of September 22, 2020, the California Department of Fish and Wildlife temporarily listed the western Joshua tree (*Yucca brevifolia*) as an endangered species until a final decision is made in 2023. Joshua trees were not observed on site during the April 10, 2023 field investigations.

6.0 IMPACTS AND MITIGATION MEASURES

6.1 General Biological Resources

Future development of the site will impact the general biological resources present on site, because most if not all of the vegetation will be removed during future construction activities. The site is expected to support very few wildlife species which will be impacted by development activities. Those species with limited mobility (i.e., small mammals and reptiles) will experience increases in mortality during the construction phase. However, more mobile species (i.e., birds, large mammals) will be displaced into adjacent areas and will likely experience minimal impacts. Therefore, loss of about 8.4-acres of a relatively disturbed desert scrub habitat is not expected to have a significant cumulative impact on the overall biological resources in the region given the presence of similar habitat throughout the surrounding area. No sensitive habitats (e.g., wetlands, vernal pools, critical habitats for sensitive species, etc.) were observed on the site during the field investigations.

6.2 Federal and State Listed and Species of Special Concern

No federal or State-listed species were observed on the site during the field investigations which include the desert tortoise. In addition, there are no documented observations of these species either on the site or in the immediate area. The site is not expected to support populations of the desert tortoise based on the absence of habitat, suitable burrows, or signs.

The Western Joshua tree (*Yucca brevifolia*), a candidate threatened species under the California Endangered Species Act (CESA), was not observed on site. Refer to section 5.5 for more information on the status and requirements on this species.

A pre-construction burrowing owl survey may be required by CDFW to determine if any owls have moved on to the site since the April 10, 2023 surveys. As stated in CDFW's *Staff Report on Burrowing Owl Mitigation*, the most effective method of completing a pre-construction survey (take avoidance survey) should be performed within 14 days of ground disturbance, followed by a final pre-construction survey within 48 hours of breaking ground.

7.0 CONCLUSIONS AND CONSIDERATIONS

Future development activities include the grading and removal of all vegetation from the 8.4-acre parcel; however, cumulative impacts to the general biological resources (plants and animals) in the surrounding area are expected to be negligible. This assumption is based on the habitat containing scarce vegetation of non-native species. As discussed above, the site does not support any desert tortoises or burrowing owls due to the lack of suitable habitat and potential burrows. Joshua trees (a state candidate species) were not observed in the field investigations during April 2023 survey. The following mitigation measures should be considered:

1. Pre-construction surveys for burrowing owls, desert tortoise, and nesting birds protected under the Migratory Bird Treaty Act and Section 3503 of the California Fish and Wildlife Code shall be conducted prior to the commencement of Project-related ground disturbance.
    a. Appropriate survey methods and timeframes shall be established, to ensure that chances of detecting the target species are maximized. In the event that listed species, such as the desert tortoise, are encountered, authorization from the USFWS and CDFW must be obtained. If nesting birds are detected, avoidance measures shall be implemented to ensure that nests are not disturbed until after young have fledged.
    b. Pre-construction surveys shall encompass all areas within the potential footprint of disturbance for the project, as well as a reasonable buffer around these areas.
2. A focused plant survey should be considered for all special status plant species that have the potential to occur on the site to be performed during the blooming season (April - June) to determine the potential environmental effects of the proposed projects on special status plants and sensitive natural communities following recommended protocols by the Department of Fish and Wildlife.

If any sensitive species are observed on the property during future activities, CDFW and USFWS (as applicable) should be contacted to discuss specific mitigation measures which may be required for the individual species. CDFW and USFWS are the only agencies which can grant authorization for the "take" of any sensitive species and can approve the implementation of any applicable mitigation measures.

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CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits, presents the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Fieldwork conducted for this assessment was performed by Ryan Hunter and Brian Bunyi. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project.

Date: 04/26/2023 Signed: *Ryan Hunter*

Brian Bunyi

Field Work Performed By: Ryan Hunter
Senior Environmental Scientist/Biologist

Field Work Performed By: Brian Bunyi
Environmental Scientist/Wildlife Biologist

Appendix A

Tables and Figures

	Figure 1: Regional Exhibit Produced By: RCA Associates Inc.	**East of the Intersection of Via Josefina and Victory Dr. in the City of Rancho Mirage, CA.**	Source: Uinta Software Acreage: 8.4-Acres (Approximately) Project #: 2023-53

RCA ASSOCIATES,INC

Figure 2: Vicinity Exhibit

Produced By: RCA Associates Inc.

East of the Intersection of Via Josefina and Victory Dr. in the City of Rancho Mirage, CA.

Source:	Uinta Software
Acreage:	8.4-Acres (Approximately)
Project #:	2023-53

RCA ASSOCIATES,INC

CENTER OF SITE LOOKING NORTH

CENTER OF SITE LOOKING EAST

FIGURE 3: PHOTOGRAPHS OF SITE

CENTER OF SITE LOOKING SOUTH

CENTER OF SITE LOOKING WEST

FIGURE 3, cont: PHOTOGRAPHS OF SITE

Table 1 - Plants observed on the site and known to occur in the immediate surrounding area.

Common Name	Scientific Name	Location
Asian mustard	*Brassica tournefortii*	On Site and in the surrounding area.
Creosote bush	*Larrea tridentata*	"
Cheatgrass	*Bromus tectorum*	"
Tamarisk	*Tamarix*	"
Hairy sand verbena	*Abronia villosa var. villosa*	"
Nettle leaf goosefoot	*Chenopodiastrum murale*	"
Desert twin bugs	*Dicoria canescens*	"
London rocket	*Sisymbrium irio*	"
Birdcage evening primrose	*Oenothera deltoides*	"
Puncture vine	*Tribulus terrestris*	"
Tumbleweed	*Kali tragus var. tragus*	"
Fourwing saltbush	*Atriplex canescens*	"
Flatspine bur ragweed	*Ambrosia acanthicarpa*	"
Western tansymustard	*Descurainia pinnata*	"
Desert palafox	*Palafoxia arida*	"
Kelch grass	*Schismus barbatus*	"

Note: The above list is not intended to be a comprehensive list of every plant which may occur on the site or in the zone of influence.

Table 2 - Wildlife observed on the site during the field investigations.

Common Name	Scientific Name	Location
Common raven	*Corvus corax*	On-site and in the surrounding area.
House finch	*Carpodacus mexicanus*	"
Rock pigeon	*Columba livia*	"
House sparrow	*Passer domesticus*	"
Mourning Dove	*Zenaida macroura*	"
Cooper's hawk	*Accipiter cooperii*	"
White throated swift	*Aeronautes saxatalis*	"
Say's Phoebe	*Sayornis saya*	"
Verdin	*Auriparus flaviceps*	"
Northern mockingbird	*Mimus polyglottos*	"

Note: The above Table is not a comprehensive list of every animal species which may occur in the area, but is a list of those common species which were identified on the site or which have been observed in the region by biologists from RCA Associates, Inc.

REGULATORY CONTEXT

The following provides a summary of federal and state regulatory jurisdiction over biological and wetland resources. Although most of these regulations do not directly apply to the site, given the general lack of sensitive resources, they provide important background information.

Federal Endangered Species Act

The USFWS has jurisdiction over federally listed threatened and endangered plant and animal species. The federal Endangered Species Act (ESA) and its implementing regulations prohibit the take of any fish or wildlife species that is federally listed as threatened or endangered without prior approval pursuant to either Section 7 or Section 10 of the ESA. ESA defines "take" as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Federal regulation 50CFR17.3 defines the term "harass" as an intentional or negligent act that creates the likelihood of injuring wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns such as breeding, feeding, or sheltering (50CFR17.3). Furthermore, federal regulation 50CFR17.3 defines "harm" as an act that either kills or injures a listed species. By definition, "harm" includes habitat modification or degradation that actually kills or injures a listed species by significantly impairing essential behavior patterns such as breeding, spawning, rearing, migrating, feeding, or sheltering (50CFR217.12).

Section10(a) of the ESA establishes a process for obtaining an incidental take permit that authorizes non federal entities to incidentally take federally listed wildlife or fish. Incidental take is defined by ESA as take that is "incidental to, and not the purpose of, the carrying out of another wise lawful activity." Preparation of a habitat conservation plan, generally referred to as an HCP, is required for all Section 10(a) permit applications. The USFWS and National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) have joint authority under the ESA for administering the incidental take program. NOAA Fisheries Service has jurisdiction over anadromous fish species and USFWS has jurisdiction over all other fish and wildlife species.

Section 7 of the ESA requires all federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any species listed under the ESA,

or result in the destruction or adverse modification of its habitat. Federal agencies are also required to minimize impacts to all listed species resulting from their actions, including issuance or permits or funding. Section 7 requires consideration of the indirect effects of a project, effects on federally listed plants, and effects on critical habitat (ESA requires that the USFWS identify critical habitat to the maximum extent that it is prudent and determinable when a species is listed as threatened or endangered). This consultation results in a Biological Opinion prepared by the USFWS stating whether implementation of the HCP will result in jeopardy to any HCP Covered Species or will adversely modify critical habitat and the measures necessary to avoid or minimize effects to listed species.

Although federally listed animals are legally protected from harm no matter where they occur, section 9 of the ESA provides protection for endangered plants by prohibiting the malicious destruction on federal land and other "take" that violates State law. Protection for plants not living on federal lands is provided by the California Endangered Species Act.

California Endangered Species Act

CDFW has jurisdiction over species listed as threatened or endangered under Section 2080 of the California Fish and Wildlife Code. Section 2080 prohibits the take of a species listed by CDFW as threatened or endangered. The state definition of take is similar to the federal definition, except that Section 2080 does not prohibit indirect harm to listed species by way of habitat modification. To qualify as take under the state ESA, an action must have direct, demonstrable detrimental effect on individuals of the species. Impacts on habitat that may ultimately result in effects on individuals are not considered take under the state ESA but can be considered take under the federal ESA.

Proponents of a project affecting a state-listed species must consult with CDFW and enter into a management agreement and take permit under Section 2081. The state ESA consultation process is similar to the federal process. California ESA does not require preparation of a state biological assessment; the federal biological assessment and the CEQA analysis or any other relevant information can provide the basis for consultation. California ESA requires that CDFW coordinate consultation for joint federally listed and state-listed species to the extent possible; generally, the state opinion for the listed species is brief and references provisions under the federal opinion.

Clean Water Act, Section 404

The COE and the U.S. Environmental Protection Agency regulate the placement of dredged or fill material into "Waters of the United States" under Section 404 of the Clean Water Act. Waters of the United States include lakes, rivers, streams, and their tributaries, and wetlands. Wetlands are defined for regulatory purposes as "areas 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" (33 Code of Federal Regulations [CFR] 328.3, 40 CFR 230.3).

The COE may issue either individual permits on a case-by-case basis or general permits on a program level. General permits are pre-authorized and are issued to cover similar activities that are expected to cause only minimal adverse environmental effects. Nationwide permits (NWP's) are general permits issued to cover particular fill activities. All NWP's have general conditions that must be met for the permits to apply to a particular project, as well as specific conditions that apply to each NWP.

Clean Water Act, Section 401

Section 401 of the Clean Water Act requires water quality certification and authorization of placement of dredged or fill material in wetlands and Other Waters of the United States. In accordance with Section 401 of the Clean Water Act, criteria for allowable discharges into surface waters have been developed by the State Water Resources Control Board, Division of Water Quality. As such, proponents of any new project which may impair water quality as a result of the project are required to create a post construction stormwater management plan to ensure offsite water quality is not degraded. The resulting requirements are used as criteria in granting National Pollution Discharge Elimination System (NPDES) permits or waivers, which are obtained through the Central Valley Regional Water Quality Control Board (RWQCB). Any activity or facility that will discharge waste (such as soils from construction) into surface waters, or from which waste may be discharged, must obtain an NPDES permit or waiver from the RWQCB. The RWQCB evaluates an NPDES permit application to determine whether the proposed discharge is consistent with the adopted water quality objectives of the basin plan.

California Fish and Wildlife Code, Sections 1600-1616

Under the California Fish and Wildlife Code, Sections 1600-1616 CDFW regulates projects that divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream, or lake. Proponents of such projects must notify CDFW and enter into a streambed alteration agreement with them.

Section 1602 of the California Fish and Wildlife Code requires a state or local government agency, public utility, or private entity to notify CDFW before it begins a construction project that will: (1) divert, obstruct, or change the natural flow or the bed, bank, channel, or bank of any river, stream, or lake; (2) use materials from a streambed; or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake. Once the notification is filed and determined to be complete, CDFW issues a streambed alteration agreement that contains conditions for construction and operations of the proposed project.

California Fish and Wildlife Code, Section 3503.5

Under the California Fish and Wildlife Code, Section 3503.5, it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks, eagles, and falcons) or Strigiformes (owls). Take would include the disturbance of an active nest resulting in the abandonment or loss of young.

Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) prohibits the taking, hunting, killing, selling, purchasing, etc. of migratory birds, parts of migratory birds, or their eggs and nests. As used in the MBTA, the term "take" is defined as "to pursue, hunt, shoot, capture, collect, kill, or attempt to pursue, hunt, shoot, capture, collect, or kill, unless the context otherwise requires." Most bird species native to North America are covered by this act.

Sensitive Natural Communities

The California Office of Planning and Research and the Office of Permit Assistance (1986) define project effects that substantially diminish habitat for fish, wildlife, or plants, or that disrupt or

divide the physical arrangement of an established community as significant impacts under CEQA. This definition applies to certain natural communities because of their scarcity and ecological values and because the remaining occurrences are vulnerable to elimination. For this study, the term "sensitive natural community" includes those communities that, if eliminated or substantially degraded, would sustain a significant adverse impact as defined under CEQA. Sensitive natural communities are important ecologically because their degradation and destruction could threaten populations of dependent plant and wildlife species and significantly reduce the regional distribution and viability of the community. If the number and extent of sensitive natural communities continue to diminish, the status of rare, threatened, or endangered species could become more precarious, and populations of common species (i.e., not special status species) could become less viable. Loss of sensitive natural communities also can eliminate or reduce important ecosystem functions, such as water filtration by wetlands and bank stabilization by riparian woodlands for example.

Protected Plants

The California Desert Native Plant Act was passed in 1981 to protect non-listed California desert native plants from unlawful harvesting on both public and privately-owned lands. Harvest, transport, sale, or possession of specific native desert plants is prohibited unless a person has a valid permit. The following plants are under the protection of the California Desert Native Plants Act:

- Dalea spinosa (smoketree)
- All species of the genus Prosopis (mesquites)
- All species of the family Agavaceae (century plants, nolinas, yuccas)
- All species of Cactus
- Creosote Rings, ten feet in diameter or greater
- All Joshua Trees

The project would be required to comply with the County of San Bernardino Desert Native Plant Protection Ordinance. The removal of any trees listed under Section 88.01.060 would be required to comply with Section 88.01.050, which requires the project applicant to apply for a Tree or Plant Removal Permit prior to removal from the project site.

HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT

TENTATIVE TRACT MAP NO. 38041

Assessor's Parcel Nos. 685-030-006, 685-080-010, and a Portion of 685-080-031
City of Rancho Mirage, Riverside County, California

For Submittal to:

Development Services Department, Planning Division
City of Rancho Mirage
69825 Highway 111
Rancho Mirage, CA 92270

Prepared for:

Philip Fomotor, P.E., P.L.S.
Fomotor Engineering
225 South Civic Drive, Suite I-5
Palm Springs, CA 92262

Prepared by:

CRM TECH
1016 East Cooley Drive, Suite A/B
Colton, CA 92324

Bai "Tom" Tang, Principal Investigator
Michael Hogan, Principal Investigator

March 14, 2023
CRM TECH Contract No. 3946

Title: Historical/Archaeological Resources Survey: Tentative Tract Map No. 38041, Assessor's Parcel Nos. 685-030-006, 685-080-010, and a Portion of 685-080-031, City of Rancho Mirage, Riverside County, California

Author(s): Daniel Ballester, Archaeologist/Field Director

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Date: March 14, 2023

For Submittal to: Development Services Department, Planning Division
City of Rancho Mirage
69825 Highway 111
Rancho Mirage, CA 92270
(760) 328-2266

Prepared for: Philip Fomotor, P.E., P.L.S.
Fomotor Engineering
225 South Civic Drive, Suite I-5
Palm Springs, CA 92262

Project Size: 6.6 acres

USGS Quadrangle: Cathedral City, Calif., 7.5' quadrangle (Section 30, T4S R6E, San Bernardino Baseline and Meridian)

Keywords: Coachella Valley, western Colorado Desert; no "historical resources" under CEQA

MANAGEMENT SUMMARY

Between September 2022 and March 2023, at the request of Fomotor Engineering, CRM TECH performed a cultural resources study on 6.6 acres of vacant desert land on the northern edge of the City of Rancho Mirage, Riverside County, California. The subject property of the study, Tentative Tract Map No. 38041, encompasses what are currently Assessor's Parcel Nos. 685-030-006, 685-080-010, and a portion of 685-080-031, located on the west side of Key Largo Avenue between Via Vail and Ginger Rogers Road, in the northwest quarter of Section 30, T4S R6E, San Bernardino Baseline and Meridian.

The study is part of the environmental review process for a proposed subdivision of the property for residential development. The City of Rancho Mirage, as the lead agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA). The purpose of the study is to provide the City with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any "historical resources," as defined by CEQA, that may exist in or around the project area.

In order to identify such resources, CRM TECH initiated a historical/archaeological resources records search and a Native American Sacred Lands File search, contacted local Native American representatives, pursued historical background research, and carried out an intensive-level field survey. Throughout the various avenues of research, this study encountered no "historical resources" within or adjacent to the project area. Therefore, CRM TECH recommends to the City of Rancho Mirage a conclusion that the proposed project will have *No Impact* on any "historical resources."

No further cultural resources investigation is recommended for the project unless development plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are discovered during any earth-moving operations associated with the project, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

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INTRODUCTION

Between September 2022 and March 2023, at the request of Fomotor Engineering, CRM TECH performed a cultural resources study on 6.6 acres of vacant desert land on the northern edge of the City of Rancho Mirage, Riverside County, California (Fig. 1). The subject property of the study, Tentative Tract Map No. 38041, encompasses what are currently Assessor's Parcel Nos. 685-030-006, 685-080-010, and a portion of 685-080-031, located on the west side of Key Largo Avenue between Via Vail and Ginger Rogers Road, in the northwest quarter of Section 30, T4S R6E, San Bernardino Baseline and Meridian (Figs. 2, 3).

The study is part of the environmental review process for a proposed subdivision of the property for residential development. The City of Rancho Mirage, as the lead agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA; PRC §21000, et seq.). The purpose of the study is to provide the City with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any "historical resources," as defined by CEQA, that may exist in or around the project area.

In order to identify such resources, CRM TECH initiated a historical/archaeological resources records search and a Native American Sacred Lands File search, contacted local Native American representatives, pursued historical background research, and carried out an intensive-level field survey. The following report is a complete account of the methods, results, and final conclusion of the study. Personnel who participated in the study are named in the appropriate sections below, and their qualifications are provided in Appendix 1.

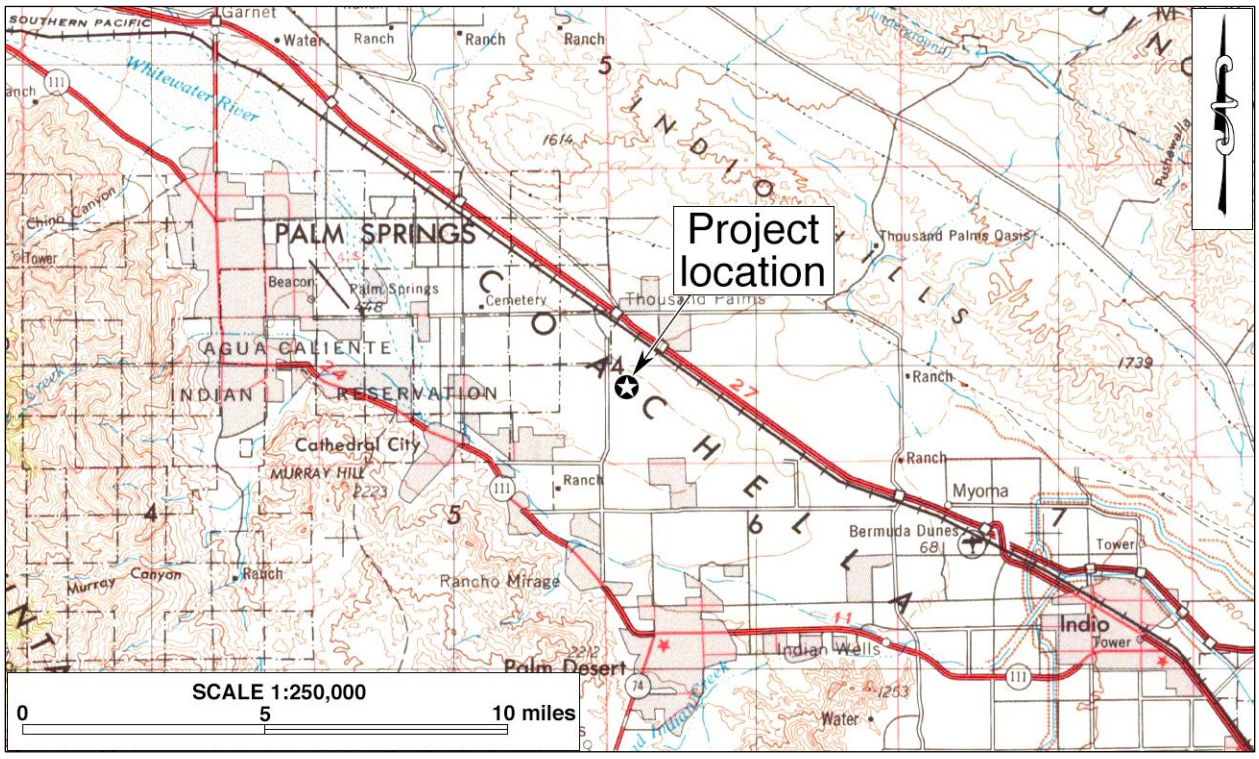

Figure 1. Project vicinity (based on USGS Santa Ana, Calif., 120'x60' quadrangle [USGS 1979]).

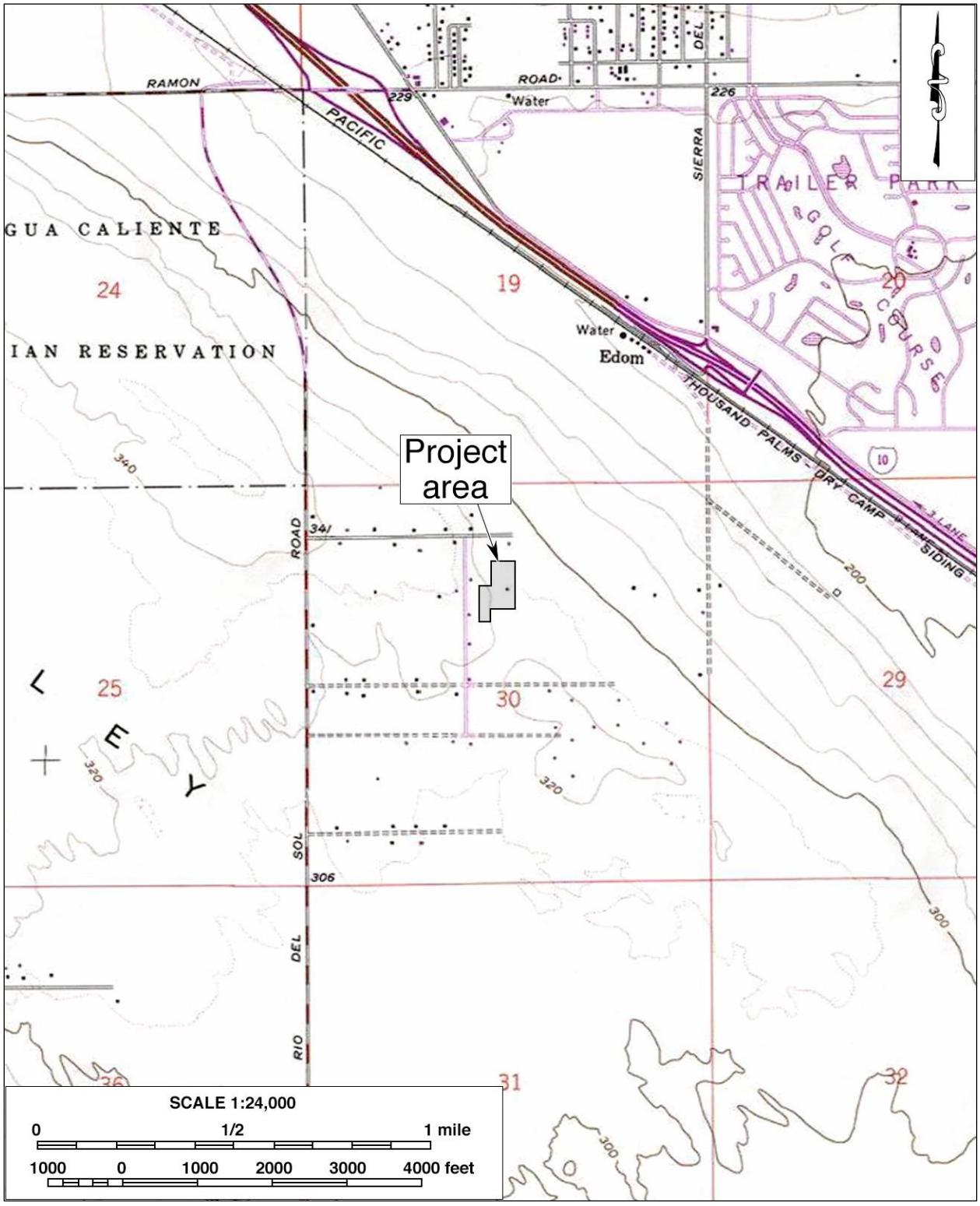

Figure 2. Project area (based on USGS Cathedral City, Calif., 7.5' quadrangles [USGS 1981]).

Figure 3. Recent satellite image of the project area.

SETTING

CURRENT NATURAL SETTING

The City of Rancho Mirage is located in the Coachella Valley, a northwest-southeast trending desert valley that constitutes the western end of the Colorado Desert. Dictated by this geographic setting, the climate and environment of the region are typical of the southern California desert country, marked by extremes in temperature and aridity. Temperatures in the region reach over 120 degrees Fahrenheit in summer, and dip to near freezing in winter. Average annual precipitation is less than five inches, and the average annual evaporation rate exceeds three feet.

The irregularly shaped project area lies on the generally level and sandy desert floor between the San Jacinto Mountains to the southwest and the Indio Hills to the northeast. The adjacent land features a residential neighborhood to the west, a Unitarian Universalist Church to the north, a dog park and undeveloped land to the east, and another vacant property to the south (Fig. 3). Elevations in the project area range roughly from 310 feet to 320 feet above mean sea level, with the terrain sloping gently downward to the northeast.

Vegetation in the vicinity consists mainly of creosote bushes and brittlebush with occasional examples of small grasses and brush. The surface soil is characterized by the lightly undulating, somewhat compact sand dunes (Fig. 4). Sources of the disturbance in the past includes the activities associated with construction and paving of Key Largo Avenue, construction of a block wall along the northern boundary, and a dirt road that was used in the southern portion of the project area.

Figure 4. Overview of the project area (view to the north; photograph taken on November 1, 2022).

CULTURAL SETTING

Prehistoric Context

Numerous investigations on the history of cultural development in southern California have led researchers to propose a number of cultural chronologies for the desert regions. A specific cultural sequence for the Colorado Desert was offered by Schaefer (1994) on the basis of the many archaeological studies conducted in the area. The earliest time period identified is the Paleoindian (ca. 8,000 to 10,000-12,000 years ago), when "small, mobile bands" of hunters and gatherers, who relied on a variety of small and large game animals as well as wild plants for subsistence, roamed the region (*ibid*.:63). These small groups settled "on mesas and terraces overlooking larger washes" (*ibid*.:64). The artifact assemblage of that period typically consists of very simple stone tools, "cleared circles, rock rings, [and] some geoglyph types" (*ibid*.).

The Early Archaic Period follows and dates to ca. 8,000 to 4,000 years ago. It appears that a decrease in population density occurred at this time and that the indigenous groups of the area relied more on foraging than hunting. Very few archaeological remains have been identified to this time period. The ensuing Late Archaic Period (ca. 4,000 to 1,500 years ago) is characterized by continued low population densities and groups of "flexible" sizes that settled near available seasonal food resources and relied on "opportunistic" hunting of game animals. Groundstone artifacts for food processing were prominent during this time period.

The most recent period in Schaefer's scheme, the Late Prehistoric, dates from ca. 1,500 years ago to the time of the Spanish missions, and saw the continuation of the seasonal settlement pattern. Peoples of the Late Prehistoric Period were associated with the Patayan cultural pattern and relied more heavily on the availability of seasonal "wild plants and animal resources" (Schaefer 1994:66). It was during this period that ceramics and the bow/arrow were introduced into the region.

The shores of Holocene Lake Cahuilla, during times of its presence, attracted much settlement and resource procurement activities. In times of the lake's desiccation and absence, according to Schaefer (1994:66), the Native people moved away from its receding shores towards rivers, streams, and mountains. Numerous archaeological sites dating to the last high stand of Holocene Lake Cahuilla, roughly between 1600 and 1700 A.D., have been identified along its former shoreline. Testing and mitigative excavations at these sites have recovered brown and buff ware ceramics, a variety of groundstone and projectile point types, ornaments, and cremation remains.

Ethnohistoric Context

The Coachella Valley is a historical center of Native American settlement, where U.S. surveyors noted large numbers of Indian villages and *rancherías*, occupied by the Cahuilla people, in the mid-19th century. The origin of the name "Cahuilla" is unclear, but may originate from their own word *káwiya*, meaning master or boss (Bean 1978). The Takic-speaking Cahuilla are generally divided by anthropologists into three groups, according to their geographic setting: the Pass Cahuilla of the San Gorgonio Pass-Palm Springs area, the Mountain Cahuilla of the San Jacinto and Santa Rosa Mountains and the Cahuilla Valley, and the Desert Cahuilla of the eastern Coachella Valley. The

basic written sources on Cahuilla culture and history include Kroeber (1925), Strong (1929), and Bean (1978), based on information provided by such Cahuilla informants as Juan Siva, Francisco Patencio, Katherine Siva Saubel, and Mariano Saubel. The following ethnohistoric discussion is based primarily on these sources.

The Cahuilla did not have a single name that referred to an all-inclusive tribal affiliation. Instead, membership was in terms of lineages or clans. Each lineage or clan belonged to one of two main divisions of the people, known as moieties. Their moieties were named for the Wildcat, or *Tuktum*, and Coyote, or *Istam*. Members of clans in one moiety had to marry into clans from the other moiety. Individual clans had villages, or central places, and territories they called their own, for purposes of hunting game, and gathering raw materials for food, medicine, ritual, or tool use. They interacted with other clans through trade, intermarriage, and ceremonies.

Cahuilla subsistence was defined by the surrounding landscape and primarily based on the hunting and gathering of wild and cultivated foods, exploiting nearly all of the resources available in a highly developed seasonal mobility system. They were adapted to the arid conditions of the desert floor, the lacustral cycles of Holocene Lake Cahuilla, and the environments of the nearby mountains. When the lake was full, or nearly full, the Cahuilla would take advantage of the resources presented by the body of fresh water, building elaborate stone fish traps. Once the lake had desiccated, they relied on the available terrestrial resources. The cooler temperatures and resources available at higher elevations in the nearby mountains were also taken advantage of.

The Cahuilla diet included seeds, roots, wild fruits and berries, acorns, wild onions, piñon nuts, and mesquite and screw beans. Medicinal plants such as creosote, California sagebrush, yerba buena and elderberry were typically cultivated near villages (Bean and Saubel 1972). Common game animals included deer, antelope, big horn sheep, rabbits, wood rats and, when Holocene Lake Cahuilla was present, fish and waterfowl. The Cahuilla hunted with throwing sticks, clubs, nets, traps, and snares, as well as bows and arrow (Bean 1978; CSRI 2002). Common tools included manos and metates, mortars and pestles, hammerstones, fire drills, awls, arrow-straighteners, and stone knives and scrapers. These lithic tools were made from locally sourced material as well as materials procured through trade or travel. They also used wood, horn, and bone spoons and stirrers; baskets for winnowing, leaching, grinding, transporting, parching, storing, and cooking; and pottery vessels for carrying water, storage, cooking, and serving food and drink (*ibid.*).

As the landscape defined their subsistence practices, the tending and cultivation practices of the Cahuilla helped shape the landscape. Biological studies have recently found evidence that the fan palms found in the Coachella Valley and throughout the southeastern California desert (*Washingtonia filifera*) may not be relics from a paleo-tropical environment, but instead a relatively recent addition brought to the area and cultivated by native populations (Anderson 2005). The planting of palms by the Cahuilla is well-documented, as is their enhancement of palm stands through the practice of controlled burning (*ibid.*; Bean and Saubel 1972). Burning palm stands would increase fruit yield dramatically by eliminating pests such as the palm borer beetle, date scales, and spider mites (Bean and Saubel 1972). It also prevented out-of-control wildfires by eliminating dead undergrowth before it accumulated to dangerous levels. The Cahuilla also burned stands of chia to produce higher yields, and deergrass to yield straighter, more abundant stalks for basketry (*ibid.*; Anderson 2005).

Population data prior to European contact is almost impossible to obtain, but estimates range from 3,600 to as high as 10,000 persons covering a territory of over 2,400 square miles. During the 19th century, the Cahuilla population was decimated as a result of European diseases, most notably smallpox, for which the Native peoples had no immunity. Today, Native Americans of Pass or Desert Cahuilla heritage are mostly affiliated with one or more of the Indian reservations in and near the Coachella Valley, including Agua Caliente, Morongo, Cabazon, Torres Martinez, and Augustine. There has been a resurgence of traditional ceremonies in recent years, and the language, songs, and stories are now being taught to the youngest generations.

Historic Context

In 1823-1825, José Romero, José Maria Estudillo, and Romualdo Pacheco became the first noted European explorers to travel through the Coachella Valley when they led a series of expeditions in search of a route to Yuma (Johnston 1987:92-95). Due to its harsh environment, few non-Indians ventured into the desert valley during the Mexican and early American periods, except those who traveled along the established trails. The most important of these trails was the Cocomaricopa Trail, an ancient Indian trading route that was "discovered" in 1862 by William David Bradshaw and known after that as the Bradshaw Trail (Gunther 1984:71; Ross 1992:25). In much of the Coachella Valley, this historic wagon road traversed a similar course to that of present-day State Route 111. During the 1860s-1870s, the Bradshaw Trail served as the main thoroughfare between coastal southern California and the Colorado River, until the completion of the Southern Pacific Railroad in 1876-1877 brought an end to its heyday (Johnston 1987:185).

Non-Indian settlement in the Coachella Valley began in the 1870s with the establishment of railroad stations along the Southern Pacific Railroad, and spread further in the 1880s after public land was opened for claims under the Homestead Act, the Desert Land Act, and other federal land laws (Laflin 1998:35-36; Robinson 1948:169-171). Farming became the dominant economic activity in the valley thanks to the development of underground water sources, often in the form of artesian wells. Around the turn of the century, the date palm was introduced into the Coachella Valley, and by the late 1910s dates were the main agricultural crop and the tree an iconic image celebrating the region as the "Arabia of America" (Shields Date Gardens 1957). Then, starting in the 1920s, a new industry featuring equestrian camps, resorts, hotels, and eventually country clubs began to spread throughout the Coachella Valley, transforming it into southern California's premier winter retreat.

In the Rancho Mirage area, the first notable settlement activities occurred in the 1910s-1920s, when several date ranches were established in the present-day city boundary (Love and Tang 1996:7). In 1924, R.P. "Bert" Davie and E.E. McIntyre subdivided the Rancho Rio del Sol Estates around today's Clancy Lane, creating a small community nicknamed "Little Santa Monica" (*ibid.*:8). Ten years later, Louis Blankenhorn and Laurence Macomber began a new subdivision at the mouth of Magnesia Spring Canyon, and for the first time bestowed the name Rancho Mirage on the community (*ibid.*). After the end of WWII, Rancho Mirage embarked on a period of rapid growth. With the development of the Thunderbird Country Club and the Tamarisk Country Club in 1951-1952, Rancho Mirage set the trend in the post-WWII boom among the five cove communities along Highway 111 (*ibid.*:8-9). This trend has continued into the present and has given rise to the City of Rancho Mirage's popular reputation as the "country club city."

RESEARCH METHODS

RECORDS SEARCH

The historical/archaeological resources records search was completed by the Eastern Information Center (EIC) at the University of California, Riverside, on October 26, 2022. During the records search, EIC administrative/coordinator assistant Eulices Lopez examined maps and records on file for previously identified cultural resources and existing cultural resources reports within a one-mile radius of the project location. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or Riverside County Historic Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory.

NATIVE AMERICAN PARTICIPATION

On September 22, 2022, CRM TECH submitted a written request to the State of California Native American Heritage Commission (NAHC) for a records search in the commission's Sacred Lands File. The NAHC is the State of California's trustee agency for the protection of "tribal cultural resources," as defined by California Public Resources Code §21074, and is tasked with identifying and cataloging properties of Native American cultural value throughout the state. In the meantime, CRM TECH notified the nearby Agua Caliente Band of Cahuilla Indians of the upcoming archaeological field survey and invited tribal participation. The responses from the NAHC and the Agua Caliente Band are summarized below and attached to this report in Appendix 2.

HISTORICAL BACKGROUND RESEARCH

Historical background research for this study was conducted by CRM TECH field director Daniel Ballester. Sources consulted during the research included published literature in local and regional history, U.S. General Land Office (GLO) land survey plat maps dated 1856, U.S. General Land Office (GLO) topographic maps dated 1904-1981, and aerial/satellite images taken between 1972 and 2021. The historical maps are accessible at the websites of the U.S. Bureau of Land Management and the USGS, and the aerial/satellite images are available at the Nationwide Environmental Title Research (NETR) Online website and through the Google Earth software.

FIELD SURVEY

On November 1, 2022, Daniel Ballester carried out the field survey of the project area with the assistance of Nicole Raslich, archaeological technician with the Agua Caliente Tribal Historic Preservation Office. The survey was conducted at an intensive level by walking a series of parallel north-south transects at 15-meter (approximately 50-foot) intervals. In this way, the entire project area was systematically and carefully examined for any evidence of human activities dating to the prehistoric or historic period (i.e., 50 years or older). Ground visibility was excellent (95 to 100 percent) as the vegetation growth of the property was generally sparse, although a small portion of the project area was obscured by large creosote bushes. In this environment, however, shifting sands are more likely to contribute to obscured cultural remains than is vegetation.

RESULTS AND FINDINGS

RECORDS SEARCH

According to EIC records, the project area had not been surveyed for cultural resources prior to this study (Fig. 5), and no cultural resources had been recorded on or adjacent to the property. Within the one-mile scope of the records search, EIC records show at least 34 previous studies on various tracts of land and linear features, which collectively covered roughly 40 percent of the land within the scope of the records search (Fig. 5). As a result of these and other studies in the vicinity, five prehistoric sites, seven historic-period sites, and five isolates—i.e., localities with fewer than three artifacts— have been identified within the one-mile radius.

The prehistoric sites in the vicinity consisted mainly of lithic and ceramic scatters and seasonal resource processing locations, but two of the sites, 33-017009 and 33-017010, also contained human remains. The historic-period sites were all fairly common for the Coachella Valley area, such as a refuse scatter, a ranch, and infrastructure features associated with roads, irrigation works, and the Southern Pacific (now Union Pacific) Railroad. All of these sites and isolates were located to the north of the project location, at distances of at least a half-mile at the nearest spot. Therefore, none of them requires further consideration during this study.

NATIVE AMERICAN PARTICIPATION

In response to CRM TECH's inquiry, the NAHC reported in a letter dated November 3, 2022, that the Sacred Lands File search did not identify any Native American cultural resources in the project vicinity. Noting that the absence of specific information would not necessarily indicate the absence of cultural resources, however, the NAHC recommended that local Native American groups be consulted for further information and provided a referral list potential contacts in the region. The NAHC's reply, including the referral list, is attached in Appendix 2 for reference by the City of Rancho Mirage in future government-to-government consultations with the pertinent Native American representatives, if necessary.

As mentioned above, Nicole Raslich from the Agua Caliente Tribal Historic Preservation Office participated in the archaeological field survey of the project area following CRM TECH's outreach effort. In a letter dated October 6, 2022, Ms. Raslich identified the project location as a part of the tribe's Traditional Use Area. She requested copies of all cultural resource documentation generated for the project for tribal review as well as the presence of archaeological and Native American monitors during ground-disturbing activities in the project area.

HISTORICAL BACKGROUND RESEARCH

Historical sources consulted during this study yielded no evidence of any settlement or development activities in the project area throughout the historic period (Figs. 6-9; NETR Online 1972). In the surrounding area, the earliest such activities evidently took place in the early post-WWII period, when a number of scattered buildings appeared across much of Section 30 and along newly constructed roads (Fig. 9). Archival records indicate that these buildings were the results of a wave of five-acre homestead claims on public land under the provisions of the Small Tract Act of 1938, a

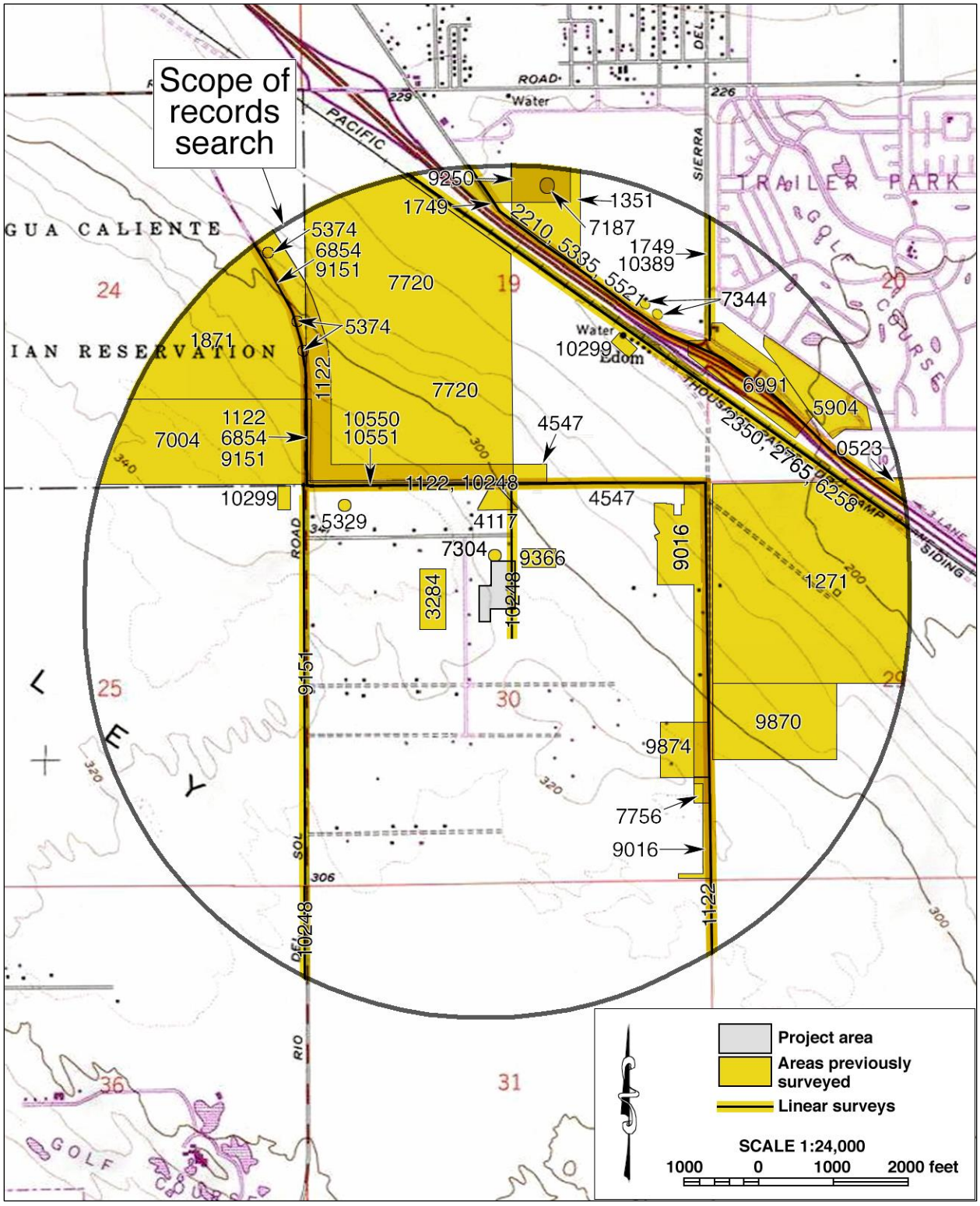

Figure 5. Previous cultural resources studies in the vicinity of the project area, listed by EIC file number. Locations of known historical/archaeological resources are not shown as a protective measure.

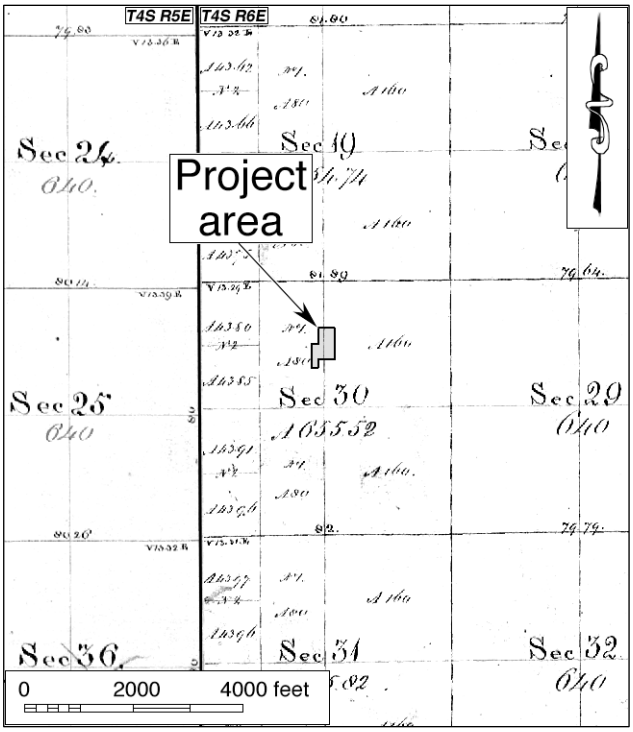

Figure 6. The project area and vicinity in 1855-1856 (source: GLO 1856a; 1856b).

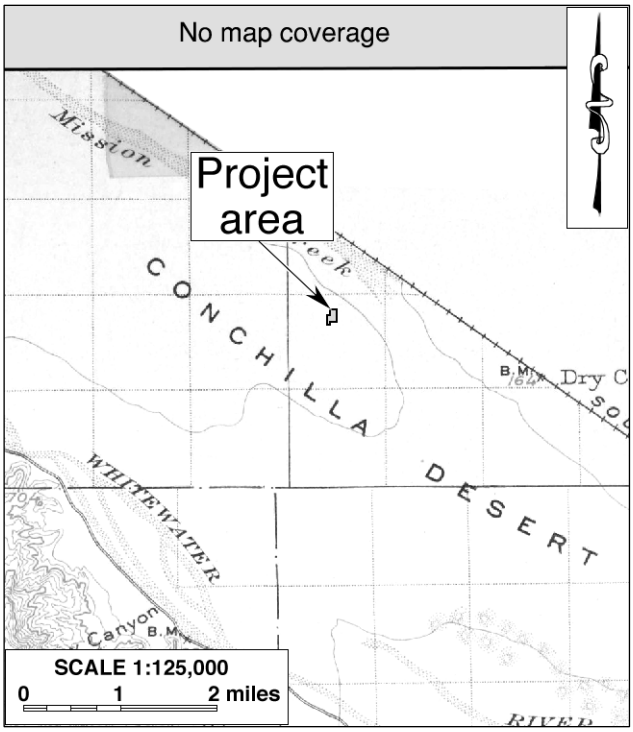

Figure 7. The project area and vicinity in 1901 (source: USGS 1904).

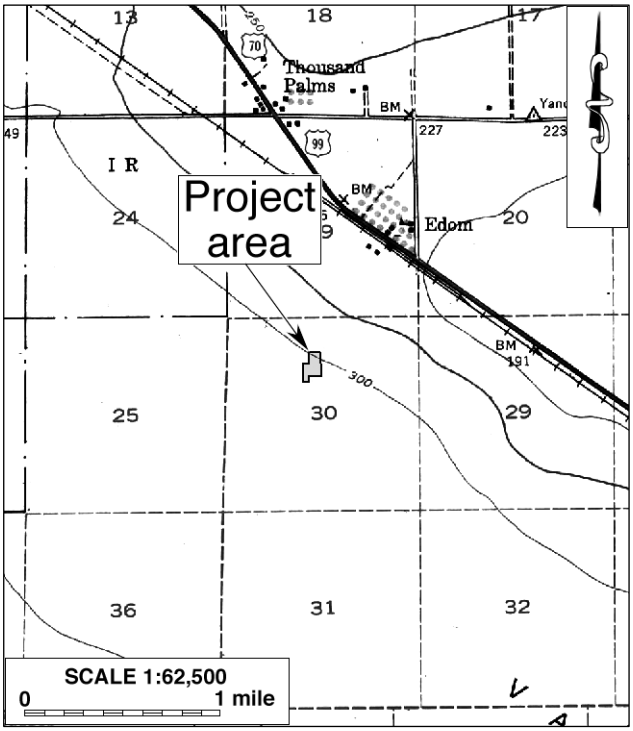

Figure 8. The project area and vicinity in 1941 (source: USGS 1941).

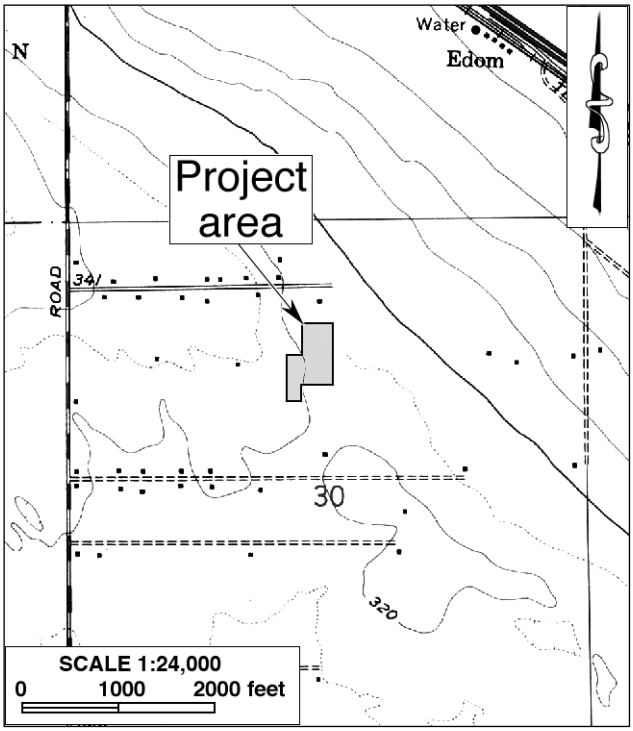

Figure 9. The project area and vicinity in 1951-1958 (source: USGS 1958).

practice that was widespread in the southern California desert region at the time (BLM n.d.). However, none of these so-called "jackrabbit homesteads" were found within the project area itself, which has remained vacant, undeveloped, and apparently unused to the present time despite accelerated growth in the surrounding area since the 1980s (Fig. 2; NETR Online 1972-2018; Google Earth 1985-2021).

FIELD SURVEY

The intensive-level field survey of the project area produced negative results for potential "historical resources," and no buildings, structures, objects, site, or artifact deposits dating to the prehistoric or historic period were encountered throughout the course of the survey.

DISCUSSION

The purpose of this study is to identify any cultural resources within the project area and to assist the City of Rancho Mirage in determining whether such resources meet the official definition of "historical resources," as provided in the California Public Resources Code, in particular CEQA. According to PRC §5020.1(j), "'historical resource' includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California."

More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the lead agency (Title 14 CCR §15064.5(a)(1)-(3)). Regarding the proper criteria for the evaluation of historical significance, CEQA guidelines mandate that "generally a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

In summary of the research results presented above, no potential "historical resources" were previously recorded within the project area, and none were found during the present survey. In addition, the Native American input did not identify any sites of traditional cultural value nearby, and no notable cultural features were known to be present in the project area throughout the historic period. Based on these findings, and in light of the significance criteria listed above, the present report concludes that no "historical resources" exist within the project area.

CONCLUSIONS AND RECOMMENDATIONS

CEQA establishes that a project that may cause a substantial adverse change in the significance of a "historical resource" is a project that may have a significant effect on the environment (PRC §21084.1). "Substantial adverse change," according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired." As stated above, this study has concluded that no "historical resources," as defined by CEQA, are present within the project area. Accordingly, CRM TECH presents the following recommendations to the City of Rancho Mirage:

- The proposed project will not cause a substantial adverse change to any known "historical resources."
- No further cultural resources investigation is necessary for the project unless development plans undergo such changes as to include areas not covered by this study.
- If buried cultural materials are discovered during any earth-moving operations associated with the project, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

REFERENCES

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2002 The Native Americans of Joshua Tree National Park: An Ethnographic Overview and Assessment Study. Http://www.cr.nps.gov/history/online_books/jotr/history6.htm.

GLO (General Land Office, U.S. Department of the Interior)
1856a Plat map: Township No. 4 South Range No. 5 East, SBBM; surveyed in 1855-1856.
1856b Plat map: Township No. 4 South Range No. 6 East, SBBM; surveyed in 1855-1856.

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1985-2021 Aerial photographs of the project vicinity; taken in 1985, 1996, 2002, 2004-2006, 2009, 2011-2013, 2015-2019, and 2021. Available through the Google Earth software.

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1984 *Riverside County, California, Place Names: Their Origins and Their Stories*. J.D. Gunther, Riverside.

Johnston, Francis J.
1987 *The Bradshaw Trail*; revised edition. Historical Commission Press, Riverside.

Kroeber, Alfred L.
1925 *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Government Printing Office, Washington, D.C.
Laflin, Patricia
1998 *Coachella Valley California: A Pictorial History*. The Donning Company, Virginia Beach, Virginia.
Love, Bruce, and Bai "Tom" Tang
1996 Cultural Resources Report: Rancho Mirage General Plan, City of Rancho Mirage, Riverside County, California. On File, Eastern Information Center, University of California, Riverside.
NETR (Nationwide Environmental Title Research) Online
1972-2018 Aerial photographs of the project vicinity; taken in 1972, 1984, 1996, 2002, 2005, 2009, 2010, 2012, 2014, 2016, 2018, and 2020. http://www.historicaerials.com.
Robinson, W.W.
1948 *Land in California.* University of California Press, Berkeley.
Ross, Delmer G.
1992 *Gold Road to La Paz: An Interpretive Guide to the Bradshaw Trail*. Tales of the Mojave Road Publishing Company, Essex, California.
Schaefer, Jerry
1994 The Challenge of Archaeological Research in the Colorado Desert: Recent Approaches and Discoveries. *Journal of California and Great Basin Anthropology* 16(1):60-80.
Shields Date Gardens
1957 *Coachella Valley Desert Trails and the Romance and Sex Life of the Date*. Shields Date Gardens, Indio.
Strong, William Duncan
1929 *Aboriginal Society in Southern California*. University of California Publications in American Archaeology and Ethnology, Vol. 26.
USGS (United States Geological Survey, U.S. Department of the Interior)
1904 Map: Indio, Calif. (30', 1:125,000); surveyed in 1901.
1941 Map: Edom, Calif. (15', 1:62,500); aerial photographs taken in 1941.
1958 Map: Thousand Palms, Calif. (15', 1:62,500); aerial photographs taken in 1951-1956, field-checked in 1958.
1979 Map: Santa Ana, Calif. (120'x60', 1:250,000); 1959 edition revised.
1981 Map: Cathedral City, Calif. (7.5', 1:24,000); 1958 edition photorevised in 1978.

APPENDIX 1:
PERSONNEL QUALIFICATIONS

PRINCIPAL INVESTIGATOR/HISTORIAN
Bai "Tom" Tang, M.A.

Education

1988-1993	Graduate Program in Public History/Historic Preservation, University of California, Riverside.
1987	M.A., American History, Yale University, New Haven, Connecticut.
1982	B.A., History, Northwestern University, Xi'an, China.
2000	"Introduction to Section 106 Review," presented by the Advisory Council on Historic Preservation and the University of Nevada, Reno.
1994	"Assessing the Significance of Historic Archaeological Sites," presented by the Historic Preservation Program, University of Nevada, Reno.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside/Colton, California.
1993-2002	Project Historian/Architectural Historian, CRM TECH, Riverside, California.
1993-1997	Project Historian, Greenwood and Associates, Pacific Palisades, California.
1991-1993	Project Historian, Archaeological Research Unit, University of California, Riverside.
1990	Intern Researcher, California State Office of Historic Preservation, Sacramento.
1990-1992	Teaching Assistant, History of Modern World, University of California, Riverside.
1988-1993	Research Assistant, American Social History, University of California, Riverside.
1985-1988	Research Assistant, Modern Chinese History, Yale University.
1985-1986	Teaching Assistant, Modern Chinese History, Yale University.
1982-1985	Lecturer, History, Xi'an Foreign Languages Institute, Xi'an, China.

Cultural Resources Management Reports

Preliminary Analyses and Recommendations Regarding California's Cultural Resources Inventory System (with Special Reference to Condition 14 of NPS 1990 Program Review Report). California State Office of Historic Preservation working paper, Sacramento, September 1990.

Numerous cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

PRINCIPAL INVESTIGATOR/ARCHAEOLOGIST
Michael Hogan, Ph.D., RPA (Registered Professional Archaeologist)

Education

1991	Ph.D., Anthropology, University of California, Riverside.
1981	B.S., Anthropology, University of California, Riverside; with honors.
1980-1981	Education Abroad Program, Lima, Peru.
2002	"Section 106—National Historic Preservation Act: Federal Law at the Local Level," UCLA Extension Course #888.
2002	"Recognizing Historic Artifacts," workshop presented by Richard Norwood, Historical Archaeologist.
2002	"Wending Your Way through the Regulatory Maze," symposium presented by the Association of Environmental Professionals.
1992	"Southern California Ceramics Workshop," presented by Jerry Schaefer.
1992	"Historic Artifact Workshop," presented by Anne Duffield-Stoll.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside/Colton, California.
1999-2002	Project Archaeologist/Field Director, CRM TECH, Riverside, California.
1996-1998	Project Director and Ethnographer, Statistical Research, Inc., Redlands, California.
1992-1998	Assistant Research Anthropologist, University of California, Riverside.
1992-1995	Project Director, Archaeological Research Unit, U.C. Riverside.
1993-1994	Adjunct Professor, Riverside Community College, Mt. San Jacinto College, U.C. Riverside, Chapman University, and San Bernardino Valley College.
1991-1992	Crew Chief, Archaeological Research Unit, U.C. Riverside.
1984-1998	Project Director, Field Director, Crew Chief, and Archaeological Technician for various southern California cultural resources management firms.

Research Interests

Cultural Resource Management, Southern Californian Archaeology, Settlement and Exchange Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural Diversity.

Cultural Resources Management Reports

Principal investigator for, author or co-author of, and contributor to numerous cultural resources management study reports since 1986.

Memberships

Society for American Archaeology; Society for California Archaeology; Pacific Coast Archaeological Society; Coachella Valley Archaeological Society.

PROJECT ARCHAEOLOGIST/FIELD DIRECTOR
Daniel Ballester, M.S., RPA (Registered Professional Archaeologist)

Education

2013	M.S., Geographic Information System (GIS), University of Redlands, California.
1998	B.A., Anthropology, California State University, San Bernardino.
1997	Archaeological Field School, University of Las Vegas and University of California, Riverside.
1994	University of Puerto Rico, Rio Piedras, Puerto Rico.
2007	Certificate in Geographic Information Systems (GIS), California State University, San Bernardino.
2002	"Historic Archaeology Workshop," presented by Richard Norwood, Base Archaeologist, Edwards Air Force Base; presented at CRM TECH, Riverside, California.

Professional Experience

2002-	Field Director/GIS Specialist, CRM TECH, Riverside/Colton, California.
2011-2012	GIS Specialist for Caltrans District 8 Project, Garcia and Associates, San Anselmo, California.
2009-2010	Field Crew Chief, Garcia and Associates, San Anselmo, California.
2009-2010	Field Crew, ECorp, Redlands.
1999-2002	Project Archaeologist, CRM TECH, Riverside, California.
1998-1999	Field Crew, K.E.A. Environmental, San Diego, California.
1998	Field Crew, A.S.M. Affiliates, Encinitas, California.
1998	Field Crew, Archaeological Research Unit, University of California, Riverside.

Cultural Resources Management Reports

Field Director, co-author, and contributor to numerous cultural management reports since 2002.

APPENDIX 2

NATIVE AMERICAN RESPONSES

AGUA CALIENTE BAND OF CAHUILLA INDIANS

TRIBAL HISTORIC PRESERVATION

03-008-2022-005

October 06, 2022

[VIA EMAIL TO:ngallardo@crmtech.us]
CRM TECH
Ms. Nina Gallardo
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

Re: TTM 38041, 38266, 38273

Dear Ms. Nina Gallardo,

The Agua Caliente Band of Cahuilla Indians (ACBCI) appreciates your efforts to include the Tribal Historic Preservation Office (THPO) in the TTM 38041, 38266, 38273 project. The project area is not located within the boundaries of the ACBCI Reservation. However, it is within the Tribe's Traditional Use Area. For this reason, the ACBCI THPO requests the following:

*A cultural resources inventory of the project area by a qualified archaeologist prior to any development activities in this area.

*A copy of the records search with associated survey reports and site records from the information center.

*Copies of any cultural resource documentation (report and site records) generated in connection with this project.

*The presence of an archaeologist that meets the Secretary of Interior's standards during any ground disturbing activities.

*The presence of an approved Agua Caliente Native American Cultural Resource Monitor(s) during any ground disturbing activities (including archaeological testing and surveys). Should buried cultural deposits be encountered, the Monitor may request that destructive construction halt and the Monitor shall notify a Qualified Archaeologist (Secretary of the Interior's Standards and Guidelines) to investigate and, if necessary, prepare a mitigation plan for submission to the State Historic Preservation Officer and the Agua Caliente Tribal Historic Preservation Office.

Again, the Agua Caliente appreciates your interest in our cultural heritage. If you have questions or require additional information, please call me at (760) 883-1134. You may also email me at ACBCI-THPO@aguacaliente.net.

Cordially,

AGUA CALIENTE BAND OF CAHUILLA INDIANS

TRIBAL HISTORIC PRESERVATION

Nicole Raslich
Archaeological Technician
Tribal Historic Preservation Office
AGUA CALIENTE BAND
OF CAHUILLA INDIANS

5401 DINAH SHORE DRIVE, PALM SPRINGS, CA 92264
T 760/699/6800 F 760/699/6924 WWW.AGUACALIENTE-NSN.GOV

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West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

November 3, 2022

Nina Gallardo
CRM TECH

Via Email to: ngallardo@crmtech.us

Re: Proposed Tentative Tract Map Numbers 38041, 38266, and 38273 Project, Riverside County

Dear Ms. Gallardo:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Riverside County
11/3/2022

Agua Caliente Band of Cahuilla Indians
Reid Milanovich, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6800
Fax: (760) 699-6919
laviles@aguacaliente.net

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Augustine Band of Cahuilla Mission Indians
Amanda Vance, Chairperson
84-001 Avenue 54 — Cahuilla
Coachella, CA, 92236
Phone: (760) 398 - 4722
Fax: (760) 369-7161
hhaines@augustinetribe.com

Cabazon Band of Mission Indians
Doug Welmas, Chairperson
84-245 Indio Springs Parkway — Cahuilla
Indio, CA, 92203
Phone: (760) 342 - 2593
Fax: (760) 347-7880
jstapp@cabazonindians-nsn.gov

Cahuilla Band of Indians
Daniel Salgado, Chairperson
52701 U.S. Highway 371 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 5549
Fax: (951) 763-2808
Chairman@cahuilla.net

Los Coyotes Band of Cahuilla and Cupeño Indians
Ray Chapparosa, Chairperson
P.O. Box 189 — Cahuilla
Warner Springs, CA, 92086-0189
Phone: (760) 782 - 0711
Fax: (760) 782-0712

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Road — Cahuilla, Serrano
Banning, CA, 92220
Phone: (951) 755 - 5110
Fax: (951) 755-5177
abrierty@morongo-nsn.gov

Morongo Band of Mission Indians
Ann Brierty, THPO
12700 Pumarra Road — Cahuilla, Serrano
Banning, CA, 92220
Phone: (951) 755 - 5259
Fax: (951) 572-6004
abrierty@morongo-nsn.gov

Quechan Tribe of the Fort Yuma Reservation
Jill McCormick, Historic Preservation Officer
P.O. Box 1899 — Quechan
Yuma, AZ, 85366
Phone: (760) 572 - 2423
historicpreservation@quechantribe.com

Quechan Tribe of the Fort Yuma Reservation
Manfred Scott, Acting Chairman
Kw'ts'an Cultural Committee
P.O. Box 1899 — Quechan
Yuma, AZ, 85366
Phone: (928) 750 - 2516
scottmanfred@yahoo.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Proposed Tentative Tract Map Numbers 38041, 38266, and 38273 Project, Riverside County.

Native American Heritage Commission
Native American Contact List
Riverside County
11/3/2022

Ramona Band of Cahuilla
Joseph Hamilton, Chairperson
P.O. Box 391670 Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
admin@ramona-nsn.gov

Ramona Band of Cahuilla
John Gomez, Environmental Coordinator
P. O. Box 391670 Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
jgomez@ramona-nsn.gov

Santa Rosa Band of Cahuilla Indians
Lovina Redner, Tribal Chair
P.O. Box 391820 Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
lsaul@santarosa-nsn.gov

Soboba Band of Luiseno Indians
Isaiah Vivanco, Chairperson
P. O. Box 487 Cahuilla
San Jacinto, CA, 92581 Luiseno
Phone: (951) 654 - 5544
Fax: (951) 654-4198
ivivanco@soboba-nsn.gov

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 Cahuilla
San Jacinto, CA, 92581 Luiseno
Phone: (951) 663 - 5279
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Torres-Martinez Desert Cahuilla Indians
Cultural Committee,
P.O. Box 1160 Cahuilla
Thermal, CA, 92274
Phone: (760) 397 - 0300
Fax: (760) 397-8146
Cultural-Committee@torresmartinez-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Proposed Tentative Tract Map Numbers 38041, 38266, and 38273 Project, Riverside County.

CRM TECH
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

MEMORANDUM

Date: June 6, 2023
From: Bai "Tom" Tang, Principal, CRM TECH
To: Phillip Fomotor, Owner, Fomotor Engineering
Subject: Addendum to Historical/Archaeological Resources Survey Report for Tentative Tract Map No. 38041, City of Rancho Mirage, Riverside County, California (CRM TECH Contract No. 4016)

Dear Phillip:

At your request, CRM TECH has completed a historical/archaeological resources survey on approximately 1.7 acres of vacant land that have been added to Tentative Tract Map (TTM) No. 38041 since the completion of the Phase I cultural resources study for the project in March 2023 (Ballester 2023). The additional project area consists of the western portion of Assessor's Parcel No. 685-080-031, which was previously excluded from TTM 38041. It is located on the east side of Via Josefina at the intersection of Victory Lane, adjacent to the western boundary of the original project area, and in the northwest quarter of Section 30, T4S R6E, San Bernardino Baseline and Meridian (Figure 1).

The purpose of the current survey is to ascertain whether any "historical resources," as defined by the California Environmental Quality Act (CEQA), are present within the additional project area and thus may be impacted by the incorporation of the area into TTM 38041. In order to accomplish this objective, CRM TECH personnel reviewed the results of the cultural resources records search and the Native American Sacred Lands File search completed for the original study, pursued supplemental historical background research on the additional property, and conducted an intensive-level field survey. According to the records search results, the additional project area had not been surveyed for cultural resources prior to this study, and no potential "historical resources" or Native American tribal cultural resources had been identified within or adjacent to its boundaries.

Historical sources indicate no evidence of any settlement or development activities in the additional project area between 1855 and 1958 (GLO 1856; GLO 1904; 1941; 1958). By 1972, a small building had appeared in the southernmost portion of the additional project area (NETR Online 1972). As mentioned in the original study, much of the development in Section 30 of T4S R6E during the mid-20th century was the result of a wave of five-acre homestead claims on public land under provisions of the Small Tract Act (Ballester 2013:9-12). The building on this property was located on one such claim that was patented in 1958 to Charles Henry Ebblewhite (1901-1985), a salesman whose primary residence was in the Los Angeles area at the time (BLM n.d.; Ancestry.com n.d.).

These so-called "jackrabbit homesteads" were often hastily constructed using subpar materials and building practices, primarily for the purpose of substantiating the land claims, and they were often abandoned soon afterwards or fell victim to the harsh climate (Bellisi n.d.; Verdin 2000). The fact that the building in the additional project area stood isolated on the barren sandy terrain in 1972, with no road connection or any other indication of regular use, suggests a similar fate (NETR Online 1972). It may have been destroyed or removed prior to 1979, but certainly by 1996, leaving only a few domestic trees to mark its former location (NETR Online 1977-1996). The entire addition to TTM 38041 has remained vacant and undeveloped since then (NETR Online 1996-2020; Google Earth 1996-2023).

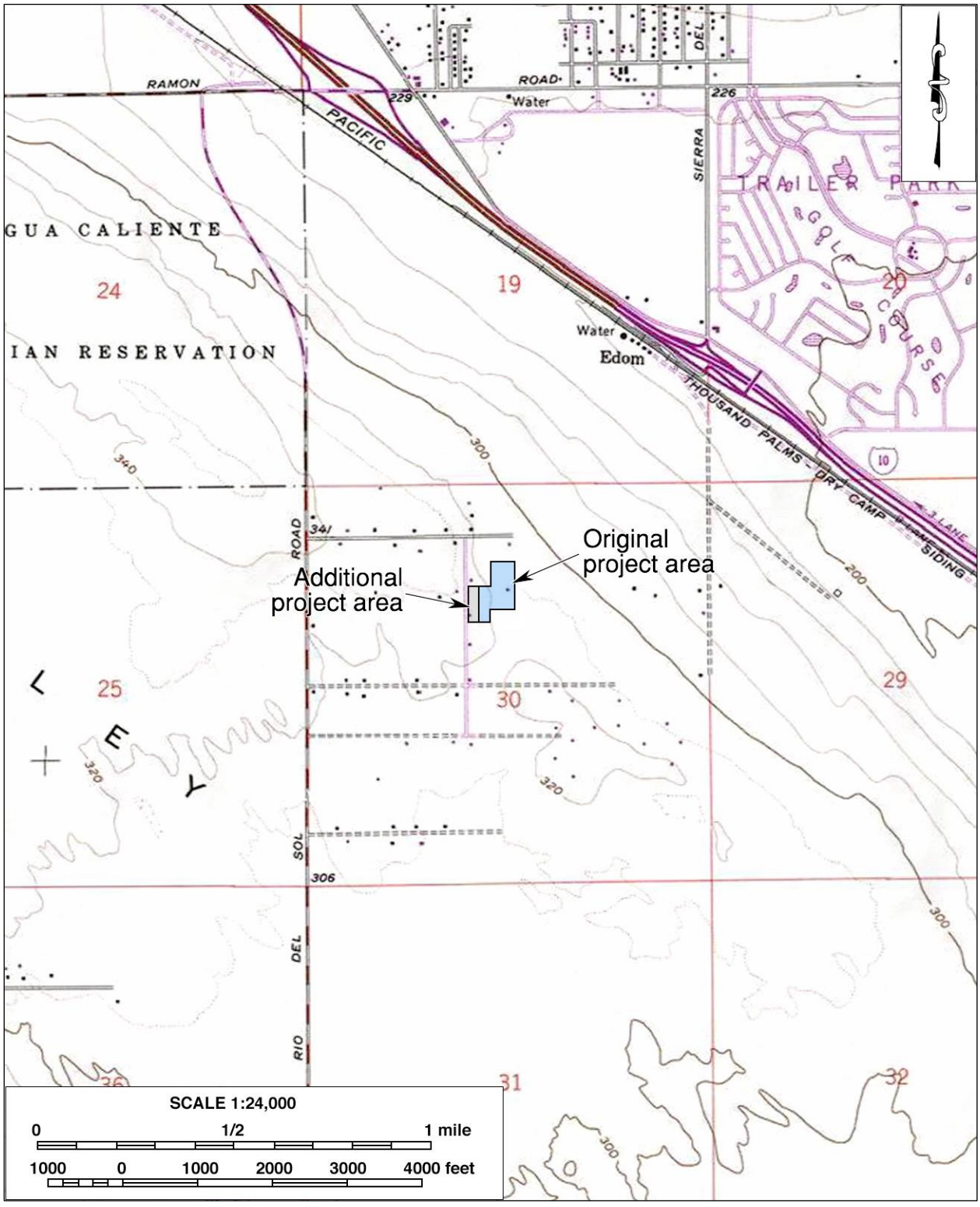


Figure 1. Location of the additional project area. (Based on USGS Cathedral City, Calif., 7.5' quadrangle, 1981 edition)

Figure 2. Overview of the additional project area. (Photograph taken on May 18, 2023; view to the southeast)

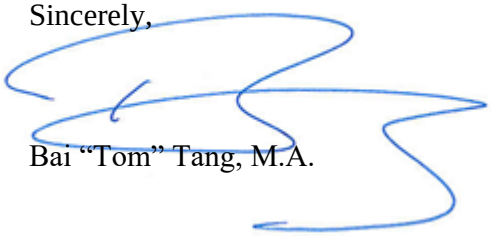
On May 18, 2023, CRM TECH field director Daniel Ballester completed the intensive-level field survey of the additional project area by walking a series of parallel north-south transects spaced 15 meters (approximately 50 feet) apart. Like the original project area, the additional acreage lies across generally level terrain with fine dune sands mixed with some rocks covering the ground surface. Elevations on the property range approximately from 315 feet to 330 feet above mean sea level. The scattered vegetation growth consists mainly of creosote, brittlebush, wild mustard, and other small desert shrubs and grasses. Ground visibility was good to excellent (90-100%) throughout the area (Figure 2).

The survey encountered no potential "historical resources" within or adjacent to the additional project area. The building that once occupied the southernmost portion of the property did not leave any identifiable archaeological remains. Other than two clusters of tamarisk trees, no features survive to mark the former location of the building. The area around the tamarisk trees has evidently been used to dump refuse (primarily landscaping waste) in relatively recent times, but none of the items is of any historical/archaeological interest.

Based on the research results summarized above, this addendum concludes that the finding of the original survey—that the proposed project would not cause a substantial adverse change to any known "historical resources"—and the recommendations made in that study (see Ballester 2023:13) remain valid and appropriate for the project after the incorporation of the additional acreage.

Thank you for this opportunity to be of service.

Sincerely,



Bai "Tom" Tang, M.A.

Reference Cited:

Ancestry.com
n.d. Genealogical database entries for Charles Henry Ebblewhite. https://www.ancestry.com.

Bellisi, Lou
n.d. BLM and the Small Tract Act in the Southern California Desert: A Brief History. http://www.publicland.org/35_archives/documents/doc_1306_bellesi.html.

BLM (Bureau of Land Management, U.S. Department of the Interior)
n.d. The Official Federal Land Records Site. http://www.glorecords.blm.gov.

Daniel Ballester
2023 Historical/Archaeological Resources Survey Report: Tentative Tract Map No. 38041, Assessor's Parcel Nos. 685-030-006, 685-080-010, and a Portion of 685-080-031, City of Rancho Mirage, Riverside County, California. Report prepared by CRM TECH for Fomotor Engineering.

GLO (General Land Office, U.S. Department of the Interior)
1856 Plat map: Township No. 4 South Range No. 6 East, SBBM; surveyed in 1855-1856.

Google Earth
1985-2023 Aerial photographs of the project vicinity; taken in 1985, 1996, 2002, 2004-2006, 2009, 2011-2013, 2015-2019, 2021, and 2023. Available through the Google Earth software.

NETR (Nationwide Environmental Title Research) Online
1972-2020 Aerial photographs of the project vicinity; taken in 1972, 1984, 1996, 2002, 2005, 2009, 2010, 2012, 2014, 2016, 2018, and 2020. http://www.historicaerials.com.

USGS (United States Geological Survey, U.S. Department of the Interior)
1904 Map: Indio, Calif. (30', 1:125,000); surveyed in 1901.
1941 Map: Edom, Calif. (15', 1:62,500); aerial photographs taken in 1941.
1958 Map: Thousand Palms, Calif. (15', 1:62,500); aerial photographs taken in 1951-1956, field-checked in 1958.

Verdin, Tom
2000 Homesteader Legacy Leaves Desert Littered with Abandoned Shacks. *The Los Angeles Times* November 5.

INTRODUCTION TO ENERGY SCREENING TABLES

The following worksheets are used to evaluated the potential impacts of a project.

Table 1 Definition of Project

This Table is used to establish the proposed development parameters that are used the calculation of energy usage. The independent variable to be entered is identified by shading. For residential development, the number of housing units should be entered in the shaded area. For non-residential development, the total floor area of development should be entered in the shaded area.

Tables 2 Summary of Project Impacts

Consumption/Generation Rates. This table indicates the development's projected electrical consumption, natural gas consumption, water consumption, effluent generation, and solid waste generation. No modifications should be made to this table.

Tables 3 through 4 Calculation of Project Impacts

Tables 3 through 4 indicate the results of the analysis.

Table 3 Electrical Consumption - This Table calculates the projected electrical consumption for new development. Default generation rates provided in the shaded areas may be changed.

Table 4 Natural Gas Consumption - This Table calculates the projected natural gas useagefor new development. Default generation rates provided in the shaded areas may be changed.

Table 1 Project Name: RNCH 004 - 17 Unit Subdivision - Energy Use

Definition of Project Parameters - Enter independent variable (no. of units or floor area) in the shaded area. The independent variable to be entered is the number of units (for residential development) or the gross floor area (for non-residential development).

Land Use	Independent	Factor
Residential Uses	**Variable**	**Total Units**
Single-Family Residential	No. of Units	17
Medium Density Residential	No. of Units	0
Multiple-Family Residential	No. of Units	0
Mobile Home	No. of Units	0
Office Uses	**Variable**	**Total Floor Area**
Office	Sq. Ft.	0
Medical Office Building	Sq. Ft.	0
Office Park	Sq. Ft.	0
Bank/Financial Services	Sq. Ft.	0
Commercial Uses	**Variable**	**Floor Area/Rooms**
Specialty Retail Commercial	Sq. Ft.	0
Convenience Store	Sq. Ft.	0
Movie Theater	Sq. Ft.	0
Shopping Center	Sq. Ft.	0
Sit-Down Restaurant	Sq. Ft.	0
Fast-Food Restaurant	Sq. Ft.	0
Hotel	Rooms	0
Manufacturing Uses	**Variable**	**Total Floor Area**
Industrial Park	Sq. Ft.	0
Manufacturing	Sq. Ft.	0
General Light Industry	Sq. Ft.	0
Warehouse	Sq. Ft.	0
Public/Institutional	**Variable**	**Total Floor Area**
Public/Institutional	Sq. Ft.	0
Open Space	Sq. Ft.	0

Table 2: Projected Energy Consumption and Generation

Summary of Project Impacts **- Results of analysis identified below. No modifications should be made to this Table.**

Utilities Consumption and Generation	Factor	Rates

Electrical Consumption	kWh/day	262.0
Natural Gas Consumption	cubic feet/day	3,776.8

Table 3: Electrical Consumption

Project Component	Units of Measure	Consumption Factor		Projected Consumption
Residential Uses	**No. of Units**	**kWh**	**Variable**	**kWh/Unit/Day**
Single-Family Residential	17	5,625.00	kWh/Unit/Year	262.0
Medium Density Residential	0	5,625.00	kWh/Unit/Year	0.0
Multiple-Family Residential	0	5,625.00	kWh/Unit/Year	0.0
Mobile Home	0	4,644.00	kWh/Unit/Year	0.0
Office Uses	**Sq. Ft.**	**kWh**	**Variable**	**kWh/Sq. Ft./Day**
Office	0	20.80	kWh/Sq. Ft./Year	0.0
Medical Office Building	0	14.20	kWh/Sq. Ft./Year	0.0
Office Park	0	20.80	kWh/Sq. Ft./Year	0.0
Bank/Financial Services	0	20.80	kWh/Sq. Ft./Year	0.0
Commercial Uses	**Sq. Ft./Rooms**	**kWh**	**Variable**	**kWh/Sq. Ft./Day**
Specialty Retail Commercial	0	16.00	kWh/Sq. Ft./Year	0.0
Convenience Store	0	16.00	kWh/Sq. Ft./Year	0.0
Movie Theater	0	16.00	kWh/Sq. Ft./Year	0.0
Shopping Center	0	35.90	kWh/Sq. Ft./Year	0
Sit-Down Restaurant	0	49.10	kWh/Sq. Ft./Year	0.0
Fast-Food Restaurant	0	49.10	kWh/Sq. Ft./Year	0.0
Hotel	0	8,955.00	kWh/Sq. Ft./Year	0.0
Manufacturing Uses	**Sq. Ft.**	**kWh**	**Variable**	**kWh/Sq. Ft./Day**
Industrial Park	0	4.80	kWh/Sq. Ft./Year	0.0
Manufacturing	0	4.80	kWh/Sq. Ft./Year	0.0
General Light Industry	0	4.80	kWh/Sq. Ft./Year	0.0
Warehouse	0	4.80	kWh/Sq. Ft./Year	0.0
Public/Institutional	**Sq. Ft.**	**kWh**	**Variable**	**kWh/Sq. Ft./Day**
Public/Institutional	0	4.80	kWh/Sq. Ft./Year	0.0
Open Space	0	0.00	kWh/Sq. Ft./Year	0.0

Total Daily Electrical Consumption (kWh/day)	262.0

Sources:
Residential rates were derived from the SCAQMD's CEQA Air Quality Handbook (April 1993).
All other rates are from Common Forecasting Methodology VII Demand Forms, 1989

Table 4: Natural Gas Consumption

Project Component	Units of Measure	Consumption Factor		Projected Consumption
Residential Uses	**No. of Units**	**Cu. Ft. of Nat. Gas**	**Variable**	**Cu. Ft,/Day**
Single-Family Residential	17	6,665.00	Cu. Ft./Mo./Unit	3,776.8
Medium Density Residential	0	4,011.50	Cu. Ft./Mo./Unit	0.0
Multiple-Family Residential	0	4,011.50	Cu. Ft./Mo./Unit	0.0
Mobile Home	0	4,011.50	Cu. Ft./Mo./Unit	0.0
Office Uses	**Sq. Ft.**	**Cu. Ft. of Nat. Gas**	**Variable**	**Cu. Ft,/Day**
Office	0	2.00	Cu. Ft./Mo./Sq. Ft.	0.0
Medical Office Building	0	2.00	Cu. Ft./Mo./Sq. Ft.	0.0
Office Park	0	2.00	Cu. Ft./Mo./Sq. Ft.	0.0
Bank/Financial Services	0	2.00	Cu. Ft./Mo./Sq. Ft.	0.0
Commercial Uses	**Sq. Ft./Rooms**	**Cu. Ft. of Nat. Gas**	**Variable**	**Cu. Ft,/Day**
Specialty Retail Commercial	0	2.90	Cu. Ft./Mo./Sq. Ft.	0.0
Convenience Store	0	2.90	Cu. Ft./Mo./Sq. Ft.	0.0
Movie Theater	0	2.90	Cu. Ft./Mo./Sq. Ft.	0.0
Shopping Center	0	2.90	Cu. Ft./Mo./Sq. Ft.	0.0
Sit-Down Restaurant	0	2.90	Cu. Ft./Mo./Sq. Ft.	0.0
Fast-Food Restaurant	0	2.90	Cu. Ft./Mo./Sq. Ft.	0.0
Hotel	0	2.90	Cu. Ft./Mo./Room	0.0
Manufacturing Uses	**Sq. Ft.**	**Cu. Ft. of Nat. Gas**	**Variable**	**Cu. Ft,/Day**

Industrial Park	0	4.70	Cu. Ft./Mo./Sq. Ft.	0.0
Manufacturing	0	4.70	Cu. Ft./Mo./Sq. Ft.	0.0
General Light Industry	0	4.70	Cu. Ft./Mo./Sq. Ft.	0.0
Warehouse	0	4.70	Cu. Ft./Mo./Sq. Ft.	0.0
Public/Institutional Use	**Sq. Ft.**	**Cu. Ft. of Nat. Gas**	**Variable**	**Cu. Ft,/Day**
Public/Institutional	0	2.90	Cu. Ft./Mo./Sq. Ft.	0.0
Open Space	0	2.90	Cu. Ft./Mo./Sq. Ft.	0.0

Total Daily Natural Gas Consumption (cubic feet/day)	3,776.8

Sources:
South Coast Air Quality Management District, CEQA Air Quality Handbook. April 1993

PRELIMINARY HYDROLOGY STUDY
for
TENTATIVE PARCEL MAP 38081
RANCHO MIRAGE, CALIFORNIA

Prepared for:
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Prepared by:

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June 7, 2023

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PRELIMINARY HYDROLOGY STUDY FOR TENTATIVE TRACT MAP 38041

PROJECT SITE LOCATION

The 8.41-acre proposed Tentative Tract Map site is located on the east side of Via Josefina, between Via Josefina, and Key Largo Avenue, in the City of Rancho Mirage, County of Riverside, California. The proposed development site lies in Section 21, T4S, R6E, and SBBM, with APNs: 685-080-031, -010, and 685-030-006.

PROJECT SITE DESCRIPTION

The project site is presently vacant. Existing elevations vary from 326 down to 310 with an existing natural basin in the center of the lot. The land slopes from the west property into the natural basin at 8.9-percent. The east side of the lot slopes from the far north toward the south from appx. 312 to a high point of 317 at 1.5-percent, then flattens out to the south. The site is entirely composed of Hydrologic Soil Type "A". A housing tract is proposed on this site. The project site area is in unshaded Zone X, which is described as: "Area of Minimal Flood Hazard".(See Riverside County Flood Insurance Rate Map numbers 06065C1595G, Effective August 28, 2008, in Reference Materials).

PURPOSE

The entire project site as well as offsite run-on were analyzed for proposed condition basin capacity using Synthetic Unit Hydrograph analysis for the 1, 3, 6, and 24-hour duration 100-year storm event to determine the worst case contributing runoff volume after infiltration. This computed net runoff volume was used to size the proposed retention basin as per City of Rancho Mirage Standard Detail 310 for Retention Basins. The runoff from the proposed onsite area and noted offsite run-on (See Preliminary Hydrology Plan in the Reference Materials) would drain from lots into the onsite driveways, collect in inlets, and be directed to the proposed retention basin. Storm drains will be sized for the 100-year peak discharge, which will be calculated from sub-watersheds using the Rational Formula.

METHODOLOGY

The materials included with this study are presented to satisfy the criteria set forth in the Riverside County Flood Control & Water Conservation District (RCFC & WCD) Hydrology Manual. The post-developed condition design runoff volume was determined using the worst of the 3, 6, and 24-hour duration storm for the 100 year event. Peak discharges of the 100-year storm event were determined with the Rational Formula. Synthetic Unit Hydrograph (SUH) and Rational Formula calculations were performed in accordance with RCFC & WCD criteria using CIVLDESIGN/CIVILCADD, a computer program developed by Joseph E. Bonadiman and Associates, Inc. The Hydrologic Soil Group area was determined with the Natural Resources Conservation Service's National Cooperative Soil Survey (See Reference Material). Point precipitation frequency data was obtained with the National Oceanic and Atmospheric Administration's (NOAA) Precipitation Frequency Data Server from Atlas 14 (See Reference Material.). The NOAA point precipitation data of the 100-year event was plotted on a log-log plot to obtain the slope of intensity duration curve to be used in the Rational Method analysis (See Reference Materials). All storm drains will be modeled with the computer modeling software,

Hydraflow Storm Sewers Extensions for AutoCAD Civil3D 2014, Version 10.3 by Autodesk, Inc. Grated storm drain inlets will be sized as per U.S. Department of Transportation Federal Highway Administration Hydraulic Engineering Circular No. 22, Third Edition (September 2009, Revised August 2013) Urban Drainage Design Manual

RESULT OF RATIONAL METHOD ANALYSIS

Summary of results of the Rational Method 100-year Peak Discharge offsite sub-watershed analysis are as follows: Please refer to the attached Preliminary Hydrology Plan, and Rational Method Output Files in the Reference Materials

Proposed Sub-Watershed Results:

SUB – WATERSHED ID:	*AREA (ACRES)*	*STORM FREQUENCY (YEAR)*	*100-YEAR PEAK DISCHARGE*
OFF WS-1	***1.98***	***100***	***5.55***
OFF WS-2	***0.80***	***100***	***2.03***

RESULT OF SYNTHETIC UNIT HYDROGRAPH ANALYSIS

Summary of results of the Synthetic Unit Hydrograph (SUH) analysis are as follows:
Please refer to the attached Preliminary Hydrology Plan, and SUH Output Files in the Reference Materials

Proposed Onsite Area Runoff to Basin

BASIN ID	*CONTRIBUTING AREA (ACRES)*	*STORM FREQUENCY (YEAR)*	*DURATION (HOUR)*	*RUNOFF VOLUME (CU-FT)-POST DEV*
ONSITE & OFFSITE RUN-ON	***10.52***	***100***	***1***	***46,194***
ONSITE & OFFSITE RUN-ON	***10.52***	***100***	***3***	***55,229***
ONSITE & OFFSITE RUN-ON	***10.52***	***100***	***6***	***68,120***
ONSITE & OFFSITE RUN-ON	***10.52***	***100***	***24***	***86,692***

DISCUSSION

An infiltration test was performed onsite (See Geotechnical Report in the Reference Materials) resulting with a raw measured infiltration rate of 11.1-inches per hour. The City of Rancho Mirage allows half the measured raw infiltration rate up to 5-inches per hour to be used, hence 5-inches per hour will be used as the design infiltration rate. Each of the 1, 3, 6, and 24-hour duration of the 100-year flood event Synthetic Unit Hydrograph output were run through the proposed onsite retention basin using the design infiltration rate as the outflow (See Basin Routing Spreadsheets in the Reference Materials), and a summary of the results are shown in the reference materials. The 6-hour / 100-year Synthetic Unit Hydrograph analysis produced a total net peak (after infiltration) proposed runoff volume of 43,736 cubic-feet for the contributing onsite and offsite run-on area under post-construction conditions, and was determined to be the worst case of the 1, 3, 6, and 24-hour duration events when considering infiltration. The surface retention basin was sized to hold 47,001 cubic-feet with 3 to 1 side slopes. The peak runoff volume would have a 100-year peak onsite basin water depth of 4.74 feet (See Preliminary Hydrology Plan in the reference Materials).

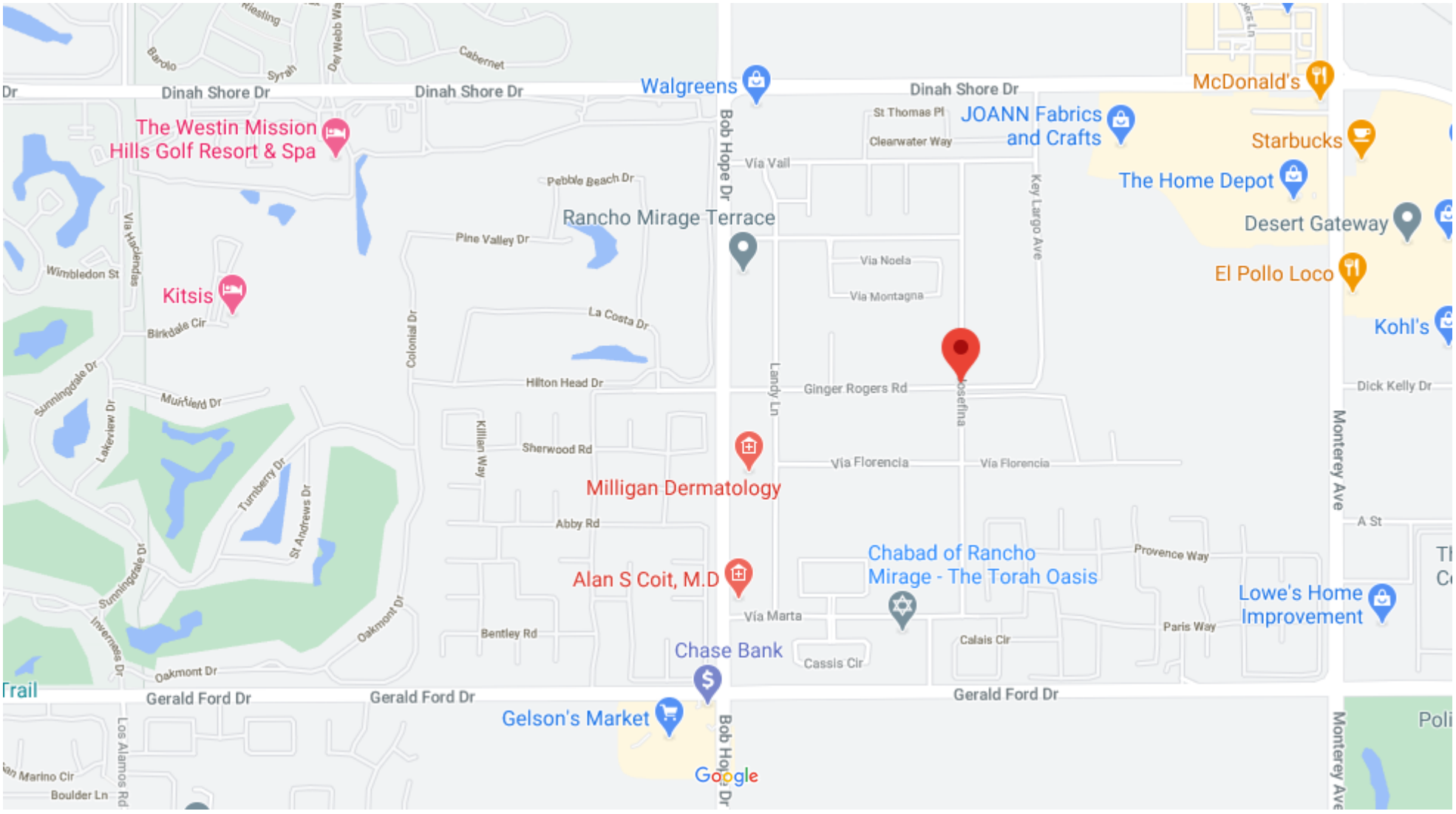
There are two offsite run-on areas (See Preliminary Hydrology Plan in the Reference Materials) directed toward the site. Offsite WS-1 directs 1.98-acres of runoff at 5.55 cubic-feet per second to a proposed channel between lots 7, 8, and 2 which would allow the flow to be directed into the proposed retention basin. Offsite WS-2 directs 0.80-acres toward the south boundary of the site. The retention basin has been sized with capacity to hold both offsite areas along with the proposed onsite runoff. We will look to obtain adjacent property owner permission for drainage alteration to remove the need for WS-2 to enter the site. All proposed storm drains, inlets and streets will be sized to adequately convey their respective 100-year Rational Method discharges to the proposed surface retention basin. Basin overflow beyond the basin capacity would spill to the south and flow along the existing flow pattern for this location.

In general, the storm drain and inlet system would more than adequately convey the post-development 100-year peak discharge to the proposed retention basin, which would be sized to more than handle the required post-development 100-year event / 3-hour duration runoff (See City of Cathedral City Municipal Code 8.24.070 in the Reference Materials).

REFERENCE MATERIAL

Google Maps Via Josefina

Vicinity Map



Map data ©2020 200 m

National Flood Hazard Layer FIRMette

FEMA

116°24'12"W 33°48'3"N

116°23'35"W 33°47'33"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

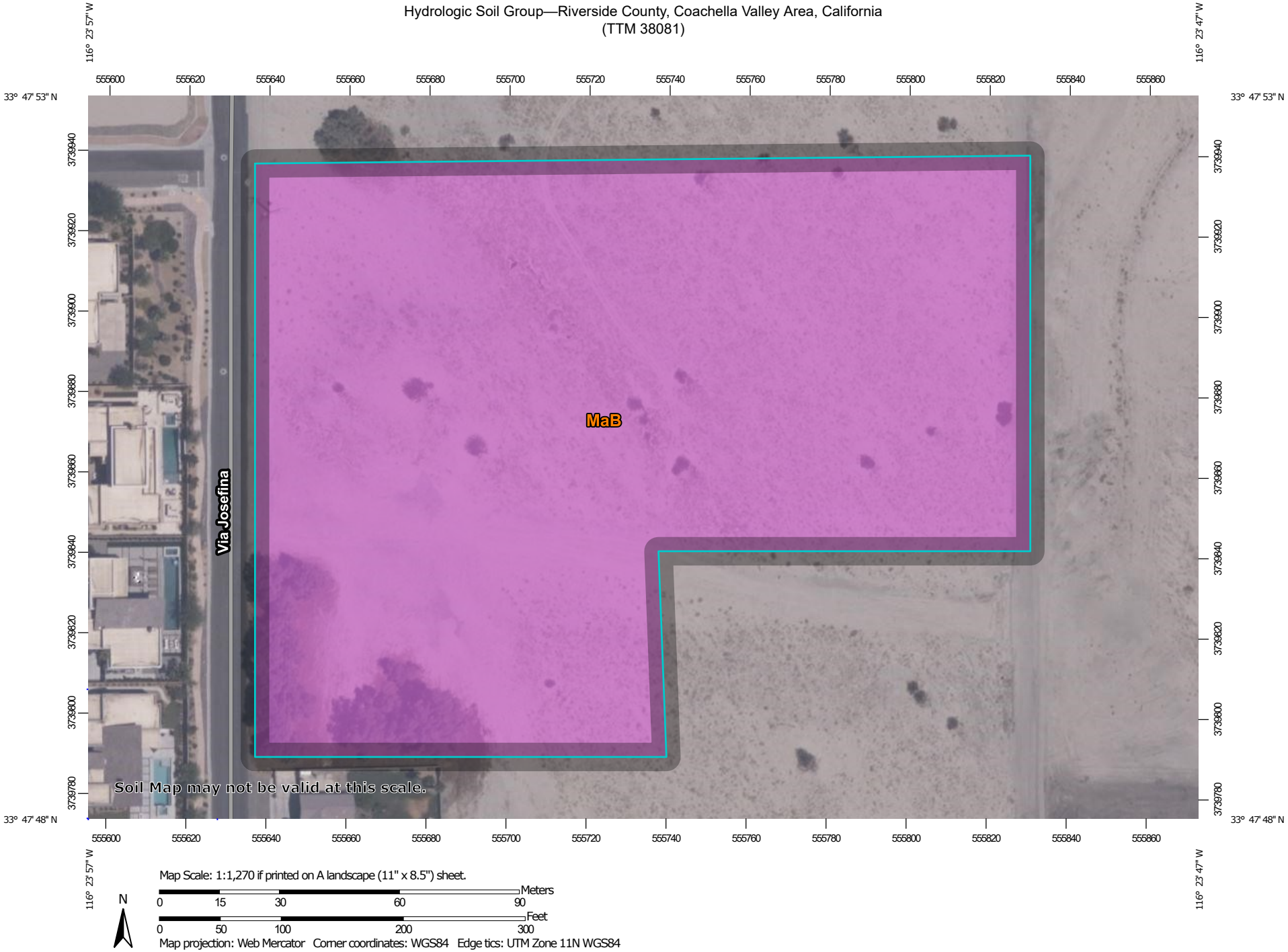
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/12/2020 at 7:19 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Hydrologic Soil Group—Riverside County, Coachella Valley Area, California
(TTM 38081)



Map Scale: 1:1,270 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Riverside County, Coachella Valley Area, California
Survey Area Data: Version 13, Sep 15, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 18, 2018—Aug 22, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
MaB	Myoma fine sand, 0 to 5 percent slopes	A	6.0	100.0%
Totals for Area of Interest			**6.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

NOAA Atlas 14, Volume 6, Version 2
Location name: Rancho Mirage, California, USA*
Latitude: 33.7979°, Longitude: -116.3979°
Elevation: 322.04 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.058** (0.048-0.070)	**0.089** (0.074-0.108)	**0.136** (0.113-0.166)	**0.180** (0.148-0.221)	**0.250** (0.199-0.317)	**0.312** (0.243-0.405)	**0.384** (0.292-0.511)	**0.469** (0.346-0.641)	**0.603** (0.427-0.861)	**0.730** (0.498-1.08)
10-min	**0.083** (0.069-0.101)	**0.128** (0.106-0.155)	**0.195** (0.162-0.238)	**0.258** (0.213-0.317)	**0.358** (0.285-0.455)	**0.447** (0.348-0.580)	**0.551** (0.418-0.732)	**0.672** (0.496-0.919)	**0.865** (0.612-1.24)	**1.05** (0.714-1.55)
15-min	**0.100** (0.084-0.122)	**0.154** (0.128-0.187)	**0.236** (0.196-0.287)	**0.313** (0.257-0.384)	**0.433** (0.345-0.550)	**0.541** (0.421-0.702)	**0.666** (0.506-0.886)	**0.812** (0.600-1.11)	**1.05** (0.740-1.49)	**1.26** (0.864-1.87)
30-min	**0.156** (0.130-0.189)	**0.239** (0.199-0.290)	**0.366** (0.304-0.446)	**0.485** (0.399-0.595)	**0.672** (0.535-0.853)	**0.839** (0.654-1.09)	**1.03** (0.785-1.37)	**1.26** (0.930-1.72)	**1.62** (1.15-2.32)	**1.96** (1.34-2.90)
60-min	**0.232** (0.193-0.281)	**0.356** (0.296-0.432)	**0.545** (0.452-0.663)	**0.721** (0.593-0.885)	**1.00** (0.795-1.27)	**1.25** (0.972-1.62)	**1.54** (1.17-2.04)	**1.87** (1.38-2.57)	**2.41** (1.71-3.45)	**2.92** (1.99-4.32)
2-hr	**0.336** (0.280-0.407)	**0.503** (0.419-0.611)	**0.752** (0.624-0.916)	**0.980** (0.806-1.20)	**1.33** (1.06-1.69)	**1.63** (1.27-2.12)	**1.98** (1.50-2.63)	**2.37** (1.75-3.24)	**2.97** (2.10-4.24)	**3.51** (2.40-5.19)
3-hr	**0.406** (0.338-0.492)	**0.604** (0.503-0.733)	**0.895** (0.743-1.09)	**1.16** (0.954-1.42)	**1.56** (1.24-1.98)	**1.91** (1.48-2.47)	**2.29** (1.74-3.05)	**2.73** (2.02-3.74)	**3.40** (2.40-4.85)	**3.98** (2.72-5.88)
6-hr	**0.557** (0.464-0.675)	**0.828** (0.689-1.00)	**1.22** (1.01-1.49)	**1.58** (1.30-1.93)	**2.11** (1.68-2.68)	**2.56** (2.00-3.33)	**3.07** (2.33-4.08)	**3.64** (2.68-4.98)	**4.49** (3.18-6.41)	**5.22** (3.57-7.72)
12-hr	**0.663** (0.553-0.804)	**1.00** (0.835-1.22)	**1.50** (1.25-1.83)	**1.95** (1.60-2.39)	**2.62** (2.09-3.33)	**3.20** (2.49-4.15)	**3.85** (2.92-5.12)	**4.57** (3.38-6.26)	**5.67** (4.01-8.09)	**6.62** (4.52-9.78)
24-hr	**0.771** (0.682-0.889)	**1.19** (1.06-1.38)	**1.81** (1.60-2.10)	**2.37** (2.08-2.77)	**3.22** (2.73-3.88)	**3.95** (3.28-4.85)	**4.76** (3.86-5.98)	**5.68** (4.48-7.34)	**7.07** (5.36-9.51)	**8.28** (6.07-11.5)
2-day	**0.846** (0.749-0.975)	**1.33** (1.18-1.54)	**2.04** (1.79-2.36)	**2.66** (2.33-3.11)	**3.61** (3.06-4.34)	**4.41** (3.66-5.42)	**5.30** (4.30-6.67)	**6.30** (4.97-8.14)	**7.79** (5.91-10.5)	**9.07** (6.65-12.6)
3-day	**0.882** (0.781-1.02)	**1.40** (1.24-1.61)	**2.14** (1.89-2.48)	**2.81** (2.45-3.27)	**3.80** (3.22-4.57)	**4.63** (3.85-5.69)	**5.56** (4.51-6.99)	**6.59** (5.20-8.52)	**8.13** (6.16-10.9)	**9.44** (6.93-13.1)
4-day	**0.908** (0.804-1.05)	**1.44** (1.28-1.67)	**2.22** (1.96-2.57)	**2.91** (2.54-3.39)	**3.93** (3.33-4.74)	**4.80** (3.98-5.89)	**5.75** (4.66-7.23)	**6.81** (5.37-8.80)	**8.39** (6.36-11.3)	**9.73** (7.14-13.5)
7-day	**0.968** (0.856-1.12)	**1.55** (1.37-1.79)	**2.40** (2.12-2.78)	**3.15** (2.75-3.67)	**4.26** (3.61-5.13)	**5.19** (4.31-6.38)	**6.22** (5.04-7.82)	**7.35** (5.80-9.50)	**9.03** (6.85-12.2)	**10.5** (7.67-14.6)
10-day	**1.02** (0.900-1.17)	**1.64** (1.45-1.89)	**2.54** (2.24-2.94)	**3.33** (2.92-3.89)	**4.51** (3.83-5.44)	**5.51** (4.57-6.77)	**6.59** (5.35-8.29)	**7.79** (6.15-10.1)	**9.57** (7.26-12.9)	**11.1** (8.12-15.4)
20-day	**1.11** (0.980-1.28)	**1.80** (1.59-2.07)	**2.79** (2.46-3.23)	**3.67** (3.21-4.29)	**4.99** (4.23-6.01)	**6.10** (5.06-7.50)	**7.31** (5.93-9.20)	**8.65** (6.83-11.2)	**10.6** (8.07-14.3)	**12.3** (9.03-17.1)
30-day	**1.24** (1.10-1.43)	**2.01** (1.77-2.32)	**3.12** (2.75-3.61)	**4.12** (3.60-4.80)	**5.61** (4.75-6.76)	**6.87** (5.70-8.44)	**8.24** (6.68-10.4)	**9.77** (7.71-12.6)	**12.0** (9.11-16.2)	**13.9** (10.2-19.4)
45-day	**1.35** (1.19-1.56)	**2.19** (1.94-2.53)	**3.42** (3.01-3.95)	**4.51** (3.95-5.27)	**6.17** (5.23-7.43)	**7.58** (6.29-9.31)	**9.12** (7.39-11.5)	**10.8** (8.55-14.0)	**13.3** (10.1-18.0)	**15.5** (11.3-21.5)
60-day	**1.47** (1.30-1.70)	**2.38** (2.11-2.75)	**3.72** (3.28-4.30)	**4.92** (4.31-5.74)	**6.74** (5.71-8.12)	**8.29** (6.88-10.2)	**9.99** (8.11-12.6)	**11.9** (9.38-15.4)	**14.7** (11.1-19.8)	**17.1** (12.5-23.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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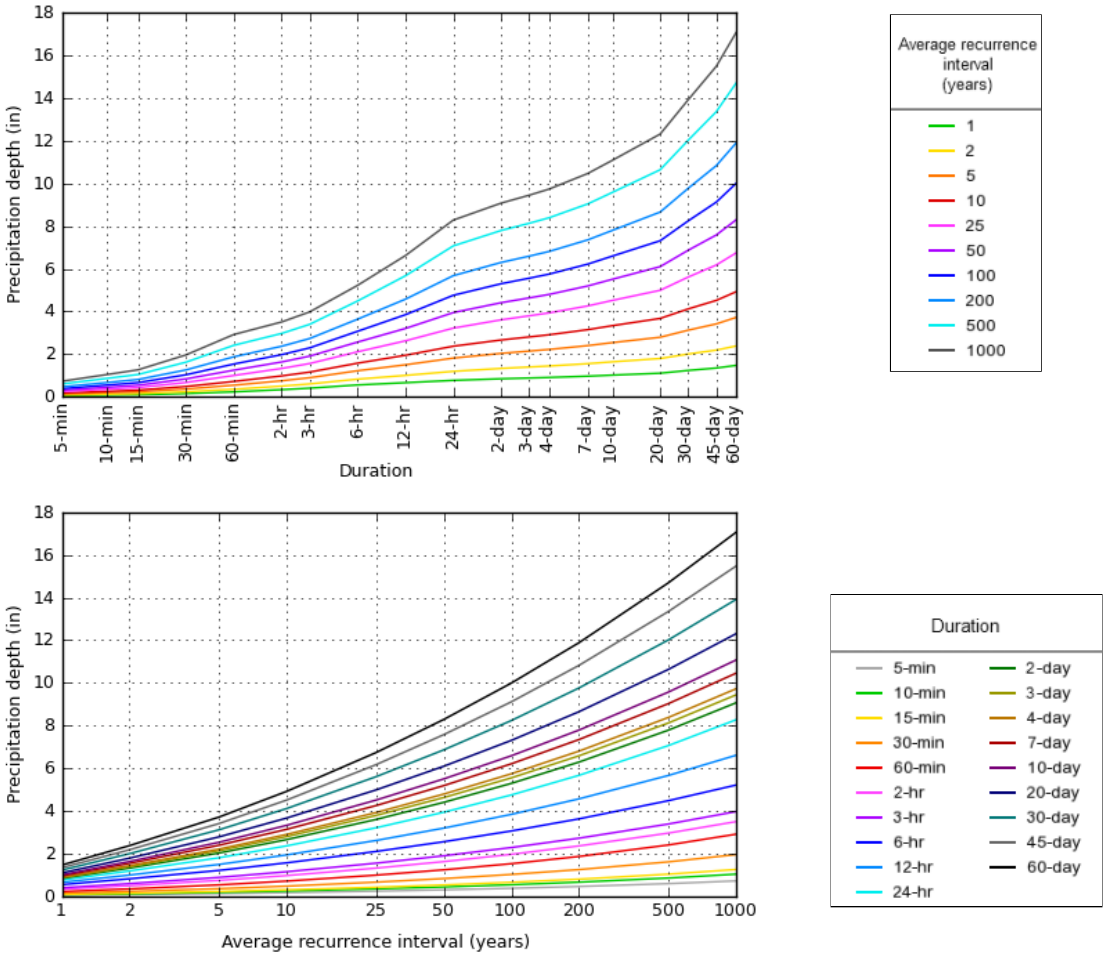
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.7979°, Longitude: -116.3979°



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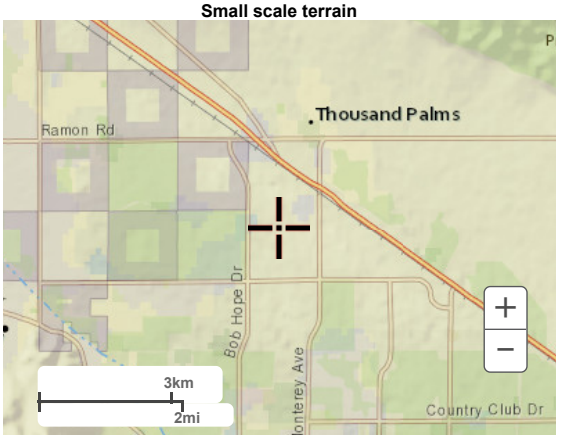
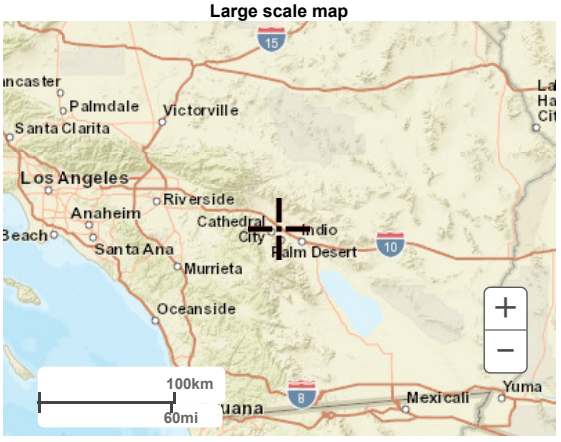
Maps & aerials

Small scale terrain

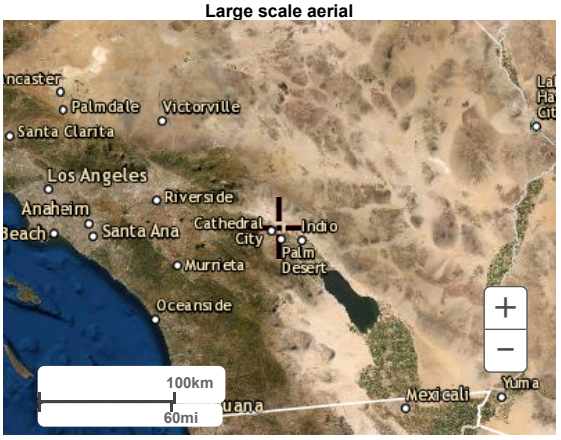


Large scale terrain

Large scale map



Large scale aerial



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National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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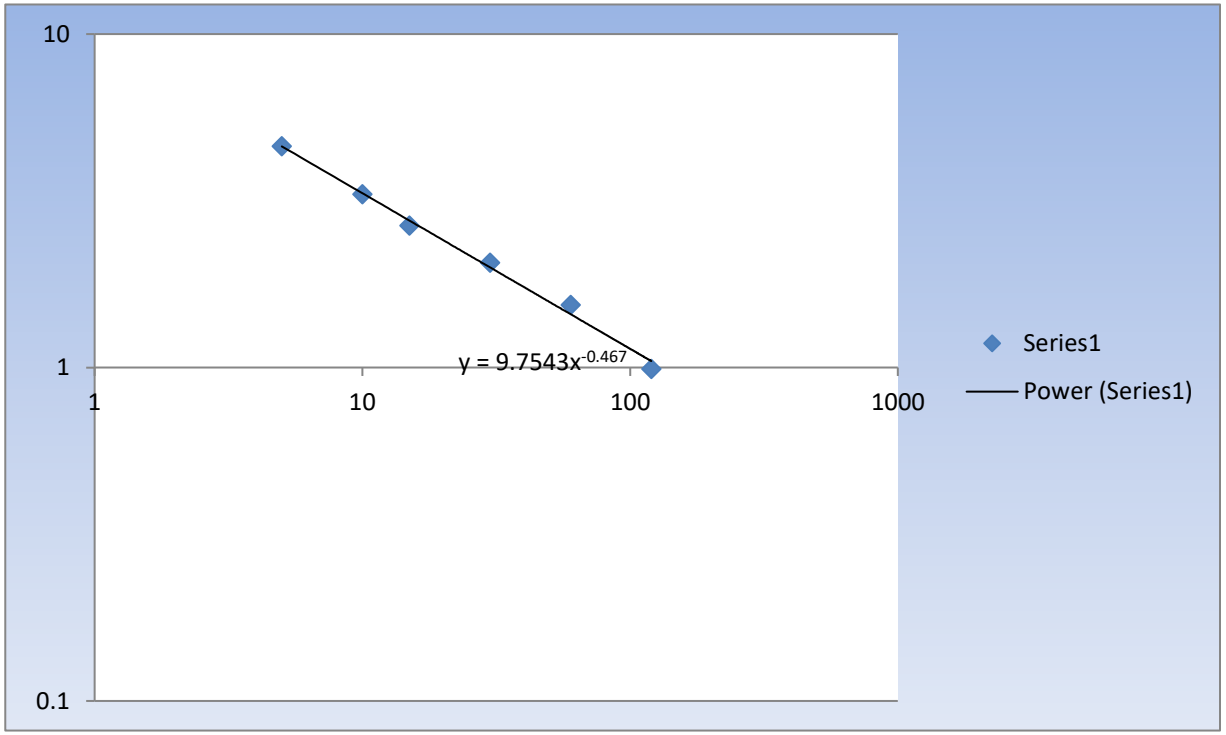
NOAA ATLAS 14 DATA

Time (min)	I (in/hr)	Depth (in)
5	4.608	0.384
10	3.306	0.551
15	2.664	0.666
30	2.06	1.03
60	1.54	1.54
120	0.99	1.98

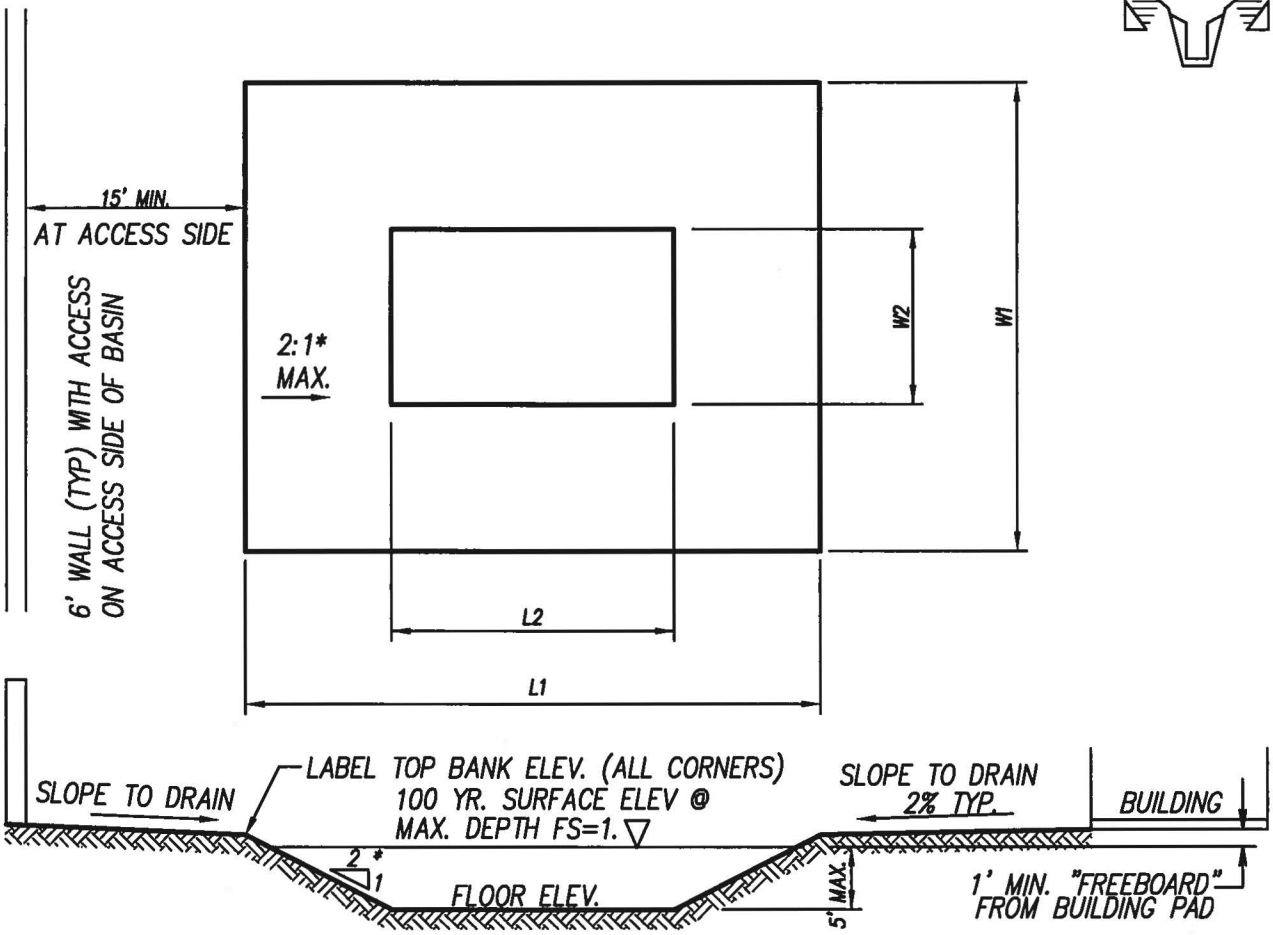
NOAA ATLAS INTENSITY - DURATION WORKSHEET

PROJECT	JOSEFINA
PROJ. NUMBER	20073
STORM EVENT	100-YEAR
DATE	9/24/2020

INTENSITY VALUES FROM GRAPH	
CONSTANT FROM GRAPH	9.75
EXPONENT FROM GRAPH	-0.47



CITY OF RANCHO MIRAGE



DESIGN CRITERIA

MAX. PERCOLATION RATE = 1"/HR.
MAX. DEPTH AT PEAK STORAGE = 5'
FACTOR OF SAFETY F.S. = 1.0 MINIMUM
ONE FOOT MINIMUM "FREEBOARD" BELOW LOWEST BUILDING PAD TO MAXIMUM WATER LEVEL
THE BASIN SHALL BE DESIGNED TO RETAIN THE RUNOFF FROM THE WORST CASE OF THE 1 HR., 3 HR. 6 HR., OR 24 HR. DURATION, 100 YEAR FREQUENCY STORM.
SEE SHT. 2 OF 2 FOR MINIMUM PLAN REQUIREMENTS

* SLOPES STEEPER THAN 5:1 WILL REQUIRE EROSION CONTROL APPROVED BY THE CITY ENGINEER. (TYPICAL EROSION CONTROL CONSISTS OF CONTINUOUS GROUND COVER LIKE GRASS, OR WASHED ROCK WITH A DIAMETER OF 1" OR LARGER, PLACED TO A DEPTH OF 3" OVER WEED BARRIER CLOTH.)

Use 1/2 of lowest percolation rate up to 5 inches per hour

CITY OF RANCHO MIRAGE		STANDARD DETAIL 310 SHT. 1 OF 2
REVISIONS * 7/5/2012	RETENTION BASIN	
	APPROVED BY: CITY ENGINEER 7/12/12 DATE	

CITY OF RANCHO MIRAGE

AT A MINIMUM, PLANS SHALL INCLUDE THE FOLLOWING INFORMATION:

1. BOUNDARY (LOT LINES) INCLUDING BEARING AND DISTANCES
2. SLOPE SYMBOLS, OR FINISH CONTOURS, WITH SLOPE RATIOS OR PERCENTAGES
* 3. ELEVATION LABELS FOR: BOTTOM, WATER SURFACE AT VOL. MAX. FOR 100YR. STORM, AND TOP (HYDROLOGY CALCULATIONS SHALL BE SUBMITTED VERIFYING BASIN AREA, DEPTH, AND VOLUME.)
4. DIMENSIONS (LENGTH, WIDTH AND DEPTH) OR SCALED DRAWING.
5. FINISHED SURFACE ELEVATIONS FOR IDENTIFYING THE FLOW PATHS
6. RIP-RAP OR APPROPRIATE EROSION CONTROL IF SLOPES EXCEED 20% (5:1)
7. ANY STRUCTURES, PIPES, HEADWALLS, RIP-RAP, DRYWELLS, ETC. SHOWN WITH REFERENCE TO STREET PLANS, STORM DRAIN PLANS, OR GRADING PLANS (A DRYWELL IS RECOMMENDED FOR LARGER RETENTION BASINS AS A WAY OF INTERCEPTING "NUISANCE WATER' THAT MIGHT CAUSE A CONSTANT SWAMPY AREA TO DEVELOP IN THE RETENTION BASIN. FLOWS TO CVWD CHANNELS OR TO LAKES TYPICALLY REQUIRE A DRYWELL TO INTERCEPT STREET RUNOFF. MAINTENANCE IS EASIEST IF THE DRYWELL IS NEAR THE STREET SO VACUUM TRUCKS CAN ACCESS THEM. SEE STANDARD DRAWINGS 306 AND 311.)

CITY OF RANCHO MIRAGE		STANDARD DETAIL 310 SHT. 2 OF 2
REVISIONS * 7/5/2012	RETENTION BASIN NOTES	
	APPROVED BY: CITY ENGINEER 7/12/12 DATE	

BASIN ROUTING **PROJECT: TTM 38041** **PROJECT NO. 20073** **DATE:** **7-Jun-23**

100-YEAR-1-HOUR PROPOSED HYDROGRAPH **OFFSITE AND ON**

ON AND OFFSITE BASIN EMPTY IN 11.6

AVERAGE BASIN AREA FOR INFILTRATION= 1-hour=60min

INFILTRATION RATE (IN/HR)= 5 Area for Inf(sf): 10004

INFILTRATION RATE (CU-FT/SEC) 1.15787 PEAK VOL 41687

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
5	0.0175	0.0175	762.3	762.3	347.36	414.94	414.94
10	0.0477	0.0302	1315.512	2077.812	347.36	968.15	1383.09
15	0.0822	0.0345	1502.82	3580.632	347.36	1155.46	2538.55
20	0.1194	0.0372	1620.432	5201.064	347.36	1273.07	3811.62
25	0.1613	0.0419	1825.164	7026.228	347.36	1477.80	5289.42
30	0.2104	0.0491	2138.796	9165.024	347.36	1791.43	7080.86
35	0.2696	0.0592	2578.752	11743.776	347.36	2231.39	9312.25
40	0.3483	0.0787	3428.172	15171.948	347.36	3080.81	12393.06
45	0.4817	0.1334	5810.904	20982.852	347.36	5463.54	17856.60
50	0.8407	0.359	15638.04	36620.892	347.36	15290.68	33147.28
55	1.0143	0.1736	7562.016	44182.908	347.36	7214.65	40361.94
60	1.0527	0.0384	1672.704	45855.612	347.36	1325.34	41687.28
65	1.0605	0.0078	339.768	46195.38	347.36	(7.59)	41679.69
70				46195.38	347.36	(347.36)	41332.32
75				46195.38	347.36	(347.36)	40984.96
80				46195.38	347.36	(347.36)	40637.60
85				46195.38	347.36	(347.36)	40290.24
90				46195.38	347.36	(347.36)	39942.88
95				46195.38	347.36	(347.36)	39595.52
100				46195.38	347.36	(347.36)	39248.16
105				46195.38	347.36	(347.36)	38900.80
110				46195.38	347.36	(347.36)	38553.44

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
115				46195.38	347.36	(347.36)	38206.07
120				46195.38	347.36	(347.36)	37858.71
125				46195.38	347.36	(347.36)	37511.35
130				46195.38	347.36	(347.36)	37163.99
135				46195.38	347.36	(347.36)	36816.63
140				46195.38	347.36	(347.36)	36469.27
145				46195.38	347.36	(347.36)	36121.91
150				46195.38	347.36	(347.36)	35774.55
155				46195.38	347.36	(347.36)	35427.19
160				46195.38	347.36	(347.36)	35079.82
165				46195.38	347.36	(347.36)	34732.46
170				46195.38	347.36	(347.36)	34385.10
175				46195.38	347.36	(347.36)	34037.74
180				46195.38	347.36	(347.36)	33690.38
185				46195.38	347.36	(347.36)	33343.02
190				46195.38	347.36	(347.36)	32995.66
195				46195.38	347.36	(347.36)	32648.30
200				46195.38	347.36	(347.36)	32300.94
205				46195.38	347.36	(347.36)	31953.57
210				46195.38	347.36	(347.36)	31606.21
215				46195.38	347.36	(347.36)	31258.85
220				46195.38	347.36	(347.36)	30911.49
225				46195.38	347.36	(347.36)	30564.13
230				46195.38	347.36	(347.36)	30216.77
235				46195.38	347.36	(347.36)	29869.41
240				46195.38	347.36	(347.36)	29522.05
245				46195.38	347.36	(347.36)	29174.69
250				46195.38	347.36	(347.36)	28827.32
255				46195.38	347.36	(347.36)	28479.96

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
260				46195.38	347.36	(347.36)	28132.60
265				46195.38	347.36	(347.36)	27785.24
270				46195.38	347.36	(347.36)	27437.88
275				46195.38	347.36	(347.36)	27090.52
280				46195.38	347.36	(347.36)	26743.16
285				46195.38	347.36	(347.36)	26395.80
290				46195.38	347.36	(347.36)	26048.44
295				46195.38	347.36	(347.36)	25701.07
300				46195.38	347.36	(347.36)	25353.71
305				46195.38	347.36	(347.36)	25006.35
310				46195.38	347.36	(347.36)	24658.99
315				46195.38	347.36	(347.36)	24311.63
320				46195.38	347.36	(347.36)	23964.27
325				46195.38	347.36	(347.36)	23616.91
330				46195.38	347.36	(347.36)	23269.55
335				46195.38	347.36	(347.36)	22922.19
340				46195.38	347.36	(347.36)	22574.82
345				46195.38	347.36	(347.36)	22227.46
350				46195.38	347.36	(347.36)	21880.10
355				46195.38	347.36	(347.36)	21532.74
360				46195.38	347.36	(347.36)	21185.38
365				46195.38	347.36	(347.36)	20838.02
370				46195.38	347.36	(347.36)	20490.66
375				46195.38	347.36	(347.36)	20143.30
380				46195.38	347.36	(347.36)	19795.94
385				46195.38	347.36	(347.36)	19448.57
390				46195.38	347.36	(347.36)	19101.21
395				46195.38	347.36	(347.36)	18753.85
400				46195.38	347.36	(347.36)	18406.49

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
405				46195.38	347.36	(347.36)	18059.13
410				46195.38	347.36	(347.36)	17711.77
415				46195.38	347.36	(347.36)	17364.41
420				46195.38	347.36	(347.36)	17017.05
425				46195.38	347.36	(347.36)	16669.69
430				46195.38	347.36	(347.36)	16322.32
435				46195.38	347.36	(347.36)	15974.96
440				46195.38	347.36	(347.36)	15627.60
445				46195.38	347.36	(347.36)	15280.24
450				46195.38	347.36	(347.36)	14932.88
455				46195.38	347.36	(347.36)	14585.52
460				46195.38	347.36	(347.36)	14238.16
465				46195.38	347.36	(347.36)	13890.80
470				46195.38	347.36	(347.36)	13543.44
475				46195.38	347.36	(347.36)	13196.07
480				46195.38	347.36	(347.36)	12848.71
485				46195.38	347.36	(347.36)	12501.35
490				46195.38	347.36	(347.36)	12153.99
495				46195.38	347.36	(347.36)	11806.63
500				46195.38	347.36	(347.36)	11459.27
505				46195.38	347.36	(347.36)	11111.91
510				46195.38	347.36	(347.36)	10764.55
515				46195.38	347.36	(347.36)	10417.19
520				46195.38	347.36	(347.36)	10069.82
525				46195.38	347.36	(347.36)	9722.46
530				46195.38	347.36	(347.36)	9375.10
535				46195.38	347.36	(347.36)	9027.74
540				46195.38	347.36	(347.36)	8680.38
545				46195.38	347.36	(347.36)	8333.02

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
550				46195.38	347.36	(347.36)	7985.66
555				46195.38	347.36	(347.36)	7638.30
560				46195.38	347.36	(347.36)	7290.94
565				46195.38	347.36	(347.36)	6943.57
570				46195.38	347.36	(347.36)	6596.21
575				46195.38	347.36	(347.36)	6248.85
580				46195.38	347.36	(347.36)	5901.49
585				46195.38	347.36	(347.36)	5554.13
590				46195.38	347.36	(347.36)	5206.77
595				46195.38	347.36	(347.36)	4859.41
600				46195.38	347.36	(347.36)	4512.05
605				46195.38	347.36	(347.36)	4164.69
610				46195.38	347.36	(347.36)	3817.32
615				46195.38	347.36	(347.36)	3469.96
620				46195.38	347.36	(347.36)	3122.60
625				46195.38	347.36	(347.36)	2775.24
630				46195.38	347.36	(347.36)	2427.88
635				46195.38	347.36	(347.36)	2080.52
640				46195.38	347.36	(347.36)	1733.16
645				46195.38	347.36	(347.36)	1385.80
650				46195.38	347.36	(347.36)	1038.44
655				46195.38	347.36	(347.36)	691.07
660				46195.38	347.36	(347.36)	343.71
665				46195.38	347.36	(347.36)	0.00
670				46195.38	347.36	(347.36)	0.00
675				46195.38	347.36	(347.36)	0.00
680				46195.38	347.36	(347.36)	0.00
685				46195.38	347.36	(347.36)	0.00
690				46195.38	347.36	(347.36)	0.00

BASIN ROUTING **PROJECT: TTM 38041** **PROJECT NO. 20073** **DATE:** **7-Jun-23**

100-YEAR-3-HOUR PROPOSED HYDROGRAPH **OFFSITE AND ON**

ON AND OFF BASIN EMPTY IN 13.3 HOURS

AVERAGE BASIN AREA FOR INFILTRATION= 3-hours=180min

INFILTRATION RATE (IN/HR)= 5 Area for Inf(sf): 10004

INFILTRATION RATE (CU-FT/SEC) 1.15787 PEAK VOL 42655

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
5	0.0088	0.0088	383.328	383.328	347.36	35.97	35.97
10	0.0211	0.0123	535.788	919.116	347.36	188.43	224.39
15	0.032	0.0109	474.804	1393.92	347.36	127.44	351.84
20	0.0451	0.0131	570.636	1964.556	347.36	223.27	575.11
25	0.0593	0.0142	618.552	2583.108	347.36	271.19	846.30
30	0.0755	0.0162	705.672	3288.78	347.36	358.31	1204.61
35	0.0905	0.015	653.4	3942.18	347.36	306.04	1510.65
40	0.1067	0.0162	705.672	4647.852	347.36	358.31	1868.96
45	0.1237	0.017	740.52	5388.372	347.36	393.16	2262.12
50	0.1387	0.015	653.4	6041.772	347.36	306.04	2568.16
55	0.1536	0.0149	649.044	6690.816	347.36	301.68	2869.84
60	0.1701	0.0165	718.74	7409.556	347.36	371.38	3241.22
65	0.1898	0.0197	858.132	8267.688	347.36	510.77	3751.99
70	0.2106	0.0208	906.048	9173.736	347.36	558.69	4310.68
75	0.2314	0.0208	906.048	10079.784	347.36	558.69	4869.37
80	0.2508	0.0194	845.064	10924.848	347.36	497.70	5367.07
85	0.2763	0.0255	1110.78	12035.628	347.36	763.42	6130.49
90	0.3058	0.0295	1285.02	13320.648	347.36	937.66	7068.15
95	0.3316	0.0258	1123.848	14444.496	347.36	776.49	7844.63
100	0.3599	0.0283	1232.748	15677.244	347.36	885.39	8730.02
105	0.3986	0.0387	1685.772	17363.016	347.36	1338.41	10068.43
110	0.4379	0.0393	1711.908	19074.924	347.36	1364.55	11432.98

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
115	0.4731	0.0352	1533.312	20608.236	347.36	1185.95	12618.93
120	0.5086	0.0355	1546.38	22154.616	347.36	1199.02	13817.95
125	0.5462	0.0376	1637.856	23792.472	347.36	1290.49	15108.44
130	0.6	0.0538	2343.528	26136	347.36	1996.17	17104.61
135	0.6717	0.0717	3123.252	29259.252	347.36	2775.89	19880.50
140	0.7265	0.0548	2387.088	31646.34	347.36	2039.73	21920.23
145	0.8199	0.0934	4068.504	35714.844	347.36	3721.14	25641.37
150	0.9395	0.1196	5209.776	40924.62	347.36	4862.41	30503.79
155	1.0748	0.1353	5893.668	46818.288	347.36	5546.31	36050.09
160	1.1823	0.1075	4682.7	51500.988	347.36	4335.34	40385.43
165	1.2228	0.0405	1764.18	53265.168	347.36	1416.82	41802.25
170	1.2403	0.0175	762.3	54027.468	347.36	414.94	42217.19
175	1.2573	0.017	740.52	54767.988	347.36	393.16	42610.35
180	1.2663	0.009	392.04	55160.028	347.36	44.68	42655.03
185	1.2679	0.0016	69.696	55229.724	347.36	(277.67)	42377.36
190				55229.724	347.36	(347.36)	42030.00
195				55229.724	347.36	(347.36)	41682.64
200				55229.724	347.36	(347.36)	41335.28
205				55229.724	347.36	(347.36)	40987.92
210				55229.724	347.36	(347.36)	40640.56
215				55229.724	347.36	(347.36)	40293.20
220				55229.724	347.36	(347.36)	39945.84
225				55229.724	347.36	(347.36)	39598.47
230				55229.724	347.36	(347.36)	39251.11
235				55229.724	347.36	(347.36)	38903.75
240				55229.724	347.36	(347.36)	38556.39
245				55229.724	347.36	(347.36)	38209.03
250				55229.724	347.36	(347.36)	37861.67
255				55229.724	347.36	(347.36)	37514.31

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
260				55229.724	347.36	(347.36)	37166.95
265				55229.724	347.36	(347.36)	36819.59
270				55229.724	347.36	(347.36)	36472.22
275				55229.724	347.36	(347.36)	36124.86
280				55229.724	347.36	(347.36)	35777.50
285				55229.724	347.36	(347.36)	35430.14
290				55229.724	347.36	(347.36)	35082.78
295				55229.724	347.36	(347.36)	34735.42
300				55229.724	347.36	(347.36)	34388.06
305				55229.724	347.36	(347.36)	34040.70
310				55229.724	347.36	(347.36)	33693.34
315				55229.724	347.36	(347.36)	33345.97
320				55229.724	347.36	(347.36)	32998.61
325				55229.724	347.36	(347.36)	32651.25
330				55229.724	347.36	(347.36)	32303.89
335				55229.724	347.36	(347.36)	31956.53
340				55229.724	347.36	(347.36)	31609.17
345				55229.724	347.36	(347.36)	31261.81
350				55229.724	347.36	(347.36)	30914.45
355				55229.724	347.36	(347.36)	30567.09
360				55229.724	347.36	(347.36)	30219.72
365				55229.724	347.36	(347.36)	29872.36
370				55229.724	347.36	(347.36)	29525.00
375				55229.724	347.36	(347.36)	29177.64
380				55229.724	347.36	(347.36)	28830.28
385				55229.724	347.36	(347.36)	28482.92
390				55229.724	347.36	(347.36)	28135.56
395				55229.724	347.36	(347.36)	27788.20
400				55229.724	347.36	(347.36)	27440.84

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
405				55229.724	347.36	(347.36)	27093.47
410				55229.724	347.36	(347.36)	26746.11
415				55229.724	347.36	(347.36)	26398.75
420				55229.724	347.36	(347.36)	26051.39
425				55229.724	347.36	(347.36)	25704.03
430				55229.724	347.36	(347.36)	25356.67
435				55229.724	347.36	(347.36)	25009.31
440				55229.724	347.36	(347.36)	24661.95
445				55229.724	347.36	(347.36)	24314.59
450				55229.724	347.36	(347.36)	23967.22
455				55229.724	347.36	(347.36)	23619.86
460				55229.724	347.36	(347.36)	23272.50
465				55229.724	347.36	(347.36)	22925.14
470				55229.724	347.36	(347.36)	22577.78
475				55229.724	347.36	(347.36)	22230.42
480				55229.724	347.36	(347.36)	21883.06
485				55229.724	347.36	(347.36)	21535.70
490				55229.724	347.36	(347.36)	21188.34
495				55229.724	347.36	(347.36)	20840.97
500				55229.724	347.36	(347.36)	20493.61
505				55229.724	347.36	(347.36)	20146.25
510				55229.724	347.36	(347.36)	19798.89
515				55229.724	347.36	(347.36)	19451.53
520				55229.724	347.36	(347.36)	19104.17
525				55229.724	347.36	(347.36)	18756.81
530				55229.724	347.36	(347.36)	18409.45
535				55229.724	347.36	(347.36)	18062.09
540				55229.724	347.36	(347.36)	17714.72
545				55229.724	347.36	(347.36)	17367.36

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
550				55229.724	347.36	(347.36)	17020.00
555				55229.724	347.36	(347.36)	16672.64
560				55229.724	347.36	(347.36)	16325.28
565				55229.724	347.36	(347.36)	15977.92
570				55229.724	347.36	(347.36)	15630.56
575				55229.724	347.36	(347.36)	15283.20
580				55229.724	347.36	(347.36)	14935.84
585				55229.724	347.36	(347.36)	14588.47
590				55229.724	347.36	(347.36)	14241.11
595				55229.724	347.36	(347.36)	13893.75
600				55229.724	347.36	(347.36)	13546.39
605				55229.724	347.36	(347.36)	13199.03
610				55229.724	347.36	(347.36)	12851.67
615				55229.724	347.36	(347.36)	12504.31
620				55229.724	347.36	(347.36)	12156.95
625				55229.724	347.36	(347.36)	11809.59
630				55229.724	347.36	(347.36)	11462.22
635				55229.724	347.36	(347.36)	11114.86
640				55229.724	347.36	(347.36)	10767.50
645				55229.724	347.36	(347.36)	10420.14
650				55229.724	347.36	(347.36)	10072.78
655				55229.724	347.36	(347.36)	9725.42
660				55229.724	347.36	(347.36)	9378.06
665				55229.724	347.36	(347.36)	9030.70
670				55229.724	347.36	(347.36)	8683.34
675				55229.724	347.36	(347.36)	8335.97
680				55229.724	347.36	(347.36)	7988.61
685				55229.724	347.36	(347.36)	7641.25
690				55229.724	347.36	(347.36)	7293.89

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
695				55229.724	347.36	(347.36)	6946.53
700				55229.724	347.36	(347.36)	6599.17
705				55229.724	347.36	(347.36)	6251.81
710				55229.724	347.36	(347.36)	5904.45
715				55229.724	347.36	(347.36)	5557.09
720				55229.724	347.36	(347.36)	5209.72
725				55229.724	347.36	(347.36)	4862.36
730				55229.724	347.36	(347.36)	4515.00
735				55229.724	347.36	(347.36)	4167.64
740				55229.724	347.36	(347.36)	3820.28
745				55229.724	347.36	(347.36)	3472.92
750				55229.724	347.36	(347.36)	3125.56
755				55229.724	347.36	(347.36)	2778.20
760				55229.724	347.36	(347.36)	2430.84
765				55229.724	347.36	(347.36)	2083.47
770				55229.724	347.36	(347.36)	1736.11
775				55229.724	347.36	(347.36)	1388.75
780				55229.724	347.36	(347.36)	1041.39
785				55229.724	347.36	(347.36)	694.03
790				55229.724	347.36	(347.36)	346.67
795				55229.724	347.36	(347.36)	0.00
800				55229.724	347.36	(347.36)	0.00
805				55229.724	347.36	(347.36)	0.00
810				55229.724	347.36	(347.36)	0.00
815				55229.724	347.36	(347.36)	0.00
820				55229.724	347.36	(347.36)	0.00
825				55229.724	347.36	(347.36)	0.00
830				55229.724	347.36	(347.36)	0.00
835				55229.724	347.36	(347.36)	0.00

BASIN ROUTING **PROJECT: KEY LARGO** **PROJECT NO. TTM 38041** **DATE:** **7-Jun-23**

100-YEAR-6-HOUR PROPOSED HYDROGRAPH **ONSITE AND ON**

ON AND OFFSITE BASIN EMPTY IN 16.4 HOURS

AVERAGE BASIN AREA FOR INFILTRATION= 6-hours=360min

INFILTRATION RATE (IN/HR)= 5 Area for Inf(sf): 10004

INFILTRATION RATE (CU-FT/SEC) 1.15787 PEAK VOL 43736

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
5	0.0045	0.0045	196.02	196.02	347.36	(151.34)	0.00
10	0.0118	0.0073	317.988	514.008	347.36	(29.37)	0.00
15	0.0194	0.0076	331.056	845.064	347.36	(16.31)	0.00
20	0.027	0.0076	331.056	1176.12	347.36	(16.31)	0.00
25	0.0346	0.0076	331.056	1507.176	347.36	(16.31)	0.00
30	0.0431	0.0085	370.26	1877.436	347.36	22.90	22.90
35	0.052	0.0089	387.684	2265.12	347.36	40.32	63.22
40	0.0608	0.0088	383.328	2648.448	347.36	35.97	99.19
45	0.0697	0.0089	387.684	3036.132	347.36	40.32	139.51
50	0.0786	0.0089	387.684	3423.816	347.36	40.32	179.83
55	0.0875	0.0089	387.684	3811.5	347.36	40.32	220.16
60	0.0972	0.0097	422.532	4234.032	347.36	75.17	295.33
65	0.1074	0.0102	444.312	4678.344	347.36	96.95	392.28
70	0.1175	0.0101	439.956	5118.3	347.36	92.59	484.87
75	0.1277	0.0102	444.312	5562.612	347.36	96.95	581.82
80	0.1378	0.0101	439.956	6002.568	347.36	92.59	674.42
85	0.1479	0.0101	439.956	6442.524	347.36	92.59	767.01
90	0.1581	0.0102	444.312	6886.836	347.36	96.95	863.97
95	0.1682	0.0101	439.956	7326.792	347.36	92.59	956.56
100	0.1784	0.0102	444.312	7771.104	347.36	96.95	1053.51
105	0.1885	0.0101	439.956	8211.06	347.36	92.59	1146.11
110	0.1986	0.0101	439.956	8651.016	347.36	92.59	1238.70

6/7/2023 BASIN:	AREA	VOL
0	5892	
1	7155	6523.5
2	8527	7841
3	10019	9273
4	11645	10832
5	13418	12531.5
	VOL=	47001
	AREA 1/2	10004
	net peak	43736
Water	depth	4.74

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
115	0.2088	0.0102	444.312	9095.328	347.36	96.95	1335.65
120	0.2198	0.011	479.16	9574.488	347.36	131.80	1467.45
125	0.2303	0.0105	457.38	10031.868	347.36	110.02	1577.47
130	0.2414	0.0111	483.516	10515.384	347.36	136.15	1713.62
135	0.2528	0.0114	496.584	11011.968	347.36	149.22	1862.85
140	0.2642	0.0114	496.584	11508.552	347.36	149.22	2012.07
145	0.2756	0.0114	496.584	12005.136	347.36	149.22	2161.29
150	0.287	0.0114	496.584	12501.72	347.36	149.22	2310.52
155	0.2984	0.0114	496.584	12998.304	347.36	149.22	2459.74
160	0.3098	0.0114	496.584	13494.888	347.36	149.22	2608.96
165	0.3221	0.0123	535.788	14030.676	347.36	188.43	2797.39
170	0.3348	0.0127	553.212	14583.888	347.36	205.85	3003.24
175	0.3475	0.0127	553.212	15137.1	347.36	205.85	3209.09
180	0.3602	0.0127	553.212	15690.312	347.36	205.85	3414.94
185	0.3728	0.0126	548.856	16239.168	347.36	201.49	3616.44
190	0.3864	0.0136	592.416	16831.584	347.36	245.05	3861.49
195	0.4004	0.014	609.84	17441.424	347.36	262.48	4123.97
200	0.4143	0.0139	605.484	18046.908	347.36	258.12	4382.09
205	0.4292	0.0149	649.044	18695.952	347.36	301.68	4683.78
210	0.4453	0.0161	701.316	19397.268	347.36	353.95	5037.73
215	0.4627	0.0174	757.944	20155.212	347.36	410.58	5448.31
220	0.4804	0.0177	771.012	20926.224	347.36	423.65	5871.96
225	0.4991	0.0187	814.572	21740.796	347.36	467.21	6339.18
230	0.5181	0.019	827.64	22568.436	347.36	480.28	6819.45
235	0.538	0.0199	866.844	23435.28	347.36	519.48	7338.94
240	0.5583	0.0203	884.268	24319.548	347.36	536.91	7875.84
245	0.5795	0.0212	923.472	25243.02	347.36	576.11	8451.96
250	0.6031	0.0236	1028.016	26271.036	347.36	680.65	9132.61
255	0.6293	0.0262	1141.272	27412.308	347.36	793.91	9926.52

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
260	0.6582	0.0289	1258.884	28671.192	347.36	911.52	10838.04
265	0.6899	0.0317	1380.852	30052.044	347.36	1033.49	11871.53
270	0.7223	0.0324	1411.344	31463.388	347.36	1063.98	12935.52
275	0.7566	0.0343	1494.108	32957.496	347.36	1146.75	14082.26
280	0.7936	0.037	1611.72	34569.216	347.36	1264.36	15346.62
285	0.8333	0.0397	1729.332	36298.548	347.36	1381.97	16728.59
290	0.8738	0.0405	1764.18	38062.728	347.36	1416.82	18145.41
295	0.9161	0.0423	1842.588	39905.316	347.36	1495.23	19640.64
300	0.9612	0.0451	1964.556	41869.872	347.36	1617.19	21257.83
305	1.0167	0.0555	2417.58	44287.452	347.36	2070.22	23328.05
310	1.0856	0.0689	3001.284	47288.736	347.36	2653.92	25981.98
315	1.1641	0.0785	3419.46	50708.196	347.36	3072.10	29054.08
320	1.2507	0.0866	3772.296	54480.492	347.36	3424.93	32479.01
325	1.3493	0.0986	4295.016	58775.508	347.36	3947.65	36426.67
330	1.4689	0.1196	5209.776	63985.284	347.36	4862.41	41289.08
335	1.5244	0.0555	2417.58	66402.864	347.36	2070.22	43359.30
340	1.5403	0.0159	692.604	67095.468	347.36	345.24	43704.54
345	1.549	0.0087	378.972	67474.44	347.36	31.61	43736.15
350	1.5557	0.0067	291.852	67766.292	347.36	(55.51)	43680.64
355	1.5602	0.0045	196.02	67962.312	347.36	(151.34)	43529.30
360	1.5631	0.0029	126.324	68088.636	347.36	(221.04)	43308.27
365	1.5638	0.0007	30.492	68119.128	347.36	(316.87)	42991.40
370				68119.128	347.36	(347.36)	42644.04
375				68119.128	347.36	(347.36)	42296.67
380				68119.128	347.36	(347.36)	41949.31
385				68119.128	347.36	(347.36)	41601.95
390				68119.128	347.36	(347.36)	41254.59
395				68119.128	347.36	(347.36)	40907.23
400				68119.128	347.36	(347.36)	40559.87

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
405				68119.128	347.36	(347.36)	40212.51
410				68119.128	347.36	(347.36)	39865.15
415				68119.128	347.36	(347.36)	39517.79
420				68119.128	347.36	(347.36)	39170.42
425				68119.128	347.36	(347.36)	38823.06
430				68119.128	347.36	(347.36)	38475.70
435				68119.128	347.36	(347.36)	38128.34
440				68119.128	347.36	(347.36)	37780.98
445				68119.128	347.36	(347.36)	37433.62
450				68119.128	347.36	(347.36)	37086.26
455				68119.128	347.36	(347.36)	36738.90
460				68119.128	347.36	(347.36)	36391.54
465				68119.128	347.36	(347.36)	36044.17
470				68119.128	347.36	(347.36)	35696.81
475				68119.128	347.36	(347.36)	35349.45
480				68119.128	347.36	(347.36)	35002.09
485				68119.128	347.36	(347.36)	34654.73
490				68119.128	347.36	(347.36)	34307.37
495				68119.128	347.36	(347.36)	33960.01
500				68119.128	347.36	(347.36)	33612.65
505				68119.128	347.36	(347.36)	33265.29
510				68119.128	347.36	(347.36)	32917.92
515				68119.128	347.36	(347.36)	32570.56
520				68119.128	347.36	(347.36)	32223.20
525				68119.128	347.36	(347.36)	31875.84
530				68119.128	347.36	(347.36)	31528.48
535				68119.128	347.36	(347.36)	31181.12
540				68119.128	347.36	(347.36)	30833.76
545				68119.128	347.36	(347.36)	30486.40

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
550				68119.128	347.36	(347.36)	30139.04
555				68119.128	347.36	(347.36)	29791.67
560				68119.128	347.36	(347.36)	29444.31
565				68119.128	347.36	(347.36)	29096.95
570				68119.128	347.36	(347.36)	28749.59
575				68119.128	347.36	(347.36)	28402.23
580				68119.128	347.36	(347.36)	28054.87
585				68119.128	347.36	(347.36)	27707.51
590				68119.128	347.36	(347.36)	27360.15
595				68119.128	347.36	(347.36)	27012.79
600				68119.128	347.36	(347.36)	26665.42
605				68119.128	347.36	(347.36)	26318.06
610				68119.128	347.36	(347.36)	25970.70
615				68119.128	347.36	(347.36)	25623.34
620				68119.128	347.36	(347.36)	25275.98
625				68119.128	347.36	(347.36)	24928.62
630				68119.128	347.36	(347.36)	24581.26
635				68119.128	347.36	(347.36)	24233.90
640				68119.128	347.36	(347.36)	23886.54
645				68119.128	347.36	(347.36)	23539.17
650				68119.128	347.36	(347.36)	23191.81
655				68119.128	347.36	(347.36)	22844.45
660				68119.128	347.36	(347.36)	22497.09
665				68119.128	347.36	(347.36)	22149.73
670				68119.128	347.36	(347.36)	21802.37
675				68119.128	347.36	(347.36)	21455.01
680				68119.128	347.36	(347.36)	21107.65
685				68119.128	347.36	(347.36)	20760.29
690				68119.128	347.36	(347.36)	20412.92

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
695				68119.128	347.36	(347.36)	20065.56
700				68119.128	347.36	(347.36)	19718.20
705				68119.128	347.36	(347.36)	19370.84
710				68119.128	347.36	(347.36)	19023.48
715				68119.128	347.36	(347.36)	18676.12
720				68119.128	347.36	(347.36)	18328.76
725				68119.128	347.36	(347.36)	17981.40
730				68119.128	347.36	(347.36)	17634.04
735				68119.128	347.36	(347.36)	17286.67
740				68119.128	347.36	(347.36)	16939.31
745				68119.128	347.36	(347.36)	16591.95
750				68119.128	347.36	(347.36)	16244.59
755				68119.128	347.36	(347.36)	15897.23
760				68119.128	347.36	(347.36)	15549.87
765				68119.128	347.36	(347.36)	15202.51
770				68119.128	347.36	(347.36)	14855.15
775				68119.128	347.36	(347.36)	14507.79
780				68119.128	347.36	(347.36)	14160.42
785				68119.128	347.36	(347.36)	13813.06
790				68119.128	347.36	(347.36)	13465.70
795				68119.128	347.36	(347.36)	13118.34
800				68119.128	347.36	(347.36)	12770.98
805				68119.128	347.36	(347.36)	12423.62
810				68119.128	347.36	(347.36)	12076.26
815				68119.128	347.36	(347.36)	11728.90
820				68119.128	347.36	(347.36)	11381.54
825				68119.128	347.36	(347.36)	11034.17
830				68119.128	347.36	(347.36)	10686.81
835				68119.128	347.36	(347.36)	10339.45

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
840				68119.128	347.36	(347.36)	9992.09
845				68119.128	347.36	(347.36)	9644.73
850				68119.128	347.36	(347.36)	9297.37
855				68119.128	347.36	(347.36)	8950.01
860				68119.128	347.36	(347.36)	8602.65
865				68119.128	347.36	(347.36)	8255.29
870				68119.128	347.36	(347.36)	7907.92
875				68119.128	347.36	(347.36)	7560.56
880				68119.128	347.36	(347.36)	7213.20
885				68119.128	347.36	(347.36)	6865.84
890				68119.128	347.36	(347.36)	6518.48
895				68119.128	347.36	(347.36)	6171.12
900				68119.128	347.36	(347.36)	5823.76
905				68119.128	347.36	(347.36)	5476.40
910				68119.128	347.36	(347.36)	5129.04
915				68119.128	347.36	(347.36)	4781.67
920				68119.128	347.36	(347.36)	4434.31
925				68119.128	347.36	(347.36)	4086.95
930				68119.128	347.36	(347.36)	3739.59
935				68119.128	347.36	(347.36)	3392.23
940				68119.128	347.36	(347.36)	3044.87
945				68119.128	347.36	(347.36)	2697.51
950				68119.128	347.36	(347.36)	2350.15
955				68119.128	347.36	(347.36)	2002.79
960				68119.128	347.36	(347.36)	1655.42
965				68119.128	347.36	(347.36)	1308.06
970				68119.128	347.36	(347.36)	960.70
975				68119.128	347.36	(347.36)	613.34
980				68119.128	347.36	(347.36)	265.98

BASIN ROUTING **PROJECT: TTM 38041** **PROJECT NO. 20073** **DATE:** **7-Jun-23**

100-YEAR-24-HOUR PROPOSED HYDROGRAPH **ONSITE AND ON**

ON AND OFFSITE BASIN EMPTY IN 24.7 HOURS

AVERAGE BASIN AREA FOR INFILTRATION= 24-hours=1440min

INFILTRATION RATE (IN/HR)= 5 Area for Inf(sf): 10004

INFILTRATION RATE (CU-FT/SEC) 1.15787 PEAK VOL 27588

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
5	0.0009	0.0009	39.204	39.204	347.36	(308.16)	0.00
10	0.0022	0.0013	56.628	95.832	347.36	(290.73)	0.00
15	0.0036	0.0014	60.984	156.816	347.36	(286.38)	0.00
20	0.0053	0.0017	74.052	230.868	347.36	(273.31)	0.00
25	0.0073	0.002	87.12	317.988	347.36	(260.24)	0.00
30	0.0093	0.002	87.12	405.108	347.36	(260.24)	0.00
35	0.0112	0.0019	82.764	487.872	347.36	(264.60)	0.00
40	0.0132	0.002	87.12	574.992	347.36	(260.24)	0.00
45	0.0152	0.002	87.12	662.112	347.36	(260.24)	0.00
50	0.0176	0.0024	104.544	766.656	347.36	(242.82)	0.00
55	0.0202	0.0026	113.256	879.912	347.36	(234.11)	0.00
60	0.0228	0.0026	113.256	993.168	347.36	(234.11)	0.00
65	0.025	0.0022	95.832	1089	347.36	(251.53)	0.00
70	0.027	0.002	87.12	1176.12	347.36	(260.24)	0.00
75	0.0289	0.0019	82.764	1258.884	347.36	(264.60)	0.00
80	0.0309	0.002	87.12	1346.004	347.36	(260.24)	0.00
85	0.0329	0.002	87.12	1433.124	347.36	(260.24)	0.00
90	0.0348	0.0019	82.764	1515.888	347.36	(264.60)	0.00
95	0.0368	0.002	87.12	1603.008	347.36	(260.24)	0.00
100	0.0387	0.0019	82.764	1685.772	347.36	(264.60)	0.00
105	0.0407	0.002	87.12	1772.892	347.36	(260.24)	0.00
110	0.0431	0.0024	104.544	1877.436	347.36	(242.82)	0.00

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
115	0.0458	0.0027	117.612	1995.048	347.36	(229.75)	0.00
120	0.0484	0.0026	113.256	2108.304	347.36	(234.11)	0.00
125	0.051	0.0026	113.256	2221.56	347.36	(234.11)	0.00
130	0.0536	0.0026	113.256	2334.816	347.36	(234.11)	0.00
135	0.0562	0.0026	113.256	2448.072	347.36	(234.11)	0.00
140	0.0589	0.0027	117.612	2565.684	347.36	(229.75)	0.00
145	0.0615	0.0026	113.256	2678.94	347.36	(234.11)	0.00
150	0.0641	0.0026	113.256	2792.196	347.36	(234.11)	0.00
155	0.0672	0.0031	135.036	2927.232	347.36	(212.33)	0.00
160	0.0705	0.0033	143.748	3070.98	347.36	(203.61)	0.00
165	0.0737	0.0032	139.392	3210.372	347.36	(207.97)	0.00
170	0.077	0.0033	143.748	3354.12	347.36	(203.61)	0.00
175	0.0803	0.0033	143.748	3497.868	347.36	(203.61)	0.00
180	0.0836	0.0033	143.748	3641.616	347.36	(203.61)	0.00
185	0.0869	0.0033	143.748	3785.364	347.36	(203.61)	0.00
190	0.0901	0.0032	139.392	3924.756	347.36	(207.97)	0.00
195	0.0934	0.0033	143.748	4068.504	347.36	(203.61)	0.00
200	0.0967	0.0033	143.748	4212.252	347.36	(203.61)	0.00
205	0.1	0.0033	143.748	4356	347.36	(203.61)	0.00
210	0.1032	0.0032	139.392	4495.392	347.36	(207.97)	0.00
215	0.1065	0.0033	143.748	4639.14	347.36	(203.61)	0.00
220	0.1098	0.0033	143.748	4782.888	347.36	(203.61)	0.00
225	0.1131	0.0033	143.748	4926.636	347.36	(203.61)	0.00
230	0.1168	0.0037	161.172	5087.808	347.36	(186.19)	0.00
235	0.1207	0.0039	169.884	5257.692	347.36	(177.48)	0.00
240	0.1247	0.004	174.24	5431.932	347.36	(173.12)	0.00
245	0.1286	0.0039	169.884	5601.816	347.36	(177.48)	0.00
250	0.1325	0.0039	169.884	5771.7	347.36	(177.48)	0.00
255	0.1365	0.004	174.24	5945.94	347.36	(173.12)	0.00

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
260	0.1409	0.0044	191.664	6137.604	347.36	(155.70)	0.00
265	0.1454	0.0045	196.02	6333.624	347.36	(151.34)	0.00
270	0.15	0.0046	200.376	6534	347.36	(146.99)	0.00
275	0.1546	0.0046	200.376	6734.376	347.36	(146.99)	0.00
280	0.1592	0.0046	200.376	6934.752	347.36	(146.99)	0.00
285	0.1638	0.0046	200.376	7135.128	347.36	(146.99)	0.00
290	0.1688	0.005	217.8	7352.928	347.36	(129.56)	0.00
295	0.1741	0.0053	230.868	7583.796	347.36	(116.49)	0.00
300	0.1793	0.0052	226.512	7810.308	347.36	(120.85)	0.00
305	0.1836	0.0043	187.308	7997.616	347.36	(160.05)	0.00
310	0.1876	0.004	174.24	8171.856	347.36	(173.12)	0.00
315	0.1915	0.0039	169.884	8341.74	347.36	(177.48)	0.00
320	0.1959	0.0044	191.664	8533.404	347.36	(155.70)	0.00
325	0.2005	0.0046	200.376	8733.78	347.36	(146.99)	0.00
330	0.2051	0.0046	200.376	8934.156	347.36	(146.99)	0.00
335	0.2101	0.005	217.8	9151.956	347.36	(129.56)	0.00
340	0.2154	0.0053	230.868	9382.824	347.36	(116.49)	0.00
345	0.2206	0.0052	226.512	9609.336	347.36	(120.85)	0.00
350	0.2258	0.0052	226.512	9835.848	347.36	(120.85)	0.00
355	0.2311	0.0053	230.868	10066.716	347.36	(116.49)	0.00
360	0.2363	0.0052	226.512	10293.228	347.36	(120.85)	0.00
365	0.242	0.0057	248.292	10541.52	347.36	(99.07)	0.00
370	0.2479	0.0059	257.004	10798.524	347.36	(90.36)	0.00
375	0.2538	0.0059	257.004	11055.528	347.36	(90.36)	0.00
380	0.2597	0.0059	257.004	11312.532	347.36	(90.36)	0.00
385	0.2656	0.0059	257.004	11569.536	347.36	(90.36)	0.00
390	0.2715	0.0059	257.004	11826.54	347.36	(90.36)	0.00
395	0.2779	0.0064	278.784	12105.324	347.36	(68.58)	0.00
400	0.2844	0.0065	283.14	12388.464	347.36	(64.22)	0.00

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
405	0.291	0.0066	287.496	12675.96	347.36	(59.87)	0.00
410	0.2975	0.0065	283.14	12959.1	347.36	(64.22)	0.00
415	0.3041	0.0066	287.496	13246.596	347.36	(59.87)	0.00
420	0.3106	0.0065	283.14	13529.736	347.36	(64.22)	0.00
425	0.3172	0.0066	287.496	13817.232	347.36	(59.87)	0.00
430	0.3237	0.0065	283.14	14100.372	347.36	(64.22)	0.00
435	0.3303	0.0066	287.496	14387.868	347.36	(59.87)	0.00
440	0.3373	0.007	304.92	14692.788	347.36	(42.44)	0.00
445	0.3445	0.0072	313.632	15006.42	347.36	(33.73)	0.00
450	0.3517	0.0072	313.632	15320.052	347.36	(33.73)	0.00
455	0.3594	0.0077	335.412	15655.464	347.36	(11.95)	0.00
460	0.3672	0.0078	339.768	15995.232	347.36	(7.59)	0.00
465	0.3751	0.0079	344.124	16339.356	347.36	(3.24)	0.00
470	0.3834	0.0083	361.548	16700.904	347.36	14.19	14.19
475	0.392	0.0086	374.616	17075.52	347.36	27.25	41.44
480	0.4005	0.0085	370.26	17445.78	347.36	22.90	64.34
485	0.4099	0.0094	409.464	17855.244	347.36	62.10	126.44
490	0.4198	0.0099	431.244	18286.488	347.36	83.88	210.33
495	0.4296	0.0098	426.888	18713.376	347.36	79.53	289.85
500	0.4394	0.0098	426.888	19140.264	347.36	79.53	369.38
505	0.4492	0.0098	426.888	19567.152	347.36	79.53	448.91
510	0.4591	0.0099	431.244	19998.396	347.36	83.88	532.79
515	0.4694	0.0103	448.668	20447.064	347.36	101.31	634.10
520	0.4798	0.0104	453.024	20900.088	347.36	105.66	739.76
525	0.4903	0.0105	457.38	21357.468	347.36	110.02	849.78
530	0.5013	0.011	479.16	21836.628	347.36	131.80	981.58
535	0.5124	0.0111	483.516	22320.144	347.36	136.15	1117.73
540	0.5235	0.0111	483.516	22803.66	347.36	136.15	1253.89
545	0.5356	0.0121	527.076	23330.736	347.36	179.71	1433.60

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
550	0.5481	0.0125	544.5	23875.236	347.36	197.14	1630.74
555	0.5605	0.0124	540.144	24415.38	347.36	192.78	1823.52
560	0.5734	0.0129	561.924	24977.304	347.36	214.56	2038.09
565	0.5865	0.0131	570.636	25547.94	347.36	223.27	2261.36
570	0.5996	0.0131	570.636	26118.576	347.36	223.27	2484.64
575	0.6132	0.0136	592.416	26710.992	347.36	245.05	2729.69
580	0.627	0.0138	601.128	27312.12	347.36	253.77	2983.46
585	0.6407	0.0137	596.772	27908.892	347.36	249.41	3232.87
590	0.6549	0.0142	618.552	28527.444	347.36	271.19	3504.06
595	0.6694	0.0145	631.62	29159.064	347.36	284.26	3788.32
600	0.6838	0.0144	627.264	29786.328	347.36	279.90	4068.22
605	0.6949	0.0111	483.516	30269.844	347.36	136.15	4204.38
610	0.7047	0.0098	426.888	30696.732	347.36	79.53	4283.90
615	0.7146	0.0099	431.244	31127.976	347.36	83.88	4367.79
620	0.7244	0.0098	426.888	31554.864	347.36	79.53	4447.31
625	0.7342	0.0098	426.888	31981.752	347.36	79.53	4526.84
630	0.744	0.0098	426.888	32408.64	347.36	79.53	4606.37
635	0.7562	0.0122	531.432	32940.072	347.36	184.07	4790.44
640	0.7693	0.0131	570.636	33510.708	347.36	223.27	5013.71
645	0.7824	0.0131	570.636	34081.344	347.36	223.27	5236.99
650	0.7955	0.0131	570.636	34651.98	347.36	223.27	5460.26
655	0.8086	0.0131	570.636	35222.616	347.36	223.27	5683.54
660	0.8217	0.0131	570.636	35793.252	347.36	223.27	5906.81
665	0.8344	0.0127	553.212	36346.464	347.36	205.85	6112.66
670	0.8468	0.0124	540.144	36886.608	347.36	192.78	6305.45
675	0.8593	0.0125	544.5	37431.108	347.36	197.14	6502.59
680	0.8717	0.0124	540.144	37971.252	347.36	192.78	6695.37
685	0.8842	0.0125	544.5	38515.752	347.36	197.14	6892.51
690	0.8966	0.0124	540.144	39055.896	347.36	192.78	7085.29

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
695	0.9081	0.0115	500.94	39556.836	347.36	153.58	7238.87
700	0.9192	0.0111	483.516	40040.352	347.36	136.15	7375.02
705	0.9304	0.0112	487.872	40528.224	347.36	140.51	7515.53
710	0.942	0.0116	505.296	41033.52	347.36	157.93	7673.47
715	0.9538	0.0118	514.008	41547.528	347.36	166.65	7840.12
720	0.9656	0.0118	514.008	42061.536	347.36	166.65	8006.76
725	0.9806	0.015	653.4	42714.936	347.36	306.04	8312.80
730	0.997	0.0164	714.384	43429.32	347.36	367.02	8679.83
735	1.0134	0.0164	714.384	44143.704	347.36	367.02	9046.85
740	1.0302	0.0168	731.808	44875.512	347.36	384.45	9431.29
745	1.0473	0.0171	744.876	45620.388	347.36	397.51	9828.81
750	1.0643	0.017	740.52	46360.908	347.36	393.16	10221.97
755	1.0823	0.018	784.08	47144.988	347.36	436.72	10658.69
760	1.1006	0.0183	797.148	47942.136	347.36	449.79	11108.47
765	1.119	0.0184	801.504	48743.64	347.36	454.14	11562.62
770	1.1378	0.0188	818.928	49562.568	347.36	471.57	12034.18
775	1.1568	0.019	827.64	50390.208	347.36	480.28	12514.46
780	1.1758	0.019	827.64	51217.848	347.36	480.28	12994.74
785	1.1999	0.0241	1049.796	52267.644	347.36	702.43	13697.18
790	1.2261	0.0262	1141.272	53408.916	347.36	793.91	14491.09
795	1.2523	0.0262	1141.272	54550.188	347.36	793.91	15285.00
800	1.2787	0.0264	1149.984	55700.172	347.36	802.62	16087.62
805	1.3052	0.0265	1154.34	56854.512	347.36	806.98	16894.60
810	1.3318	0.0266	1158.696	58013.208	347.36	811.33	17705.94
815	1.3502	0.0184	801.504	58814.712	347.36	454.14	18160.08
820	1.3653	0.0151	657.756	59472.468	347.36	310.39	18470.47
825	1.3803	0.015	653.4	60125.868	347.36	306.04	18776.51
830	1.3954	0.0151	657.756	60783.624	347.36	310.39	19086.91
835	1.4105	0.0151	657.756	61441.38	347.36	310.39	19397.30

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
840	1.4255	0.015	653.4	62094.78	347.36	306.04	19703.34
845	1.4425	0.017	740.52	62835.3	347.36	393.16	20096.50
850	1.4602	0.0177	771.012	63606.312	347.36	423.65	20520.15
855	1.478	0.0178	775.368	64381.68	347.36	428.01	20948.16
860	1.4952	0.0172	749.232	65130.912	347.36	401.87	21350.03
865	1.5123	0.0171	744.876	65875.788	347.36	397.51	21747.54
870	1.5293	0.017	740.52	66616.308	347.36	393.16	22140.70
875	1.5463	0.017	740.52	67356.828	347.36	393.16	22533.86
880	1.5634	0.0171	744.876	68101.704	347.36	397.51	22931.38
885	1.5804	0.017	740.52	68842.224	347.36	393.16	23324.53
890	1.597	0.0166	723.096	69565.32	347.36	375.73	23700.27
895	1.6134	0.0164	714.384	70279.704	347.36	367.02	24067.29
900	1.6297	0.0163	710.028	70989.732	347.36	362.67	24429.96
905	1.6457	0.016	696.96	71686.692	347.36	349.60	24779.56
910	1.6614	0.0157	683.892	72370.584	347.36	336.53	25116.09
915	1.6771	0.0157	683.892	73054.476	347.36	336.53	25452.62
920	1.6924	0.0153	666.468	73720.944	347.36	319.11	25771.73
925	1.7074	0.015	653.4	74374.344	347.36	306.04	26077.77
930	1.7225	0.0151	657.756	75032.1	347.36	310.39	26388.16
935	1.7357	0.0132	574.992	75607.092	347.36	227.63	26615.79
940	1.7481	0.0124	540.144	76147.236	347.36	192.78	26808.57
945	1.7606	0.0125	544.5	76691.736	347.36	197.14	27005.71
950	1.773	0.0124	540.144	77231.88	347.36	192.78	27198.50
955	1.7855	0.0125	544.5	77776.38	347.36	197.14	27395.64
960	1.7979	0.0124	540.144	78316.524	347.36	192.78	27588.42
965	1.8034	0.0055	239.58	78556.104	347.36	(107.78)	27480.64
970	1.806	0.0026	113.256	78669.36	347.36	(234.11)	27246.53
975	1.8086	0.0026	113.256	78782.616	347.36	(234.11)	27012.43
980	1.8112	0.0026	113.256	78895.872	347.36	(234.11)	26778.32

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
985	1.8138	0.0026	113.256	79009.128	347.36	(234.11)	26544.22
990	1.8165	0.0027	117.612	79126.74	347.36	(229.75)	26314.47
995	1.8186	0.0021	91.476	79218.216	347.36	(255.89)	26058.58
1000	1.8206	0.002	87.12	79305.336	347.36	(260.24)	25798.34
1005	1.8225	0.0019	82.764	79388.1	347.36	(264.60)	25533.74
1010	1.8245	0.002	87.12	79475.22	347.36	(260.24)	25273.50
1015	1.8265	0.002	87.12	79562.34	347.36	(260.24)	25013.26
1020	1.8284	0.0019	82.764	79645.104	347.36	(264.60)	24748.66
1025	1.8313	0.0029	126.324	79771.428	347.36	(221.04)	24527.63
1030	1.8346	0.0033	143.748	79915.176	347.36	(203.61)	24324.01
1035	1.8379	0.0033	143.748	80058.924	347.36	(203.61)	24120.40
1040	1.8412	0.0033	143.748	80202.672	347.36	(203.61)	23916.79
1045	1.8444	0.0032	139.392	80342.064	347.36	(207.97)	23708.82
1050	1.8477	0.0033	143.748	80485.812	347.36	(203.61)	23505.21
1055	1.851	0.0033	143.748	80629.56	347.36	(203.61)	23301.59
1060	1.8543	0.0033	143.748	80773.308	347.36	(203.61)	23097.98
1065	1.8575	0.0032	139.392	80912.7	347.36	(207.97)	22890.01
1070	1.8604	0.0029	126.324	81039.024	347.36	(221.04)	22668.97
1075	1.863	0.0026	113.256	81152.28	347.36	(234.11)	22434.87
1080	1.8656	0.0026	113.256	81265.536	347.36	(234.11)	22200.76
1085	1.8682	0.0026	113.256	81378.792	347.36	(234.11)	21966.66
1090	1.8708	0.0026	113.256	81492.048	347.36	(234.11)	21732.55
1095	1.8735	0.0027	117.612	81609.66	347.36	(229.75)	21502.80
1100	1.8761	0.0026	113.256	81722.916	347.36	(234.11)	21268.70
1105	1.8787	0.0026	113.256	81836.172	347.36	(234.11)	21034.59
1110	1.8813	0.0026	113.256	81949.428	347.36	(234.11)	20800.49
1115	1.8835	0.0022	95.832	82045.26	347.36	(251.53)	20548.96
1120	1.8854	0.0019	82.764	82128.024	347.36	(264.60)	20284.36
1125	1.8874	0.002	87.12	82215.144	347.36	(260.24)	20024.12

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
1130	1.8889	0.0015	65.34	82280.484	347.36	(282.02)	19742.10
1135	1.8902	0.0013	56.628	82337.112	347.36	(290.73)	19451.37
1140	1.8915	0.0013	56.628	82393.74	347.36	(290.73)	19160.63
1145	1.8933	0.0018	78.408	82472.148	347.36	(268.95)	18891.68
1150	1.8953	0.002	87.12	82559.268	347.36	(260.24)	18631.44
1155	1.8972	0.0019	82.764	82642.032	347.36	(264.60)	18366.84
1160	1.8997	0.0025	108.9	82750.932	347.36	(238.46)	18128.38
1165	1.9023	0.0026	113.256	82864.188	347.36	(234.11)	17894.28
1170	1.9049	0.0026	113.256	82977.444	347.36	(234.11)	17660.17
1175	1.9071	0.0022	95.832	83073.276	347.36	(251.53)	17408.64
1180	1.909	0.0019	82.764	83156.04	347.36	(264.60)	17144.05
1185	1.911	0.002	87.12	83243.16	347.36	(260.24)	16883.80
1190	1.9125	0.0015	65.34	83308.5	347.36	(282.02)	16601.78
1195	1.9138	0.0013	56.628	83365.128	347.36	(290.73)	16311.05
1200	1.9151	0.0013	56.628	83421.756	347.36	(290.73)	16020.32
1205	1.9169	0.0018	78.408	83500.164	347.36	(268.95)	15751.36
1210	1.9188	0.0019	82.764	83582.928	347.36	(264.60)	15486.77
1215	1.9208	0.002	87.12	83670.048	347.36	(260.24)	15226.53
1220	1.9228	0.002	87.12	83757.168	347.36	(260.24)	14966.28
1225	1.9247	0.0019	82.764	83839.932	347.36	(264.60)	14701.69
1230	1.9267	0.002	87.12	83927.052	347.36	(260.24)	14441.45
1235	1.9287	0.002	87.12	84014.172	347.36	(260.24)	14181.20
1240	1.9306	0.0019	82.764	84096.936	347.36	(264.60)	13916.61
1245	1.9326	0.002	87.12	84184.056	347.36	(260.24)	13656.37
1250	1.9341	0.0015	65.34	84249.396	347.36	(282.02)	13374.35
1255	1.9354	0.0013	56.628	84306.024	347.36	(290.73)	13083.61
1260	1.9367	0.0013	56.628	84362.652	347.36	(290.73)	12792.88
1265	1.9385	0.0018	78.408	84441.06	347.36	(268.95)	12523.93
1270	1.9405	0.002	87.12	84528.18	347.36	(260.24)	12263.69

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
1275	1.9424	0.0019	82.764	84610.944	347.36	(264.60)	11999.09
1280	1.9439	0.0015	65.34	84676.284	347.36	(282.02)	11717.07
1285	1.9452	0.0013	56.628	84732.912	347.36	(290.73)	11426.33
1290	1.9465	0.0013	56.628	84789.54	347.36	(290.73)	11135.60
1295	1.9483	0.0018	78.408	84867.948	347.36	(268.95)	10866.65
1300	1.9503	0.002	87.12	84955.068	347.36	(260.24)	10606.41
1305	1.9523	0.002	87.12	85042.188	347.36	(260.24)	10346.17
1310	1.9538	0.0015	65.34	85107.528	347.36	(282.02)	10064.14
1315	1.9551	0.0013	56.628	85164.156	347.36	(290.73)	9773.41
1320	1.9564	0.0013	56.628	85220.784	347.36	(290.73)	9482.68
1325	1.9582	0.0018	78.408	85299.192	347.36	(268.95)	9213.72
1330	1.9601	0.0019	82.764	85381.956	347.36	(264.60)	8949.13
1335	1.9621	0.002	87.12	85469.076	347.36	(260.24)	8688.89
1340	1.9636	0.0015	65.34	85534.416	347.36	(282.02)	8406.87
1345	1.9649	0.0013	56.628	85591.044	347.36	(290.73)	8116.13
1350	1.9662	0.0013	56.628	85647.672	347.36	(290.73)	7825.40
1355	1.9675	0.0013	56.628	85704.3	347.36	(290.73)	7534.67
1360	1.9688	0.0013	56.628	85760.928	347.36	(290.73)	7243.93
1365	1.9701	0.0013	56.628	85817.556	347.36	(290.73)	6953.20
1370	1.9714	0.0013	56.628	85874.184	347.36	(290.73)	6662.47
1375	1.9728	0.0014	60.984	85935.168	347.36	(286.38)	6376.09
1380	1.9741	0.0013	56.628	85991.796	347.36	(290.73)	6085.36
1385	1.9754	0.0013	56.628	86048.424	347.36	(290.73)	5794.62
1390	1.9767	0.0013	56.628	86105.052	347.36	(290.73)	5503.89
1395	1.978	0.0013	56.628	86161.68	347.36	(290.73)	5213.16
1400	1.9793	0.0013	56.628	86218.308	347.36	(290.73)	4922.42
1405	1.9806	0.0013	56.628	86274.936	347.36	(290.73)	4631.69
1410	1.9819	0.0013	56.628	86331.564	347.36	(290.73)	4340.96
1415	1.9832	0.0013	56.628	86388.192	347.36	(290.73)	4050.22

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
1420	1.9845	0.0013	56.628	86444.82	347.36	(290.73)	3759.49
1425	1.9859	0.0014	60.984	86505.804	347.36	(286.38)	3473.11
1430	1.9872	0.0013	56.628	86562.432	347.36	(290.73)	3182.38
1435	1.9885	0.0013	56.628	86619.06	347.36	(290.73)	2891.65
1440	1.9898	0.0013	56.628	86675.688	347.36	(290.73)	2600.92
1445	1.9902	0.0004	17.424	86693.112	347.36	(329.94)	2270.98
1450				86693.112	347.36	(347.36)	1923.62
1455				86693.112	347.36	(347.36)	1576.26
1460				86693.112	347.36	(347.36)	1228.89
1465				86693.112	347.36	(347.36)	881.53
1470				86693.112	347.36	(347.36)	534.17
1475				86693.112	347.36	(347.36)	186.81
1480				86693.112	347.36	(347.36)	0.00
1485				86693.112	347.36	(347.36)	0.00
1490				86693.112	347.36	(347.36)	0.00
1495				86693.112	347.36	(347.36)	0.00
1500				86693.112	347.36	(347.36)	0.00
1505				86693.112	347.36	(347.36)	0.00
1510				86693.112	347.36	(347.36)	0.00
1515				86693.112	347.36	(347.36)	0.00
1520				86693.112	347.36	(347.36)	0.00
1525				86693.112	347.36	(347.36)	0.00
1530				86693.112	347.36	(347.36)	0.00
1535				86693.112	347.36	(347.36)	0.00
1540				86693.112	347.36	(347.36)	0.00
1545				86693.112	347.36	(347.36)	0.00
1550				86693.112	347.36	(347.36)	0.00
1555				86693.112	347.36	(347.36)	0.00
1560				86693.112	347.36	(347.36)	0.00

BASIN ROUTING **PROJECT: TTM 38041** **PROJECT NO. 20073** **DATE: 7-Jun-23**

100-YEAR-1-HOUR PROPOSED HYDROGRAPH **ONSITE**

BASIN EMPTY IN 8.1

AVERAGE BASIN AREA FOR INFILTRATION= 1-hour=60min

INFILTRATION RATE (IN/HR)= 5 Area for Inf(sf): 10004

INFILTRATION RATE (CU-FT/SEC) 1.15787 PEAK VOL 29281

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
5	0.0158	0.0158	688.248	688.248	347.36	340.89	340.89
10	0.0387	0.0229	997.524	1685.772	347.36	650.16	991.05
15	0.0632	0.0245	1067.22	2752.992	347.36	719.86	1710.91
20	0.0895	0.0263	1145.628	3898.62	347.36	798.27	2509.18
25	0.1193	0.0298	1298.088	5196.708	347.36	950.73	3459.90
30	0.1547	0.0354	1542.024	6738.732	347.36	1194.66	4654.57
35	0.1975	0.0428	1864.368	8603.1	347.36	1517.01	6171.57
40	0.2553	0.0578	2517.768	11120.868	347.36	2170.41	8341.98
45	0.3556	0.1003	4369.068	15489.936	347.36	4021.71	12363.69
50	0.6328	0.2772	12074.832	27564.768	347.36	11727.47	24091.16
55	0.7408	0.108	4704.48	32269.248	347.36	4357.12	28448.28
60	0.7679	0.0271	1180.476	33449.724	347.36	833.11	29281.39
65	0.7726	0.0047	204.732	33654.456	347.36	(142.63)	29138.76
70				33654.456	347.36	(347.36)	28791.40
75				33654.456	347.36	(347.36)	28444.04
80				33654.456	347.36	(347.36)	28096.68
85				33654.456	347.36	(347.36)	27749.32
90				33654.456	347.36	(347.36)	27401.96
95				33654.456	347.36	(347.36)	27054.59
100				33654.456	347.36	(347.36)	26707.23
105				33654.456	347.36	(347.36)	26359.87
110				33654.456	347.36	(347.36)	26012.51
115				33654.456	347.36	(347.36)	25665.15
120				33654.456	347.36	(347.36)	25317.79
125				33654.456	347.36	(347.36)	24970.43
130				33654.456	347.36	(347.36)	24623.07
135				33654.456	347.36	(347.36)	24275.71
140				33654.456	347.36	(347.36)	23928.34
145				33654.456	347.36	(347.36)	23580.98
150				33654.456	347.36	(347.36)	23233.62
155				33654.456	347.36	(347.36)	22886.26
160				33654.456	347.36	(347.36)	22538.90
165				33654.456	347.36	(347.36)	22191.54
170				33654.456	347.36	(347.36)	21844.18
175				33654.456	347.36	(347.36)	21496.82
180				33654.456	347.36	(347.36)	21149.46
185				33654.456	347.36	(347.36)	20802.09
190				33654.456	347.36	(347.36)	20454.73
195				33654.456	347.36	(347.36)	20107.37
200				33654.456	347.36	(347.36)	19760.01
205				33654.456	347.36	(347.36)	19412.65
210				33654.456	347.36	(347.36)	19065.29
215				33654.456	347.36	(347.36)	18717.93
220				33654.456	347.36	(347.36)	18370.57
225				33654.456	347.36	(347.36)	18023.21
230				33654.456	347.36	(347.36)	17675.84

235	33654.456	347.36	(347.36)	17328.48
240	33654.456	347.36	(347.36)	16981.12
245	33654.456	347.36	(347.36)	16633.76
250	33654.456	347.36	(347.36)	16286.40
255	33654.456	347.36	(347.36)	15939.04
260	33654.456	347.36	(347.36)	15591.68
265	33654.456	347.36	(347.36)	15244.32
270	33654.456	347.36	(347.36)	14896.96
275	33654.456	347.36	(347.36)	14549.59
280	33654.456	347.36	(347.36)	14202.23
285	33654.456	347.36	(347.36)	13854.87
290	33654.456	347.36	(347.36)	13507.51
295	33654.456	347.36	(347.36)	13160.15
300	33654.456	347.36	(347.36)	12812.79
305	33654.456	347.36	(347.36)	12465.43
310	33654.456	347.36	(347.36)	12118.07
315	33654.456	347.36	(347.36)	11770.71
320	33654.456	347.36	(347.36)	11423.34
325	33654.456	347.36	(347.36)	11075.98
330	33654.456	347.36	(347.36)	10728.62
335	33654.456	347.36	(347.36)	10381.26
340	33654.456	347.36	(347.36)	10033.90
345	33654.456	347.36	(347.36)	9686.54
350	33654.456	347.36	(347.36)	9339.18
355	33654.456	347.36	(347.36)	8991.82
360	33654.456	347.36	(347.36)	8644.46
365	33654.456	347.36	(347.36)	8297.09
370	33654.456	347.36	(347.36)	7949.73
375	33654.456	347.36	(347.36)	7602.37
380	33654.456	347.36	(347.36)	7255.01
385	33654.456	347.36	(347.36)	6907.65
390	33654.456	347.36	(347.36)	6560.29
395	33654.456	347.36	(347.36)	6212.93
400	33654.456	347.36	(347.36)	5865.57
405	33654.456	347.36	(347.36)	5518.21
410	33654.456	347.36	(347.36)	5170.84
415	33654.456	347.36	(347.36)	4823.48
420	33654.456	347.36	(347.36)	4476.12
425	33654.456	347.36	(347.36)	4128.76
430	33654.456	347.36	(347.36)	3781.40
435	33654.456	347.36	(347.36)	3434.04
440	33654.456	347.36	(347.36)	3086.68
445	33654.456	347.36	(347.36)	2739.32
450	33654.456	347.36	(347.36)	2391.96
455	33654.456	347.36	(347.36)	2044.59
460	33654.456	347.36	(347.36)	1697.23
465	33654.456	347.36	(347.36)	1349.87
470	33654.456	347.36	(347.36)	1002.51
475	33654.456	347.36	(347.36)	655.15
480	33654.456	347.36	(347.36)	307.79
485	33654.456	347.36	(347.36)	0.00
490	33654.456	347.36	(347.36)	0.00
495	33654.456	347.36	(347.36)	0.00
500	33654.456	347.36	(347.36)	0.00
505	33654.456	347.36	(347.36)	0.00
510	33654.456	347.36	(347.36)	0.00
515	33654.456	347.36	(347.36)	0.00
520	33654.456	347.36	(347.36)	0.00

BASIN ROUTING **PROJECT: TTM 38041** **PROJECT NO. 20073** **DATE: 7-Jun-23**

100-YEAR-3-HOUR PROPOSED HYDROGRAPH **ONSITE**

BASIN EMPTY IN 10.2 HOURS

AVERAGE BASIN AREA FOR INFILTRATION= 3-hours=180min

INFILTRATION RATE (IN/HR)= 5 Area for Inf(sf): 10004

INFILTRATION RATE (CU-FT/SEC) 1.15787 PEAK VOL 29725

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
5	0.0085	0.0085	370.26	370.26	347.36	22.90	22.90
10	0.0194	0.0109	474.804	845.064	347.36	127.44	150.34
15	0.0289	0.0095	413.82	1258.884	347.36	66.46	216.80
20	0.0407	0.0118	514.008	1772.892	347.36	166.65	383.45
25	0.0533	0.0126	548.856	2321.748	347.36	201.49	584.94
30	0.0678	0.0145	631.62	2953.368	347.36	284.26	869.20
35	0.0809	0.0131	570.636	3524.004	347.36	223.27	1092.48
40	0.0954	0.0145	631.62	4155.624	347.36	284.26	1376.74
45	0.1104	0.015	653.4	4809.024	347.36	306.04	1682.77
50	0.1235	0.0131	570.636	5379.66	347.36	223.27	1906.05
55	0.1367	0.0132	574.992	5954.652	347.36	227.63	2133.68
60	0.1514	0.0147	640.332	6594.984	347.36	292.97	2426.65
65	0.169	0.0176	766.656	7361.64	347.36	419.29	2845.95
70	0.1874	0.0184	801.504	8163.144	347.36	454.14	3300.09
75	0.2058	0.0184	801.504	8964.648	347.36	454.14	3754.23
80	0.2229	0.0171	744.876	9709.524	347.36	397.51	4151.75
85	0.2435	0.0206	897.336	10606.86	347.36	549.97	4701.72
90	0.2659	0.0224	975.744	11582.604	347.36	628.38	5330.10
95	0.2865	0.0206	897.336	12479.94	347.36	549.97	5880.08
100	0.3086	0.0221	962.676	13442.616	347.36	615.31	6495.39
105	0.3368	0.0282	1228.392	14671.008	347.36	881.03	7376.42
110	0.3642	0.0274	1193.544	15864.552	347.36	846.18	8222.61
115	0.389	0.0248	1080.288	16944.84	347.36	732.93	8955.53
120	0.4142	0.0252	1097.712	18042.552	347.36	750.35	9705.89
125	0.4407	0.0265	1154.34	19196.892	347.36	806.98	10512.86
130	0.4802	0.0395	1720.62	20917.512	347.36	1373.26	11886.12
135	0.5325	0.0523	2278.188	23195.7	347.36	1930.83	13816.95
140	0.5701	0.0376	1637.856	24833.556	347.36	1290.49	15107.44
145	0.6409	0.0708	3084.048	27917.604	347.36	2736.69	17844.13
150	0.7281	0.0872	3798.432	31716.036	347.36	3451.07	21295.20
155	0.8274	0.0993	4325.508	36041.544	347.36	3978.15	25273.35
160	0.903	0.0756	3293.136	39334.68	347.36	2945.77	28219.12
165	0.931	0.028	1219.68	40554.36	347.36	872.32	29091.44
170	0.9464	0.0154	670.824	41225.184	347.36	323.46	29414.91
175	0.9615	0.0151	657.756	41882.94	347.36	310.39	29725.30
180	0.9687	0.0072	313.632	42196.572	347.36	(33.73)	29691.57
185	0.9698	0.0011	47.916	42244.488	347.36	(299.45)	29392.13
190				42244.488	347.36	(347.36)	29044.77
195				42244.488	347.36	(347.36)	28697.40
200				42244.488	347.36	(347.36)	28350.04
205				42244.488	347.36	(347.36)	28002.68
210				42244.488	347.36	(347.36)	27655.32
215				42244.488	347.36	(347.36)	27307.96
220				42244.488	347.36	(347.36)	26960.60
225				42244.488	347.36	(347.36)	26613.24
230				42244.488	347.36	(347.36)	26265.88
235				42244.488	347.36	(347.36)	25918.52
240				42244.488	347.36	(347.36)	25571.15
245				42244.488	347.36	(347.36)	25223.79
250				42244.488	347.36	(347.36)	24876.43

255	42244.488	347.36	(347.36)	24529.07
260	42244.488	347.36	(347.36)	24181.71
265	42244.488	347.36	(347.36)	23834.35
270	42244.488	347.36	(347.36)	23486.99
275	42244.488	347.36	(347.36)	23139.63
280	42244.488	347.36	(347.36)	22792.27
285	42244.488	347.36	(347.36)	22444.90
290	42244.488	347.36	(347.36)	22097.54
295	42244.488	347.36	(347.36)	21750.18
300	42244.488	347.36	(347.36)	21402.82
305	42244.488	347.36	(347.36)	21055.46
310	42244.488	347.36	(347.36)	20708.10
315	42244.488	347.36	(347.36)	20360.74
320	42244.488	347.36	(347.36)	20013.38
325	42244.488	347.36	(347.36)	19666.02
330	42244.488	347.36	(347.36)	19318.65
335	42244.488	347.36	(347.36)	18971.29
340	42244.488	347.36	(347.36)	18623.93
345	42244.488	347.36	(347.36)	18276.57
350	42244.488	347.36	(347.36)	17929.21
355	42244.488	347.36	(347.36)	17581.85
360	42244.488	347.36	(347.36)	17234.49
365	42244.488	347.36	(347.36)	16887.13
370	42244.488	347.36	(347.36)	16539.77
375	42244.488	347.36	(347.36)	16192.40
380	42244.488	347.36	(347.36)	15845.04
385	42244.488	347.36	(347.36)	15497.68
390	42244.488	347.36	(347.36)	15150.32
395	42244.488	347.36	(347.36)	14802.96
400	42244.488	347.36	(347.36)	14455.60
405	42244.488	347.36	(347.36)	14108.24
410	42244.488	347.36	(347.36)	13760.88
415	42244.488	347.36	(347.36)	13413.52
420	42244.488	347.36	(347.36)	13066.15
425	42244.488	347.36	(347.36)	12718.79
430	42244.488	347.36	(347.36)	12371.43
435	42244.488	347.36	(347.36)	12024.07
440	42244.488	347.36	(347.36)	11676.71
445	42244.488	347.36	(347.36)	11329.35
450	42244.488	347.36	(347.36)	10981.99
455	42244.488	347.36	(347.36)	10634.63
460	42244.488	347.36	(347.36)	10287.27
465	42244.488	347.36	(347.36)	9939.90
470	42244.488	347.36	(347.36)	9592.54
475	42244.488	347.36	(347.36)	9245.18
480	42244.488	347.36	(347.36)	8897.82
485	42244.488	347.36	(347.36)	8550.46
490	42244.488	347.36	(347.36)	8203.10
495	42244.488	347.36	(347.36)	7855.74
500	42244.488	347.36	(347.36)	7508.38
505	42244.488	347.36	(347.36)	7161.02
510	42244.488	347.36	(347.36)	6813.65
515	42244.488	347.36	(347.36)	6466.29
520	42244.488	347.36	(347.36)	6118.93
525	42244.488	347.36	(347.36)	5771.57
530	42244.488	347.36	(347.36)	5424.21
535	42244.488	347.36	(347.36)	5076.85
540	42244.488	347.36	(347.36)	4729.49
545	42244.488	347.36	(347.36)	4382.13
550	42244.488	347.36	(347.36)	4034.77
555	42244.488	347.36	(347.36)	3687.40
560	42244.488	347.36	(347.36)	3340.04

565	42244.488	347.36	(347.36)	2992.68
570	42244.488	347.36	(347.36)	2645.32
575	42244.488	347.36	(347.36)	2297.96
580	42244.488	347.36	(347.36)	1950.60
585	42244.488	347.36	(347.36)	1603.24
590	42244.488	347.36	(347.36)	1255.88
595	42244.488	347.36	(347.36)	908.52
600	42244.488	347.36	(347.36)	561.15
605	42244.488	347.36	(347.36)	213.79
610	42244.488	347.36	(347.36)	0.00
615	42244.488	347.36	(347.36)	0.00
620	42244.488	347.36	(347.36)	0.00
625	42244.488	347.36	(347.36)	0.00
630	42244.488	347.36	(347.36)	0.00
635	42244.488	347.36	(347.36)	0.00
640	42244.488	347.36	(347.36)	0.00
645	42244.488	347.36	(347.36)	0.00
650	42244.488	347.36	(347.36)	0.00
655	42244.488	347.36	(347.36)	0.00
660	42244.488	347.36	(347.36)	0.00
665	42244.488	347.36	(347.36)	0.00
670	42244.488	347.36	(347.36)	0.00
675	42244.488	347.36	(347.36)	0.00
680	42244.488	347.36	(347.36)	0.00
685	42244.488	347.36	(347.36)	0.00
690	42244.488	347.36	(347.36)	0.00
695	42244.488	347.36	(347.36)	0.00
700	42244.488	347.36	(347.36)	0.00
705	42244.488	347.36	(347.36)	0.00
710	42244.488	347.36	(347.36)	0.00
715	42244.488	347.36	(347.36)	0.00
720	42244.488	347.36	(347.36)	0.00
725	42244.488	347.36	(347.36)	0.00
730	42244.488	347.36	(347.36)	0.00
735	42244.488	347.36	(347.36)	0.00
740	42244.488	347.36	(347.36)	0.00
745	42244.488	347.36	(347.36)	0.00
750	42244.488	347.36	(347.36)	0.00
755	42244.488	347.36	(347.36)	0.00
760	42244.488	347.36	(347.36)	0.00
765	42244.488	347.36	(347.36)	0.00
770	42244.488	347.36	(347.36)	0.00
775	42244.488	347.36	(347.36)	0.00
780	42244.488	347.36	(347.36)	0.00
785	42244.488	347.36	(347.36)	0.00
790	42244.488	347.36	(347.36)	0.00
795	42244.488	347.36	(347.36)	0.00
800	42244.488	347.36	(347.36)	0.00
805	42244.488	347.36	(347.36)	0.00
810	42244.488	347.36	(347.36)	0.00
815	42244.488	347.36	(347.36)	0.00
820	42244.488	347.36	(347.36)	0.00
825	42244.488	347.36	(347.36)	0.00
830	42244.488	347.36	(347.36)	0.00
835	42244.488	347.36	(347.36)	0.00
840	42244.488	347.36	(347.36)	0.00
845	42244.488	347.36	(347.36)	0.00
850	42244.488	347.36	(347.36)	0.00
855	42244.488	347.36	(347.36)	0.00
860	42244.488	347.36	(347.36)	0.00
865	42244.488	347.36	(347.36)	0.00
870	42244.488	347.36	(347.36)	0.00

BASIN ROUTING **PROJECT: KEY LARGO** **PROJECT NO. TTM 38041** **DATE: 7-Jun-23**

100-YEAR-6-HOUR PROPOSED HYDROGRAPH **ONSITE**

BASIN EMPTY IN 13.0 HOURS

AVERAGE BASIN AREA FOR INFILTRATION= 6-hours=360min

INFILTRATION RATE (IN/HR)= 5 Area for Inf(sf): 10004

INFILTRATION RATE (CU-FT/SEC) 1.15787 PEAK VOL 29628

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
5	0.0044	0.0044	191.664	191.664	347.36	(155.70)	0.00
10	0.0109	0.0065	283.14	474.804	347.36	(64.22)	0.00
15	0.0176	0.0067	291.852	766.656	347.36	(55.51)	0.00
20	0.0243	0.0067	291.852	1058.508	347.36	(55.51)	0.00
25	0.031	0.0067	291.852	1350.36	347.36	(55.51)	0.00
30	0.0386	0.0076	331.056	1681.416	347.36	(16.31)	0.00
35	0.0465	0.0079	344.124	2025.54	347.36	(3.24)	0.00
40	0.0543	0.0078	339.768	2365.308	347.36	(7.59)	0.00
45	0.0622	0.0079	344.124	2709.432	347.36	(3.24)	0.00
50	0.07	0.0078	339.768	3049.2	347.36	(7.59)	0.00
55	0.0779	0.0079	344.124	3393.324	347.36	(3.24)	0.00
60	0.0866	0.0087	378.972	3772.296	347.36	31.61	31.61
65	0.0955	0.0089	387.684	4159.98	347.36	40.32	71.93
70	0.1045	0.009	392.04	4552.02	347.36	44.68	116.61
75	0.1135	0.009	392.04	4944.06	347.36	44.68	161.29
80	0.1224	0.0089	387.684	5331.744	347.36	40.32	201.61
85	0.1314	0.009	392.04	5723.784	347.36	44.68	246.29
90	0.1404	0.009	392.04	6115.824	347.36	44.68	290.97
95	0.1493	0.0089	387.684	6503.508	347.36	40.32	331.30
100	0.1583	0.009	392.04	6895.548	347.36	44.68	375.97
105	0.1673	0.009	392.04	7287.588	347.36	44.68	420.65
110	0.1762	0.0089	387.684	7675.272	347.36	40.32	460.98
115	0.1852	0.009	392.04	8067.312	347.36	44.68	505.65
120	0.195	0.0098	426.888	8494.2	347.36	79.53	585.18
125	0.2043	0.0093	405.108	8899.308	347.36	57.75	642.93
130	0.2141	0.0098	426.888	9326.196	347.36	79.53	722.46
135	0.2242	0.0101	439.956	9766.152	347.36	92.59	815.05
140	0.2343	0.0101	439.956	10206.108	347.36	92.59	907.65
145	0.2444	0.0101	439.956	10646.064	347.36	92.59	1000.24
150	0.2544	0.01	435.6	11081.664	347.36	88.24	1088.48
155	0.2645	0.0101	439.956	11521.62	347.36	92.59	1181.07
160	0.2746	0.0101	439.956	11961.576	347.36	92.59	1273.67
165	0.2856	0.011	479.16	12440.736	347.36	131.80	1405.47
170	0.2968	0.0112	487.872	12928.608	347.36	140.51	1545.98
175	0.308	0.0112	487.872	13416.48	347.36	140.51	1686.49
180	0.3192	0.0112	487.872	13904.352	347.36	140.51	1827.00
185	0.3304	0.0112	487.872	14392.224	347.36	140.51	1967.51
190	0.3425	0.0121	527.076	14919.3	347.36	179.71	2147.23
195	0.3548	0.0123	535.788	15455.088	347.36	188.43	2335.65
200	0.3671	0.0123	535.788	15990.876	347.36	188.43	2524.08
205	0.3803	0.0132	574.992	16565.868	347.36	227.63	2751.71
210	0.3947	0.0144	627.264	17193.132	347.36	279.90	3031.61
215	0.4101	0.0154	670.824	17863.956	347.36	323.46	3355.08
220	0.4258	0.0157	683.892	18547.848	347.36	336.53	3691.61
225	0.4424	0.0166	723.096	19270.944	347.36	375.73	4067.34
230	0.4592	0.0168	731.808	20002.752	347.36	384.45	4451.79
235	0.4769	0.0177	771.012	20773.764	347.36	423.65	4875.44
240	0.4948	0.0179	779.724	21553.488	347.36	432.36	5307.80
245	0.5136	0.0188	818.928	22372.416	347.36	471.57	5779.37
250	0.5335	0.0199	866.844	23239.26	347.36	519.48	6298.85
255	0.5546	0.0211	919.116	24158.376	347.36	571.75	6870.61

260	0.5768	0.0222	967.032	25125.408	347.36	619.67	7490.28
265	0.6	0.0232	1010.592	26136	347.36	663.23	8153.51
270	0.6236	0.0236	1028.016	27164.016	347.36	680.65	8834.16
275	0.648	0.0244	1062.864	28226.88	347.36	715.50	9549.67
280	0.6742	0.0262	1141.272	29368.152	347.36	793.91	10343.58
285	0.7023	0.0281	1224.036	30592.188	347.36	876.67	11220.25
290	0.7309	0.0286	1245.816	31838.004	347.36	898.45	12118.71
295	0.761	0.0301	1311.156	33149.16	347.36	963.79	13082.50
300	0.7931	0.0321	1398.276	34547.436	347.36	1050.91	14133.42
305	0.8333	0.0402	1751.112	36298.548	347.36	1403.75	15537.17
310	0.8835	0.0502	2186.712	38485.26	347.36	1839.35	17376.52
315	0.9404	0.0569	2478.564	40963.824	347.36	2131.20	19507.72
320	1.0034	0.063	2744.28	43708.104	347.36	2396.92	21904.64
325	1.0753	0.0719	3131.964	46840.068	347.36	2784.60	24689.24
330	1.1633	0.088	3833.28	50673.348	347.36	3485.92	28175.16
335	1.2001	0.0368	1603.008	52276.356	347.36	1255.65	29430.81
340	1.2126	0.0125	544.5	52820.856	347.36	197.14	29627.95
345	1.2201	0.0075	326.7	53147.556	347.36	(20.66)	29607.29
350	1.2259	0.0058	252.648	53400.204	347.36	(94.71)	29512.57
355	1.2298	0.0039	169.884	53570.088	347.36	(177.48)	29335.10
360	1.2323	0.0025	108.9	53678.988	347.36	(238.46)	29096.64
365	1.2328	0.0005	21.78	53700.768	347.36	(325.58)	28771.06
370				53700.768	347.36	(347.36)	28423.69
375				53700.768	347.36	(347.36)	28076.33
380				53700.768	347.36	(347.36)	27728.97
385				53700.768	347.36	(347.36)	27381.61
390				53700.768	347.36	(347.36)	27034.25
395				53700.768	347.36	(347.36)	26686.89
400				53700.768	347.36	(347.36)	26339.53
405				53700.768	347.36	(347.36)	25992.17
410				53700.768	347.36	(347.36)	25644.81
415				53700.768	347.36	(347.36)	25297.44
420				53700.768	347.36	(347.36)	24950.08
425				53700.768	347.36	(347.36)	24602.72
430				53700.768	347.36	(347.36)	24255.36
435				53700.768	347.36	(347.36)	23908.00
440				53700.768	347.36	(347.36)	23560.64
445				53700.768	347.36	(347.36)	23213.28
450				53700.768	347.36	(347.36)	22865.92
455				53700.768	347.36	(347.36)	22518.56
460				53700.768	347.36	(347.36)	22171.19
465				53700.768	347.36	(347.36)	21823.83
470				53700.768	347.36	(347.36)	21476.47
475				53700.768	347.36	(347.36)	21129.11
480				53700.768	347.36	(347.36)	20781.75
485				53700.768	347.36	(347.36)	20434.39
490				53700.768	347.36	(347.36)	20087.03
495				53700.768	347.36	(347.36)	19739.67
500				53700.768	347.36	(347.36)	19392.31
505				53700.768	347.36	(347.36)	19044.94
510				53700.768	347.36	(347.36)	18697.58
515				53700.768	347.36	(347.36)	18350.22
520				53700.768	347.36	(347.36)	18002.86
525				53700.768	347.36	(347.36)	17655.50
530				53700.768	347.36	(347.36)	17308.14
535				53700.768	347.36	(347.36)	16960.78
540				53700.768	347.36	(347.36)	16613.42
545				53700.768	347.36	(347.36)	16266.06
550				53700.768	347.36	(347.36)	15918.69
555				53700.768	347.36	(347.36)	15571.33
560				53700.768	347.36	(347.36)	15223.97
565				53700.768	347.36	(347.36)	14876.61
570				53700.768	347.36	(347.36)	14529.25

575	53700.768	347.36	(347.36)	14181.89
580	53700.768	347.36	(347.36)	13834.53
585	53700.768	347.36	(347.36)	13487.17
590	53700.768	347.36	(347.36)	13139.81
595	53700.768	347.36	(347.36)	12792.44
600	53700.768	347.36	(347.36)	12445.08
605	53700.768	347.36	(347.36)	12097.72
610	53700.768	347.36	(347.36)	11750.36
615	53700.768	347.36	(347.36)	11403.00
620	53700.768	347.36	(347.36)	11055.64
625	53700.768	347.36	(347.36)	10708.28
630	53700.768	347.36	(347.36)	10360.92
635	53700.768	347.36	(347.36)	10013.56
640	53700.768	347.36	(347.36)	9666.19
645	53700.768	347.36	(347.36)	9318.83
650	53700.768	347.36	(347.36)	8971.47
655	53700.768	347.36	(347.36)	8624.11
660	53700.768	347.36	(347.36)	8276.75
665	53700.768	347.36	(347.36)	7929.39
670	53700.768	347.36	(347.36)	7582.03
675	53700.768	347.36	(347.36)	7234.67
680	53700.768	347.36	(347.36)	6887.31
685	53700.768	347.36	(347.36)	6539.94
690	53700.768	347.36	(347.36)	6192.58
695	53700.768	347.36	(347.36)	5845.22
700	53700.768	347.36	(347.36)	5497.86
705	53700.768	347.36	(347.36)	5150.50
710	53700.768	347.36	(347.36)	4803.14
715	53700.768	347.36	(347.36)	4455.78
720	53700.768	347.36	(347.36)	4108.42
725	53700.768	347.36	(347.36)	3761.06
730	53700.768	347.36	(347.36)	3413.69
735	53700.768	347.36	(347.36)	3066.33
740	53700.768	347.36	(347.36)	2718.97
745	53700.768	347.36	(347.36)	2371.61
750	53700.768	347.36	(347.36)	2024.25
755	53700.768	347.36	(347.36)	1676.89
760	53700.768	347.36	(347.36)	1329.53
765	53700.768	347.36	(347.36)	982.17
770	53700.768	347.36	(347.36)	634.81
775	53700.768	347.36	(347.36)	287.44
780	53700.768	347.36	(347.36)	0.00
785	53700.768	347.36	(347.36)	0.00
790	53700.768	347.36	(347.36)	0.00
795	53700.768	347.36	(347.36)	0.00
800	53700.768	347.36	(347.36)	0.00
805	53700.768	347.36	(347.36)	0.00
810	53700.768	347.36	(347.36)	0.00
815	53700.768	347.36	(347.36)	0.00
820	53700.768	347.36	(347.36)	0.00
825	53700.768	347.36	(347.36)	0.00
830	53700.768	347.36	(347.36)	0.00
835	53700.768	347.36	(347.36)	0.00
840	53700.768	347.36	(347.36)	0.00
845	53700.768	347.36	(347.36)	0.00
850	53700.768	347.36	(347.36)	0.00
855	53700.768	347.36	(347.36)	0.00
860	53700.768	347.36	(347.36)	0.00
865	53700.768	347.36	(347.36)	0.00
870	53700.768	347.36	(347.36)	0.00
875	53700.768	347.36	(347.36)	0.00
880	53700.768	347.36	(347.36)	0.00
885	53700.768	347.36	(347.36)	0.00

BASIN ROUTING **PROJECT: TTM 38041** **PROJECT NO. 20073** **DATE: 7-Jun-23**

100-YEAR-24-HOUR PROPOSED HYDROGRAPH **OFFSITE**

BASIN EMPTY IN 22.3 HOURS

AVERAGE BASIN AREA FOR INFILTRATION= 24-hours=1440min

INFILTRATION RATE (IN/HR)= 5 Area for Inf(sf): 10004

INFILTRATION RATE (CU-FT/SEC) 1.15787 PEAK VOL 19531

Time Interval (min)	Runoff Total (AC-FT)	Runoff per Interval (AC-FT)	Runoff per Interval (CU-FT)	Total Runoff Before Infiltration (CU-FT)	Infiltration per Interval (CU-FT)	Basin Storage Vol Increase or Decrease per Interval (CU-FT)	Total Basin Storage (CU-FT)
5	0.0009	0.0009	39.204	39.204	347.36	(308.16)	0.00
10	0.0021	0.0012	52.272	91.476	347.36	(295.09)	0.00
15	0.0032	0.0011	47.916	139.392	347.36	(299.45)	0.00
20	0.0048	0.0016	69.696	209.088	347.36	(277.67)	0.00
25	0.0066	0.0018	78.408	287.496	347.36	(268.95)	0.00
30	0.0083	0.0017	74.052	361.548	347.36	(273.31)	0.00
35	0.01	0.0017	74.052	435.6	347.36	(273.31)	0.00
40	0.0118	0.0018	78.408	514.008	347.36	(268.95)	0.00
45	0.0135	0.0017	74.052	588.06	347.36	(273.31)	0.00
50	0.0157	0.0022	95.832	683.892	347.36	(251.53)	0.00
55	0.018	0.0023	100.188	784.08	347.36	(247.17)	0.00
60	0.0203	0.0023	100.188	884.268	347.36	(247.17)	0.00
65	0.0222	0.0019	82.764	967.032	347.36	(264.60)	0.00
70	0.0239	0.0017	74.052	1041.084	347.36	(273.31)	0.00
75	0.0257	0.0018	78.408	1119.492	347.36	(268.95)	0.00
80	0.0274	0.0017	74.052	1193.544	347.36	(273.31)	0.00
85	0.0292	0.0018	78.408	1271.952	347.36	(268.95)	0.00
90	0.0309	0.0017	74.052	1346.004	347.36	(273.31)	0.00
95	0.0326	0.0017	74.052	1420.056	347.36	(273.31)	0.00
100	0.0344	0.0018	78.408	1498.464	347.36	(268.95)	0.00
105	0.0361	0.0017	74.052	1572.516	347.36	(273.31)	0.00
110	0.0383	0.0022	95.832	1668.348	347.36	(251.53)	0.00
115	0.0406	0.0023	100.188	1768.536	347.36	(247.17)	0.00
120	0.0429	0.0023	100.188	1868.724	347.36	(247.17)	0.00
125	0.0453	0.0024	104.544	1973.268	347.36	(242.82)	0.00
130	0.0476	0.0023	100.188	2073.456	347.36	(247.17)	0.00
135	0.0499	0.0023	100.188	2173.644	347.36	(247.17)	0.00
140	0.0522	0.0023	100.188	2273.832	347.36	(247.17)	0.00
145	0.0545	0.0023	100.188	2374.02	347.36	(247.17)	0.00
150	0.0568	0.0023	100.188	2474.208	347.36	(247.17)	0.00
155	0.0596	0.0028	121.968	2596.176	347.36	(225.39)	0.00
160	0.0625	0.0029	126.324	2722.5	347.36	(221.04)	0.00
165	0.0654	0.0029	126.324	2848.824	347.36	(221.04)	0.00
170	0.0683	0.0029	126.324	2975.148	347.36	(221.04)	0.00
175	0.0712	0.0029	126.324	3101.472	347.36	(221.04)	0.00
180	0.0741	0.0029	126.324	3227.796	347.36	(221.04)	0.00
185	0.077	0.0029	126.324	3354.12	347.36	(221.04)	0.00
190	0.0799	0.0029	126.324	3480.444	347.36	(221.04)	0.00
195	0.0828	0.0029	126.324	3606.768	347.36	(221.04)	0.00
200	0.0857	0.0029	126.324	3733.092	347.36	(221.04)	0.00
205	0.0886	0.0029	126.324	3859.416	347.36	(221.04)	0.00
210	0.0915	0.0029	126.324	3985.74	347.36	(221.04)	0.00
215	0.0944	0.0029	126.324	4112.064	347.36	(221.04)	0.00
220	0.0973	0.0029	126.324	4238.388	347.36	(221.04)	0.00
225	0.1002	0.0029	126.324	4364.712	347.36	(221.04)	0.00
230	0.1035	0.0033	143.748	4508.46	347.36	(203.61)	0.00
235	0.107	0.0035	152.46	4660.92	347.36	(194.90)	0.00
240	0.1105	0.0035	152.46	4813.38	347.36	(194.90)	0.00
245	0.1139	0.0034	148.104	4961.484	347.36	(199.26)	0.00
250	0.1174	0.0035	152.46	5113.944	347.36	(194.90)	0.00

255	0.1209	0.0035	152.46	5266.404	347.36	(194.90)	0.00
260	0.1248	0.0039	169.884	5436.288	347.36	(177.48)	0.00
265	0.1289	0.0041	178.596	5614.884	347.36	(168.77)	0.00
270	0.1329	0.004	174.24	5789.124	347.36	(173.12)	0.00
275	0.137	0.0041	178.596	5967.72	347.36	(168.77)	0.00
280	0.141	0.004	174.24	6141.96	347.36	(173.12)	0.00
285	0.1451	0.0041	178.596	6320.556	347.36	(168.77)	0.00
290	0.1496	0.0045	196.02	6516.576	347.36	(151.34)	0.00
295	0.1542	0.0046	200.376	6716.952	347.36	(146.99)	0.00
300	0.1589	0.0047	204.732	6921.684	347.36	(142.63)	0.00
305	0.1626	0.0037	161.172	7082.856	347.36	(186.19)	0.00
310	0.1661	0.0035	152.46	7235.316	347.36	(194.90)	0.00
315	0.1695	0.0034	148.104	7383.42	347.36	(199.26)	0.00
320	0.1735	0.004	174.24	7557.66	347.36	(173.12)	0.00
325	0.1775	0.004	174.24	7731.9	347.36	(173.12)	0.00
330	0.1816	0.0041	178.596	7910.496	347.36	(168.77)	0.00
335	0.1861	0.0045	196.02	8106.516	347.36	(151.34)	0.00
340	0.1907	0.0046	200.376	8306.892	347.36	(146.99)	0.00
345	0.1953	0.0046	200.376	8507.268	347.36	(146.99)	0.00
350	0.2	0.0047	204.732	8712	347.36	(142.63)	0.00
355	0.2046	0.0046	200.376	8912.376	347.36	(146.99)	0.00
360	0.2092	0.0046	200.376	9112.752	347.36	(146.99)	0.00
365	0.2143	0.0051	222.156	9334.908	347.36	(125.21)	0.00
370	0.2195	0.0052	226.512	9561.42	347.36	(120.85)	0.00
375	0.2248	0.0053	230.868	9792.288	347.36	(116.49)	0.00
380	0.23	0.0052	226.512	10018.8	347.36	(120.85)	0.00
385	0.2352	0.0052	226.512	10245.312	347.36	(120.85)	0.00
390	0.2404	0.0052	226.512	10471.824	347.36	(120.85)	0.00
395	0.2461	0.0057	248.292	10720.116	347.36	(99.07)	0.00
400	0.2519	0.0058	252.648	10972.764	347.36	(94.71)	0.00
405	0.2577	0.0058	252.648	11225.412	347.36	(94.71)	0.00
410	0.2634	0.0057	248.292	11473.704	347.36	(99.07)	0.00
415	0.2692	0.0058	252.648	11726.352	347.36	(94.71)	0.00
420	0.275	0.0058	252.648	11979	347.36	(94.71)	0.00
425	0.2808	0.0058	252.648	12231.648	347.36	(94.71)	0.00
430	0.2866	0.0058	252.648	12484.296	347.36	(94.71)	0.00
435	0.2924	0.0058	252.648	12736.944	347.36	(94.71)	0.00
440	0.2986	0.0062	270.072	13007.016	347.36	(77.29)	0.00
445	0.305	0.0064	278.784	13285.8	347.36	(68.58)	0.00
450	0.3114	0.0064	278.784	13564.584	347.36	(68.58)	0.00
455	0.3182	0.0068	296.208	13860.792	347.36	(51.15)	0.00
460	0.3252	0.007	304.92	14165.712	347.36	(42.44)	0.00
465	0.3321	0.0069	300.564	14466.276	347.36	(46.80)	0.00
470	0.3395	0.0074	322.344	14788.62	347.36	(25.02)	0.00
475	0.3471	0.0076	331.056	15119.676	347.36	(16.31)	0.00
480	0.3546	0.0075	326.7	15446.376	347.36	(20.66)	0.00
485	0.363	0.0084	365.904	15812.28	347.36	18.54	18.54
490	0.3717	0.0087	378.972	16191.252	347.36	31.61	50.15
495	0.3804	0.0087	378.972	16570.224	347.36	31.61	81.76
500	0.3891	0.0087	378.972	16949.196	347.36	31.61	113.38
505	0.3978	0.0087	378.972	17328.168	347.36	31.61	144.99
510	0.4065	0.0087	378.972	17707.14	347.36	31.61	176.60
515	0.4156	0.0091	396.396	18103.536	347.36	49.03	225.63
520	0.4249	0.0093	405.108	18508.644	347.36	57.75	283.38
525	0.4341	0.0092	400.752	18909.396	347.36	53.39	336.77
530	0.4439	0.0098	426.888	19336.284	347.36	79.53	416.30
535	0.4537	0.0098	426.888	19763.172	347.36	79.53	495.82
540	0.4635	0.0098	426.888	20190.06	347.36	79.53	575.35
545	0.4743	0.0108	470.448	20660.508	347.36	123.09	698.44
550	0.4853	0.011	479.16	21139.668	347.36	131.80	830.24
555	0.4963	0.011	479.16	21618.828	347.36	131.80	962.04
560	0.5078	0.0115	500.94	22119.768	347.36	153.58	1115.61

565	0.5194	0.0116	505.296	22625.064	347.36	157.93	1273.55
570	0.5309	0.0115	500.94	23126.004	347.36	153.58	1427.13
575	0.543	0.0121	527.076	23653.08	347.36	179.71	1606.84
580	0.5551	0.0121	527.076	24180.156	347.36	179.71	1786.56
585	0.5673	0.0122	531.432	24711.588	347.36	184.07	1970.63
590	0.5799	0.0126	548.856	25260.444	347.36	201.49	2172.12
595	0.5927	0.0128	557.568	25818.012	347.36	210.21	2382.33
600	0.6054	0.0127	553.212	26371.224	347.36	205.85	2588.18
605	0.615	0.0096	418.176	26789.4	347.36	70.81	2659.00
610	0.6237	0.0087	378.972	27168.372	347.36	31.61	2690.61
615	0.6324	0.0087	378.972	27547.344	347.36	31.61	2722.22
620	0.641	0.0086	374.616	27921.96	347.36	27.25	2749.47
625	0.6497	0.0087	378.972	28300.932	347.36	31.61	2781.08
630	0.6584	0.0087	378.972	28679.904	347.36	31.61	2812.69
635	0.6694	0.011	479.16	29159.064	347.36	131.80	2944.49
640	0.681	0.0116	505.296	29664.36	347.36	157.93	3102.43
645	0.6925	0.0115	500.94	30165.3	347.36	153.58	3256.01
650	0.7041	0.0116	505.296	30670.596	347.36	157.93	3413.94
655	0.7157	0.0116	505.296	31175.892	347.36	157.93	3571.88
660	0.7273	0.0116	505.296	31681.188	347.36	157.93	3729.81
665	0.7384	0.0111	483.516	32164.704	347.36	136.15	3865.97
670	0.7494	0.011	479.16	32643.864	347.36	131.80	3997.77
675	0.7604	0.011	479.16	33123.024	347.36	131.80	4129.56
680	0.7714	0.011	479.16	33602.184	347.36	131.80	4261.36
685	0.7825	0.0111	483.516	34085.7	347.36	136.15	4397.52
690	0.7935	0.011	479.16	34564.86	347.36	131.80	4529.32
695	0.8036	0.0101	439.956	35004.816	347.36	92.59	4621.91
700	0.8134	0.0098	426.888	35431.704	347.36	79.53	4701.44
705	0.8233	0.0099	431.244	35862.948	347.36	83.88	4785.32
710	0.8336	0.0103	448.668	36311.616	347.36	101.31	4886.63
715	0.844	0.0104	453.024	36764.64	347.36	105.66	4992.29
720	0.8544	0.0104	453.024	37217.664	347.36	105.66	5097.95
725	0.868	0.0136	592.416	37810.08	347.36	245.05	5343.01
730	0.8825	0.0145	631.62	38441.7	347.36	284.26	5627.27
735	0.897	0.0145	631.62	39073.32	347.36	284.26	5911.53
740	0.9119	0.0149	649.044	39722.364	347.36	301.68	6213.21
745	0.927	0.0151	657.756	40380.12	347.36	310.39	6523.61
750	0.942	0.015	653.4	41033.52	347.36	306.04	6829.64
755	0.958	0.016	696.96	41730.48	347.36	349.60	7179.24
760	0.9742	0.0162	705.672	42436.152	347.36	358.31	7537.55
765	0.9904	0.0162	705.672	43141.824	347.36	358.31	7895.86
770	1.0071	0.0167	727.452	43869.276	347.36	380.09	8275.96
775	1.0239	0.0168	731.808	44601.084	347.36	384.45	8660.40
780	1.0407	0.0168	731.808	45332.892	347.36	384.45	9044.85
785	1.0597	0.019	827.64	46160.532	347.36	480.28	9525.13
790	1.0794	0.0197	858.132	47018.664	347.36	510.77	10035.90
795	1.0991	0.0197	858.132	47876.796	347.36	510.77	10546.67
800	1.1188	0.0197	858.132	48734.928	347.36	510.77	11057.44
805	1.1385	0.0197	858.132	49593.06	347.36	510.77	11568.21
810	1.1582	0.0197	858.132	50451.192	347.36	510.77	12078.98
815	1.1729	0.0147	640.332	51091.524	347.36	292.97	12371.95
820	1.1863	0.0134	583.704	51675.228	347.36	236.34	12608.30
825	1.1996	0.0133	579.348	52254.576	347.36	231.99	12840.28
830	1.2129	0.0133	579.348	52833.924	347.36	231.99	13072.27
835	1.2262	0.0133	579.348	53413.272	347.36	231.99	13304.26
840	1.2395	0.0133	579.348	53992.62	347.36	231.99	13536.24
845	1.2547	0.0152	662.112	54654.732	347.36	314.75	13850.99
850	1.2703	0.0156	679.536	55334.268	347.36	332.17	14183.17
855	1.286	0.0157	683.892	56018.16	347.36	336.53	14519.70
860	1.3011	0.0151	657.756	56675.916	347.36	310.39	14830.10
865	1.3162	0.0151	657.756	57333.672	347.36	310.39	15140.49
870	1.3313	0.0151	657.756	57991.428	347.36	310.39	15450.89

875	1.3463	0.015	653.4	58644.828	347.36	306.04	15756.92
880	1.3614	0.0151	657.756	59302.584	347.36	310.39	16067.32
885	1.3764	0.015	653.4	59955.984	347.36	306.04	16373.36
890	1.391	0.0146	635.976	60591.96	347.36	288.61	16661.97
895	1.4055	0.0145	631.62	61223.58	347.36	284.26	16946.23
900	1.42	0.0145	631.62	61855.2	347.36	284.26	17230.49
905	1.434	0.014	609.84	62465.04	347.36	262.48	17492.97
910	1.4479	0.0139	605.484	63070.524	347.36	258.12	17751.09
915	1.4618	0.0139	605.484	63676.008	347.36	258.12	18009.22
920	1.4753	0.0135	588.06	64264.068	347.36	240.70	18249.91
925	1.4886	0.0133	579.348	64843.416	347.36	231.99	18481.90
930	1.5019	0.0133	579.348	65422.764	347.36	231.99	18713.89
935	1.5135	0.0116	505.296	65928.06	347.36	157.93	18871.82
940	1.5245	0.011	479.16	66407.22	347.36	131.80	19003.62
945	1.5355	0.011	479.16	66886.38	347.36	131.80	19135.42
950	1.5465	0.011	479.16	67365.54	347.36	131.80	19267.22
955	1.5575	0.011	479.16	67844.7	347.36	131.80	19399.02
960	1.5685	0.011	479.16	68323.86	347.36	131.80	19530.82
965	1.5727	0.0042	182.952	68506.812	347.36	(164.41)	19366.41
970	1.575	0.0023	100.188	68607	347.36	(247.17)	19119.24
975	1.5773	0.0023	100.188	68707.188	347.36	(247.17)	18872.06
980	1.5796	0.0023	100.188	68807.376	347.36	(247.17)	18624.89
985	1.582	0.0024	104.544	68911.92	347.36	(242.82)	18382.07
990	1.5843	0.0023	100.188	69012.108	347.36	(247.17)	18134.90
995	1.5861	0.0018	78.408	69090.516	347.36	(268.95)	17865.95
1000	1.5879	0.0018	78.408	69168.924	347.36	(268.95)	17596.99
1005	1.5896	0.0017	74.052	69242.976	347.36	(273.31)	17323.68
1010	1.5914	0.0018	78.408	69321.384	347.36	(268.95)	17054.73
1015	1.5931	0.0017	74.052	69395.436	347.36	(273.31)	16781.42
1020	1.5948	0.0017	74.052	69469.488	347.36	(273.31)	16508.11
1025	1.5975	0.0027	117.612	69587.1	347.36	(229.75)	16278.36
1030	1.6004	0.0029	126.324	69713.424	347.36	(221.04)	16057.33
1035	1.6033	0.0029	126.324	69839.748	347.36	(221.04)	15836.29
1040	1.6062	0.0029	126.324	69966.072	347.36	(221.04)	15615.25
1045	1.6091	0.0029	126.324	70092.396	347.36	(221.04)	15394.21
1050	1.612	0.0029	126.324	70218.72	347.36	(221.04)	15173.18
1055	1.6149	0.0029	126.324	70345.044	347.36	(221.04)	14952.14
1060	1.6178	0.0029	126.324	70471.368	347.36	(221.04)	14731.10
1065	1.6206	0.0028	121.968	70593.336	347.36	(225.39)	14505.71
1070	1.6231	0.0025	108.9	70702.236	347.36	(238.46)	14267.25
1075	1.6254	0.0023	100.188	70802.424	347.36	(247.17)	14020.08
1080	1.6277	0.0023	100.188	70902.612	347.36	(247.17)	13772.90
1085	1.63	0.0023	100.188	71002.8	347.36	(247.17)	13525.73
1090	1.6324	0.0024	104.544	71107.344	347.36	(242.82)	13282.91
1095	1.6347	0.0023	100.188	71207.532	347.36	(247.17)	13035.74
1100	1.637	0.0023	100.188	71307.72	347.36	(247.17)	12788.57
1105	1.6393	0.0023	100.188	71407.908	347.36	(247.17)	12541.39
1110	1.6416	0.0023	100.188	71508.096	347.36	(247.17)	12294.22
1115	1.6435	0.0019	82.764	71590.86	347.36	(264.60)	12029.62
1120	1.6452	0.0017	74.052	71664.912	347.36	(273.31)	11756.31
1125	1.647	0.0018	78.408	71743.32	347.36	(268.95)	11487.36
1130	1.6483	0.0013	56.628	71799.948	347.36	(290.73)	11196.63
1135	1.6494	0.0011	47.916	71847.864	347.36	(299.45)	10897.18
1140	1.6506	0.0012	52.272	71900.136	347.36	(295.09)	10602.09
1145	1.6522	0.0016	69.696	71969.832	347.36	(277.67)	10324.43
1150	1.6539	0.0017	74.052	72043.884	347.36	(273.31)	10051.12
1155	1.6557	0.0018	78.408	72122.292	347.36	(268.95)	9782.17
1160	1.6578	0.0021	91.476	72213.768	347.36	(255.89)	9526.28
1165	1.6602	0.0024	104.544	72318.312	347.36	(242.82)	9283.46
1170	1.6625	0.0023	100.188	72418.5	347.36	(247.17)	9036.29
1175	1.6643	0.0018	78.408	72496.908	347.36	(268.95)	8767.34
1180	1.6661	0.0018	78.408	72575.316	347.36	(268.95)	8498.38

1185	1.6678	0.0017	74.052	72649.368	347.36	(273.31)	8225.08
1190	1.6691	0.0013	56.628	72705.996	347.36	(290.73)	7934.34
1195	1.6703	0.0012	52.272	72758.268	347.36	(295.09)	7639.25
1200	1.6714	0.0011	47.916	72806.184	347.36	(299.45)	7339.81
1205	1.673	0.0016	69.696	72875.88	347.36	(277.67)	7062.14
1210	1.6748	0.0018	78.408	72954.288	347.36	(268.95)	6793.19
1215	1.6765	0.0017	74.052	73028.34	347.36	(273.31)	6519.88
1220	1.6782	0.0017	74.052	73102.392	347.36	(273.31)	6246.57
1225	1.68	0.0018	78.408	73180.8	347.36	(268.95)	5977.62
1230	1.6817	0.0017	74.052	73254.852	347.36	(273.31)	5704.31
1235	1.6835	0.0018	78.408	73333.26	347.36	(268.95)	5435.36
1240	1.6852	0.0017	74.052	73407.312	347.36	(273.31)	5162.05
1245	1.6869	0.0017	74.052	73481.364	347.36	(273.31)	4888.74
1250	1.6882	0.0013	56.628	73537.992	347.36	(290.73)	4598.00
1255	1.6894	0.0012	52.272	73590.264	347.36	(295.09)	4302.92
1260	1.6905	0.0011	47.916	73638.18	347.36	(299.45)	4003.47
1265	1.6921	0.0016	69.696	73707.876	347.36	(277.67)	3725.81
1270	1.6939	0.0018	78.408	73786.284	347.36	(268.95)	3456.85
1275	1.6956	0.0017	74.052	73860.336	347.36	(273.31)	3183.54
1280	1.6969	0.0013	56.628	73916.964	347.36	(290.73)	2892.81
1285	1.6981	0.0012	52.272	73969.236	347.36	(295.09)	2597.72
1290	1.6992	0.0011	47.916	74017.152	347.36	(299.45)	2298.28
1295	1.7008	0.0016	69.696	74086.848	347.36	(277.67)	2020.61
1300	1.7026	0.0018	78.408	74165.256	347.36	(268.95)	1751.66
1305	1.7043	0.0017	74.052	74239.308	347.36	(273.31)	1478.35
1310	1.7056	0.0013	56.628	74295.936	347.36	(290.73)	1187.62
1315	1.7068	0.0012	52.272	74348.208	347.36	(295.09)	892.53
1320	1.7079	0.0011	47.916	74396.124	347.36	(299.45)	593.08
1325	1.7095	0.0016	69.696	74465.82	347.36	(277.67)	315.42
1330	1.7113	0.0018	78.408	74544.228	347.36	(268.95)	46.46
1335	1.713	0.0017	74.052	74618.28	347.36	(273.31)	0.00
1340	1.7143	0.0013	56.628	74674.908	347.36	(290.73)	0.00
1345	1.7154	0.0011	47.916	74722.824	347.36	(299.45)	0.00
1350	1.7166	0.0012	52.272	74775.096	347.36	(295.09)	0.00
1355	1.7178	0.0012	52.272	74827.368	347.36	(295.09)	0.00
1360	1.7189	0.0011	47.916	74875.284	347.36	(299.45)	0.00
1365	1.7201	0.0012	52.272	74927.556	347.36	(295.09)	0.00
1370	1.7212	0.0011	47.916	74975.472	347.36	(299.45)	0.00
1375	1.7224	0.0012	52.272	75027.744	347.36	(295.09)	0.00
1380	1.7236	0.0012	52.272	75080.016	347.36	(295.09)	0.00
1385	1.7247	0.0011	47.916	75127.932	347.36	(299.45)	0.00
1390	1.7259	0.0012	52.272	75180.204	347.36	(295.09)	0.00
1395	1.727	0.0011	47.916	75228.12	347.36	(299.45)	0.00
1400	1.7282	0.0012	52.272	75280.392	347.36	(295.09)	0.00
1405	1.7293	0.0011	47.916	75328.308	347.36	(299.45)	0.00
1410	1.7305	0.0012	52.272	75380.58	347.36	(295.09)	0.00
1415	1.7317	0.0012	52.272	75432.852	347.36	(295.09)	0.00
1420	1.7328	0.0011	47.916	75480.768	347.36	(299.45)	0.00
1425	1.734	0.0012	52.272	75533.04	347.36	(295.09)	0.00
1430	1.7351	0.0011	47.916	75580.956	347.36	(299.45)	0.00
1435	1.7363	0.0012	52.272	75633.228	347.36	(295.09)	0.00
1440	1.7375	0.0012	52.272	75685.5	347.36	(295.09)	0.00
1445	1.7377	0.0002	8.712	75694.212	347.36	(338.65)	0.00
1450				75694.212	347.36	(347.36)	0.00
1455				75694.212	347.36	(347.36)	0.00
1460				75694.212	347.36	(347.36)	0.00
1465				75694.212	347.36	(347.36)	0.00
1470				75694.212	347.36	(347.36)	0.00
1475				75694.212	347.36	(347.36)	0.00
1480				75694.212	347.36	(347.36)	0.00
1485				75694.212	347.36	(347.36)	0.00
1490				75694.212	347.36	(347.36)	0.00

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November 9, 2018

Mr. Mark Howard
La Paloma Homes, Inc.
P.O. Box 10179
Palm Desert, CA 92245

Geotechnical Report
APNs 685-030-006 & 685-080-031
Rancho Mirage, California
LCI Report No.: LP18149

Dear Mr. Howard:

As per your request, ***LandMark Consultants, Inc.*** is providing the following geotechnical report for the proposed single-family residential project located at the southeast corner of Victory Lane and Via Josefina in the city of Rancho Mirage, California. The proposed development will consist of fifteen (15) new single-family residential homes, each with a garage and concrete driveway. Each residential home will be a one story, wood or metal frame structure with shallow reinforced concrete foundations and slab-on-grade concrete floors.

Purpose of Work

The purpose of this study was to investigate the upper 12 feet of subsurface soil at selected locations within the site for evaluation of physical/engineering properties. From the analysis of the field and laboratory data, professional opinions were developed and are provided in this report regarding geotechnical conditions at this site and the effect on design and construction.

Field Exploration

Subsurface exploration was performed on August 30, 2018 using a backhoe to excavate five (5) exploratory test pits to an approximate depth of 10 to 12 feet below the existing ground surface. The test pits locations are shown on the Site and Exploration Plan (Plate A-2). Bulk samples were obtained at selected depths in the test pits. The test pits were located by taped or paced measurements and should be considered approximate.

Our senior engineer maintained logs of the test pits during exploration. The logs were edited in final form after a review of retrieved samples and the field and laboratory data. The test pit logs are presented on Plates B-1 thru B-5 in Appendix B. Soils encountered have been classified according to the Unified Soil Classification System. A key to the test pit logs is presented on Plate B-6. The stratification lines shown on the subsurface logs represent the approximate boundaries between the various strata. However, the transition from one stratum to another may be gradual over some range of depth.

After logging and sampling the soil, the exploratory test pits were backfilled with the excavated material. The backfill was loosely placed and was not compacted to the requirements specified for engineered fill.

Laboratory Testing

Laboratory tests were conducted on selected bulk soil samples to aid in classification and evaluation of selected properties of the site soils. The tests were conducted in general conformance to the procedures of the American Society for Testing and Materials (ASTM) or other standardized methods as referenced below. The laboratory testing program consisted of the following tests:

- Grain Size Analysis (ASTM D422) – used for soil classification
- Moisture-Density Relationship (ASTM D1557) – used for soil compaction determinations
- Chemical Analyses (soluble sulfates & chlorides, pH, and resistivity) (Caltrans Methods) – used for concrete mix evaluations and corrosion protection requirements

The laboratory test results are presented on the subsurface logs and on Plates C-1 through C-4 in Appendix C. Engineering parameters of soil strength, compressibility, and relative density utilized for developing design criteria provided within this report were extrapolated from data obtained from the field and laboratory testing program.

Site Conditions

The project site is irregular shape in plain view, elongated in the north-south direction. The site is a vacant desert land and covered in scattered native vegetation. Via Josefina, a paved two-lane residential street, abuts the west margin of the project site and Key Largo Avenue (partially developed) is located to the east. Adjacent properties are flat-lying and are approximately at the same and lower elevation with this site. Single family residential homes are located across Via Josefina to the west, a church complex to the north, and vacant desert land to the east and south.

The project site lies at an elevation of approximately 315 feet above mean sea level (AMSL) in the Coachella Valley region of the California low desert. Annual rainfall in this arid region is less than 4 inches per year with four months of average summertime temperatures above 100 °F. Winter temperatures are mild, seldom reaching freezing.

Subsurface Soils

Subsurface soils encountered during the field exploration conducted on August 30, 2018 consist of dry, medium dense sand (SP-SM) soils to a depth of 12 feet, the maximum depth of exploration. The near surface soils are non-expansive in nature. The subsurface logs (Plates B-1 thru B-5) depict the stratigraphic relationships of the various soil types.

Groundwater

Groundwater was not encountered in the borings during the time of exploration. The well information collected near the subject site (Well 338195N1163903W001), has indicated that the ground water level ranges from 194 feet to 205 feet below the ground surfaces in the last 7 years.

There is uncertainty in the accuracy of short-term water level measurements. Groundwater levels may fluctuate with precipitation, irrigation of adjacent properties, drainage, and site grading. The groundwater level noted should not be interpreted to represent an accurate or permanent condition. Based on the regional topography, groundwater flow is assumed to be generally towards the north-west within the site area. Flow directions may vary locally in the vicinity of the site.

Historic groundwater records in the vicinity of the project site indicate that groundwater has fluctuated between 100 and 215 feet below the ground surface over the last 60 years according to a report "Coachella Valley Investigation" conducted by the Department of Water Resources, published July 1964.

Geologic Setting

The project site is located in the Coachella Valley portion of the Salton Trough physiographic province. The Salton Trough is a geologic structural depression resulting from large scale regional faulting. The trough is bounded on the northeast by the San Andreas Fault and Chocolate Mountains and the southwest by the Peninsular Range and faults of the San Jacinto Fault Zone. The Salton Trough represents the northward extension of the Gulf of California, containing both marine and non-marine sediments since the Miocene Epoch. Tectonic activity that formed the trough continues at a high rate as evidenced by deformed young sedimentary deposits and high levels of seismicity. Figure 1 shows the location of the site in relation to regional faults and physiographic features.

The surrounding regional geology includes the Peninsular Ranges (Santa Rosa and San Jacinto Mountains) to the south and west, the Salton Basin to the southeast, and the Transverse Ranges (Little San Bernardino and Orocopia Mountains) to the north and east. Hundreds of feet to several thousand feet of Quaternary fluvial, lacustrine, and aeolian soil deposits underlie the Coachella Valley.

The southeastern part of the Coachella Valley lies below sea level. In the geologic past, the ancient Lake Cahuilla submerged the area. Calcareous tufa deposits may be observed along the ancient shoreline as high as elevation 45 feet above mean seal level (AMSL) along the Santa Rosa Mountains from La Quinta southward. Lacustrine (lake bed) deposits comprise the subsurface soils over much of the eastern Coachella Valley with alluvial outwash along the flanks of the valley.

Faulting

The project site is located in the seismically active Coachella Valley of southern California with numerous mapped faults of the San Andreas Fault System traversing the region. We have performed a computer-aided search of known faults or seismic zones that lie within a 43-mile (69 kilometer) radius of the project site (Table 1).

A fault map illustrating known active faults relative to the site is presented on Figure 1, *Regional Fault Map*. Figure 2 shows the project site in relation to local faults. The criterion for fault classification adopted by the California Geological Survey defines Earthquake Fault Zones along active or potentially active faults.

An active fault is one that has ruptured during Holocene time (roughly within the last 11,000 years). A fault that has ruptured during the last 1.8 million years (Quaternary time), but has not been proven by direct evidence to have not moved within Holocene time is considered to be potentially active. A fault that has not moved during Quaternary time is considered to be inactive.

Review of the current Alquist-Priolo Earthquake Fault Zone maps (CGS, 2000a) indicates that the nearest mapped Earthquake Fault Zone is the San Andreas-San Bernardino (South) fault located approximately 3.3 miles northeast of the project site.

General Ground Motion Analysis

The project site is considered likely to be subjected to moderate to strong ground motion from earthquakes in the region. Ground motions are dependent primarily on the earthquake magnitude and distance to the seismogenic (rupture) zone. Acceleration magnitudes also are dependent upon attenuation by rock and soil deposits, direction of rupture and type of fault; therefore, ground motions may vary considerably in the same general area.

CBC General Ground Motion Parameters: The 2016 CBC general ground motion parameters are based on the Risk-Targeted Maximum Considered Earthquake (MCE_R). The U.S. Geological Survey "U.S. Seismic Design Maps Web Application" (USGS, 2018) was used to obtain the site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters. ***The site soils have been classified as Site Class D (stiff soil profile).***

Design spectral response acceleration parameters are defined as the earthquake ground motions that are two-thirds (2/3) of the corresponding MCE_R ground motions. Design earthquake ground motion parameters are provided in Table 2. ***A Risk Category II was determined using Table 1604.5 and the Seismic Design Category is E since S_1 is greater than 0.75.***

The Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration (PGA_M) value was determined from the "U.S. Seismic Design Maps Web Application" (USGS, 2018) for liquefaction and seismic settlement analysis in accordance with 2016 CBC Section 1803.5.12 and CGS Note 48 ($PGA_M = F_{PGA}*PGA$). ***A PGA_M value of 0.75g has been determined for the project site.***

Seismic and Other Hazards

► **Groundshaking.** The primary seismic hazard at the project site is the potential for strong groundshaking during earthquakes along the San Andreas fault. A further discussion of groundshaking follows above.

► **Surface Rupture.** The project site does not lie within a State of California, Alquist-Priolo Earthquake Fault Zone. Surface fault rupture is considered to be unlikely at the project site because of the well-delineated fault lines through the Coachella Valley as shown on USGS and CDMG maps. However, because of the high tectonic activity and deep alluvium of the region, we cannot preclude the potential for surface rupture on undiscovered or new faults that may underlie the site.

► **Liquefaction.** Liquefaction is unlikely to be a potential hazard at the site, due to groundwater deeper than 50 feet (the maximum depth that liquefaction is known to occur).

Other Potential Geologic Hazards.

► **Landsliding.** The hazard of landsliding is unlikely due to the regional planar topography. No ancient landslides are shown on geologic maps of the region and no indications of landslides were observed during our site investigation.

► **Volcanic hazards.** The site is not located in proximity to any known volcanically active area and the risk of volcanic hazards is considered very low.

► **Tsunamis, sieches, and flooding.** The site does not lie near any large bodies of water, so the threat of tsunami, sieches, or other seismically-induced flooding is unlikely. The site is located within Other Flood Areas, Zone X (as shown on Plate A-8). The areas of 1% annual chance flood with average depth of less than 1 foot or with drainage area less than 1 square mile.

► **Expansive soil.** The near surface soils at the project site consist of silty sands/sands which are non-expansive.

Site Preparation

Clearing and Grubbing: Any surface improvements, debris or vegetation including grass, brush, and weeds, on the site at the time of construction should be removed from the construction area. Root balls should be completely excavated. Organic stripping should be hauled from the site and not used as fill. *Any trash, construction debris, and buried obstructions such as sprinkler and leach lines exposed during rough grading should be traced to the limits of the foreign material by the grading contractor and removed under our supervision.* Any excavations resulting from site clearing should be dish-shaped to the lowest depth of disturbance and backfilled under the observation of the geotechnical engineer's representative.

Building Pad Preparation: The existing surface soil within the proposed building pad should be removed to 18 inches below the lowest foundation grade or 36 inches below the original grade (whichever is deeper), extending five feet beyond all exterior wall/column lines (including adjacent concrete areas). Exposed sub-grade should be scarified to a depth of 8 inches, uniformly moisture conditioned to at least 2% over optimum moisture content and re-compacted a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods.

The native granular soil is suitable for use as compacted fill and utility trench backfill. The native soil should be placed in maximum 8 inches lifts (loose), uniformly moisture conditioned to at least 2% of optimum moisture content, and re-compacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods.

Imported fill soil (if needed) should similar to onsite soil or non-expansive, granular soil meeting the USCS classifications of SM, SP-SM, or SW-SM with a maximum rock size of 3 inches. The geotechnical engineer should approve imported fill soil sources before hauling material to the site. Imported granular fill should be placed in lifts no greater than 8 inches in loose thickness, uniformly moisture conditioned to at least 2% over optimum moisture content, and re-compacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods.

In areas other than the house pad which are to receive concrete slabs and pavements, the ground surface should be over-excavated to a depth of 18 inches, uniformly moisture conditioned to at least 2% over optimum moisture content, and re-compacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods

Soil Bearing Values and Lateral Loads

The subsurface soils consist of sand with some gravel to maximum penetrated. An allowable soil bearing pressure of 1,800 psf could be used. Passive resistance of lateral earth pressure may be calculated using an equivalent fluid pressure of 300 pcf to resist lateral loadings. The top one foot of embedment should not be considered in computing passive resistance unless the adjacent area is confined by a slab or pavement. An allowable friction coefficient of 0.45 may also be used at the base of the footings to resist lateral loading. Static earth pressure equivalent to that exerted by a fluid weighing 35 pcf for unrestrained (active) conditions and 50 pcf for restrained (at-rest) conditions.

Foundation

All exterior and interior foundations should be embedded a minimum of 18 inches deep. Continuous wall footings should have a minimum width of 12 inches. Spread footings should have a minimum width of 24 inches and should not be structurally isolated. ***Recommended concrete reinforcement and sizing for all footings should be provided by the structural engineer.***

Slabs-on-Grade

Concrete slabs and flatwork should be a minimum of 4 inches thick. The concrete floor slabs may either be monolithically placed with the foundation or dowelled after footing placement. The concrete slabs may be placed on granular subgrade that has been compacted at least 90% relative compaction (ASTM D1557). ***Slab thickness and steel reinforcement should be determined by the design engineer.***

American Concrete Institute (ACI) guidelines (ACI 302.1R-04 Chapter 3, Section 3.2.3) provide recommendations regarding the use of moisture barriers beneath concrete slabs. The concrete floor slabs should be underlain by a 10-mil polyethylene vapor retarder that works as a capillary break to reduce moisture migration into the slab section. All laps and seams should be overlapped 6-inches or as recommended by the manufacturer. The vapor retarder should be protected from puncture. The joints and penetrations should be sealed with the manufacturer's recommended adhesive, pressure-sensitive tape, or both. The vapor retarder should extend a minimum of 12 inches into the footing excavations. The vapor retarder should be covered by 4 inches of clean sand (Sand Equivalent SE>30) unless placed on 2.5 feet of granular fill, in which case, the vapor retarder may lie directly on the granular fill with 2 inches of clean sand cover.

Placing sand over the vapor retarder may increase moisture transmission through the slab, because it provides a reservoir for bleed water from the concrete to collect. The sand placed over the vapor retarder may also move and mound prior to concrete placement, resulting in an irregular slab thickness. For areas with moisture sensitive flooring materials, ACI recommends that concrete slabs be placed without a sand cover directly over the vapor retarder, provided that the concrete mix uses a low-water cement ratio and concrete curing methods are employed to compensate for release of bleed water through the top of the slab. The vapor retarder should have a minimum thickness of 15-mil (Stego-Wrap or equivalent).

Control joints should be provided in all concrete slabs-on-grade at a maximum spacing (in feet) of 2 to 3 times the slab thickness (in inches) as recommended by American Concrete Institute (ACI) guidelines. All joints should form approximately square patterns to reduce randomly oriented contraction cracks. Contraction joints in the slabs should be tooled at the time of the pour or sawcut (¼ of slab depth) within 6 to 8 hours of concrete placement. Construction (cold) joints in foundations and area flatwork should either be thickened butt-joints with dowels or a thickened keyed-joint designed to resist vertical deflection at the joint. All joints in flatwork should be sealed to prevent moisture, vermin, or foreign material intrusion. Precautions should be taken to prevent curling of slabs in this arid desert region (refer to ACI guidelines).

All independent concrete flatworks should be underlain by 12 inches of moisture conditioned and compacted soils. All flatwork should be jointed in square patterns and at irregularities in shape at a maximum spacing of 10 feet or the least width of the sidewalk.

Concrete Mixes and Corrosivity

Selected chemical analyses for corrosivity were conducted on bulk samples of the near surface soil from the project site (Plate C-3). The native soils have low levels of sulfate and chloride ion concentrations. Resistivity determinations on the soil indicate a low potential for metal loss because of electrochemical corrosion processes.

A minimum of 2,500 psi concrete of Type II Portland Cement with a maximum water/cement ratio of 0.60 (by weight) should be used for concrete placed in contact with native soil on this project (sitework including streets, sidewalks, driveways, patios, and other wall foundations). ***Landmark does not practice corrosion engineering. We recommend that a qualified corrosion engineer evaluate the corrosion potential on metal construction materials and concrete at the site.***

Permanent Slopes

Cut and Fill slopes should be constructed generally no steeper than 3(H):1(V) to permit slope maintenance with motor graders and provide erosional stability from wind or rain while unprotected without landscape cover. Slopes with a 2(H):1(V) gradient are permitted, provided it is recognized that such slopes are more prone to erosion and do not permit maintenance by motorized riding equipment and require landscape cover to retard erosion.

Soil Infiltration Rate

Soil infiltration was conducted by Sladden Engineering in November 2016 in the area of the proposed development. Infiltration testing was performed utilizing a double ring infiltrometer (ASTM D3385). The test results indicate that the stabilized soil infiltration rate for the soil is 11.08 inches per hour, and may be used for the on-site storm-water retention basin design. An oil/water separator should be installed at inlets to the stormwater retention basin to prevent sealing of the basin bottom with silt and oil residues. The field and conversion calculation worksheets are included in Appendix D.

We recommend additional testing should be performed after the completion of rough grading operations, to verify the soil infiltration rate.

Observation and Density Testing

Site preparation and fill placement should be continuously observed and tested by a representative of a qualified geotechnical engineering firm. Near full-time observation services during the excavation and scarification process is necessary to detect undesirable materials or conditions and soft areas that may be encountered in the construction area. The geotechnical firm that provides observation and testing during construction shall assume the responsibility of "***geotechnical engineer of record***" and, as such, shall perform additional tests and investigation as necessary to satisfy themselves as to the site conditions and the recommendations for site development.

We did not encounter soil conditions that would preclude implementation of the proposed project provided the recommendations contained in this report are implemented in the design and construction of this project.

We appreciate the opportunity to provide our findings and professional opinions regarding geotechnical conditions at the site. If you have any questions or comments regarding our findings, please call our office at (760) 360-0665.

Respectfully Submitted,
LandMark Consultants, Inc.

Greg M. Chandra, P.E., M.ASCE
Principal Engineer

Attachments:

Appendix A: Vicinity and Site Maps
Appendix B: Subsurface Soil Logs and Soil Key
Appendix C: Laboratory Test Results
Appendix D: Soil Infiltration Report for Tent. Tract Map 36949, prepared by Sladden Engineering, dated December 19, 2016
Appendix E: References

TABLES

Table 1
Summary of Characteristics of Closest Known Active Faults

Fault Name	Approximate Distance (miles)	Approximate Distance (km)	Maximum Moment Magnitude (Mw)	Fault Length (km)	Slip Rate (mm/yr)
San Andreas - San Bernardino (South)	3.3	5.4	7.4	103 ± 10	30 ± 7
Garnet Hill *	4.7	7.5			
San Andreas - San Bernardino (North)	5.6	8.9	7.5	103 ± 10	24 ± 6
San Andreas - Coachella	9.5	15.2	7.2	96 ± 10	25 ± 5
Indio Hills *	9.6	15.4			
Blue Cut *	11.3	18.0			
Eureka Peak	12.0	19.3	6.4	19 ± 2	0.6 ± 0.4
Burnt Mtn.	17.9	28.7	6.5	21 ± 2	0.6 ± 0.4
Morongo *	19.8	31.7			
San Jacinto - Anza	21.3	34.1	7.2	91 ± 9	12 ± 6
Pinto Mtn.	21.5	34.4	7.2	74 ± 7	2.5 ± 2
San Jacinto - Coyote Creek	24.4	39.0	6.8	41 ± 4	4 ± 2
Landers	25.3	40.5	7.3	83 ± 8	0.6 ± 0.4
San Jacinto - San Jacinto Valley	31.0	49.6	6.9	43 ± 4	12 ± 6
Pisgah Mtn. - Mesquite Lake	31.7	50.8	7.3	89 ± 9	0.6 ± 0.4
Johnson Valley (northern)	34.7	55.5	6.7	35 ± 4	0.6 ± 0.4
S. Emerson - Copper Mtn.	34.8	55.8	7	54 ± 5	0.6 ± 0.4
North Frontal Fault Zone - Eastern	35.9	57.4	6.7	27 ± 3	0.5 ± 0.3
Lenwood - Lockhart - Old Woman Springs	40.6	65.0	7.5	145 ± 15	0.6 ± 0.4
Calico-Hidalgo	41.2	65.9	7.3	95 ± 10	0.6 ± 0.4
Hot Springs *	41.5	66.3			
San Jacinto - Borrego	43.0	68.8	6.6	29 ± 3	4 ± 2

* Note: Faults not included in CGS database.

Table 2
2016 California Building Code (CBC) and ASCE 7-10 Seismic Parameters

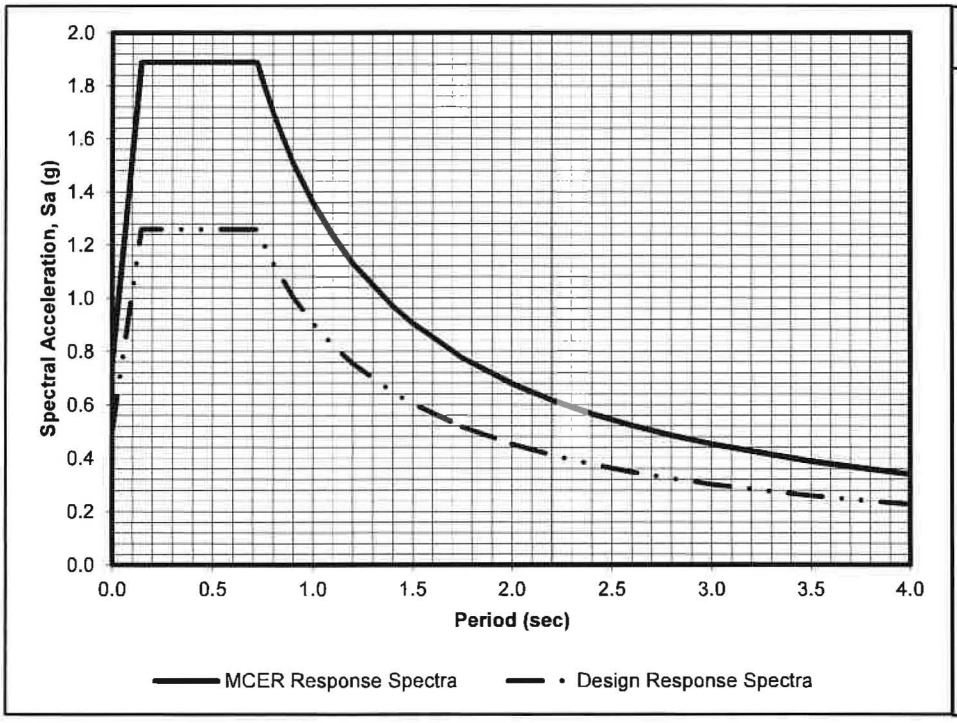
		CBC Reference
Soil Site Class:	**D**	Table 20.3-1
Latitude:	33.7981 N	
Longitude:	-116.3979 W	
Risk Category:	II	
Seismic Design Category:	E	

Maximum Considered Earthquake (MCE) Ground Motion

Mapped MCE_R Short Period Spectral Response	S_s	1.889 g	Figure 1613.3.1(1)	
Mapped MCE_R 1 second Spectral Response	S_1	0.906 g	Figure 1613.3.1(2)	
Short Period (0.2 s) Site Coefficient	F_a	1.00	Table 1613.3.3(1)	
Long Period (1.0 s) Site Coefficient	F_v	1.50	Table 1613.3.3(2)	
MCE_R Spectral Response Acceleration Parameter (0.2 s)	S_{MS}	1.889 g	$= F_a * S_s$	Equation 16-37
MCE_R Spectral Response Acceleration Parameter (1.0 s)	S_{M1}	1.359 g	$= F_v * S_1$	Equation 16-38

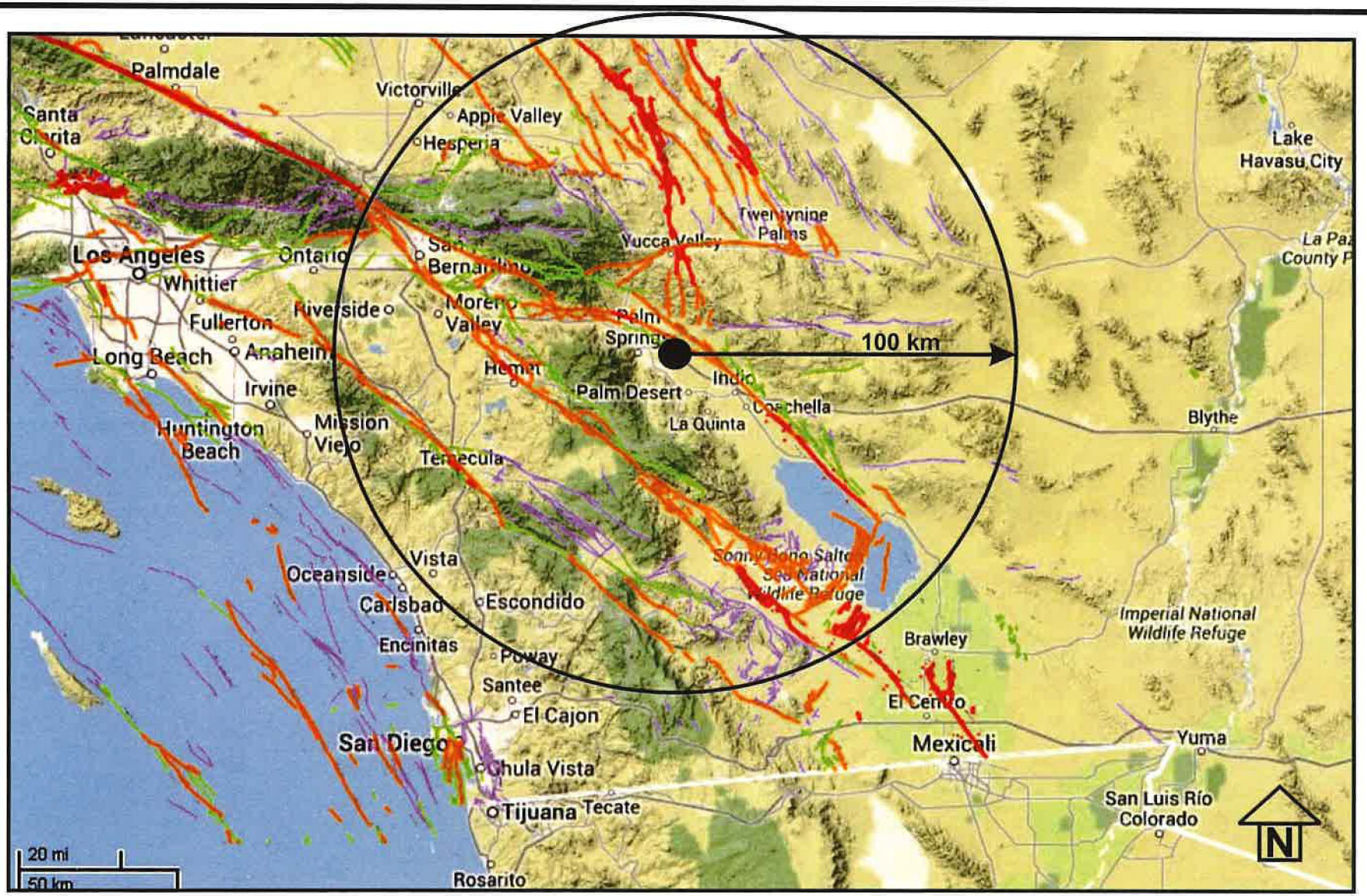
Design Earthquake Ground Motion

Design Spectral Response Acceleration Parameter (0.2 s)	S_{DS}	1.259 g	$= 2/3*S_{MS}$	Equation 16-39
Design Spectral Response Acceleration Parameter (1.0 s)	S_{D1}	0.906 g	$= 2/3*S_{M1}$	Equation 16-40
Risk Coefficient at Short Periods (less than 0.2 s)	C_{RS}	0.999		ASCE Figure 22-17
Risk Coefficient at Long Periods (greater than 1.0 s)	C_{R1}	0.954		ASCE Figure 22-18
	T_L	8.00 sec		ASCE Figure 22-12
	T_O	0.14 sec	$=0.2*S_{D1}/S_{DS}$	
	T_S	0.72 sec	$=S_{D1}/S_{DS}$	
Peak Ground Acceleration	PGA_M	0.75 g		ASCE Equation 11.8-1



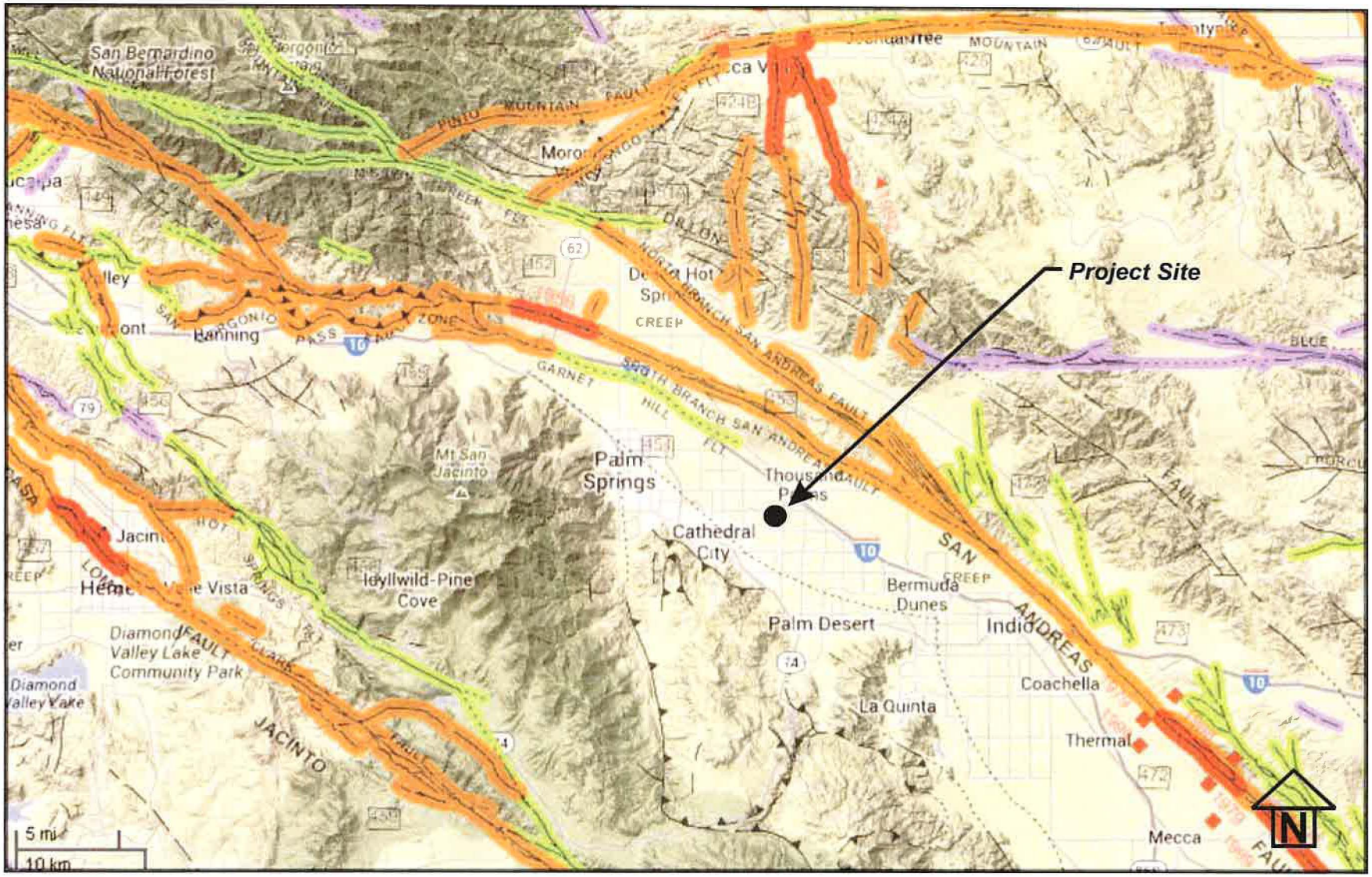
Period T (sec)	Sa (g)	MCE_R Sa (g)
0.00	0.50	0.76
0.14	1.26	1.89
0.72	1.26	1.89
0.75	1.21	1.81
0.80	1.13	1.70
0.90	1.01	1.51
1.00	0.91	1.36
1.10	0.82	1.24
1.20	0.76	1.13
1.20	0.76	1.13
1.40	0.65	0.97
1.50	0.60	0.91
1.75	0.52	0.78
2.00	0.45	0.68
2.20	0.41	0.62
2.40	0.38	0.57
2.60	0.35	0.52
2.80	0.32	0.49
3.00	0.30	0.45
3.50	0.26	0.39
4.00	0.23	0.34

FIGURES



Source: California Geological Survey 2010 Fault Activity Map of California
http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html#

LANDMARK Geo-Engineers and Geologists Project No.: LP18149	Regional Fault Map	Figure 1



Source: California Geological Survey 2010 Fault Activity Map of California
http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html#

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Map of Local Faults

Figure 2

EXPLANATION

Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred, and by dotted lines where concealed by younger rocks or by lakes or bays. Fault traces are queried where continuation or existence is uncertain. Concealed faults in the Great Valley are based on maps of selected subsurface horizons, so locations shown are approximate and may indicate structural trend only. All offshore faults based on seismic reflection profile records are shown as solid lines where well defined, dashed where inferred, queried where uncertain.

FAULT CLASSIFICATION COLOR CODE
(Indicating Recency of Movement)

Fault along which historic (last 200 years) displacement has occurred and is associated with one or more of the following:

(a) a recorded earthquake with surface rupture. (Also included are some well-defined surface breaks caused by ground shaking during earthquakes, e.g. extensive ground breakage, not on the White Wolf fault, caused by the Arvin-Tehachapi earthquake of 1952). The date of the associated earthquake is indicated. Where repeated surface ruptures on the same fault have occurred, only the date of the latest movement may be indicated, especially if earlier reports are not well documented as to location of ground breaks.

(b) fault creep slippage - slow ground displacement usually without accompanying earthquakes.

(c) displaced survey lines.

A triangle to the right or left of the date indicates termination point of observed surface displacement. Solid red triangle indicates known location of rupture termination point. Open black triangle indicates uncertain or estimated location of rupture termination point.

Date bracketed by triangles indicates local fault break.

No triangle by date indicates an intermediate point along fault break.

Fault that exhibits fault creep slippage. Hachures indicate linear extent of fault creep. Annotation (creep with leader) indicates representative locations where fault creep has been observed and recorded.

Square on fault indicates where fault creep slippage has occured that has been triggered by an earthquake on some other fault. Date of causative earthquake indicated. Squares to right and left of date indicate terminal points between which triggered creep slippage has occurred (creep either continuous or intermittent between these end points).

Holocene fault displacement (during past 11,700 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: offset stream courses, linear scarps, shutter ridges, and triangular faceted spurs. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting.

Late Quaternary fault displacement (during past 700,000 years). Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.

Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement sometime during the past 1.6 million years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age. Unnumbered Quaternary faults were based on Fault Map of California, 1975. See Bulletin 201, Appendix D for source data.

Pre-Quaternary fault (older that 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissnce nature, or was not done with the object of dating fault displacements. Faults in this category are not necessarily inactive.

ADDITIONAL FAULT SYMBOLS

Bar and ball on downthrown side (relative or apparent).

Arrows along fault indicate relative or apparent direction of lateral movement.

Arrow on fault indicates direction of dip.

Low angle fault (barbs on upper plate). Fault surface generally dips less than 45° but locally may have been subsequently steepened. On offshore faults, barbs simply indicate a reverse fault regardless of steepness of dip.

OTHER SYMBOLS

Numbers refer to annotations listed in the appendices of the accompanying report. Annotations include fault name, age of fault displacement, and pertinent references including Earthquake Fault Zone maps where a fault has been zoned by the Alquist-Priolo Earthquake Fault Zoning Act. This Act requires the State Geologist to delineate zones to encompass faults with Holocene displacement.

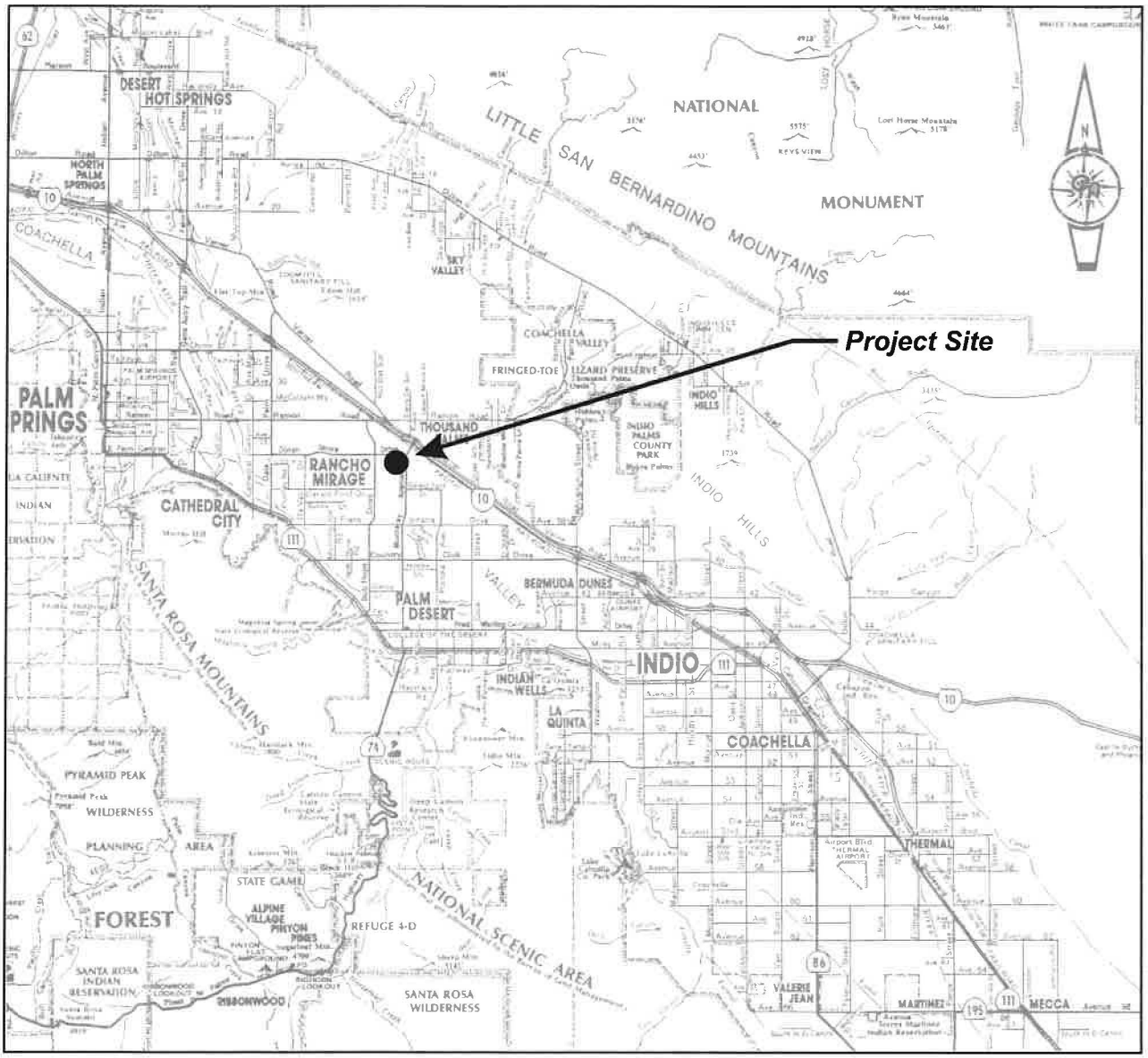
Structural discontinuity (offshore) separating differing Neogene structural domains. May indicate discontinuities between basement rocks.

Brawley Seismic Zone, a linear zone of seismicity locally up to 10 km wide associated with the releasing step between the Imperial and San Andreas faults.

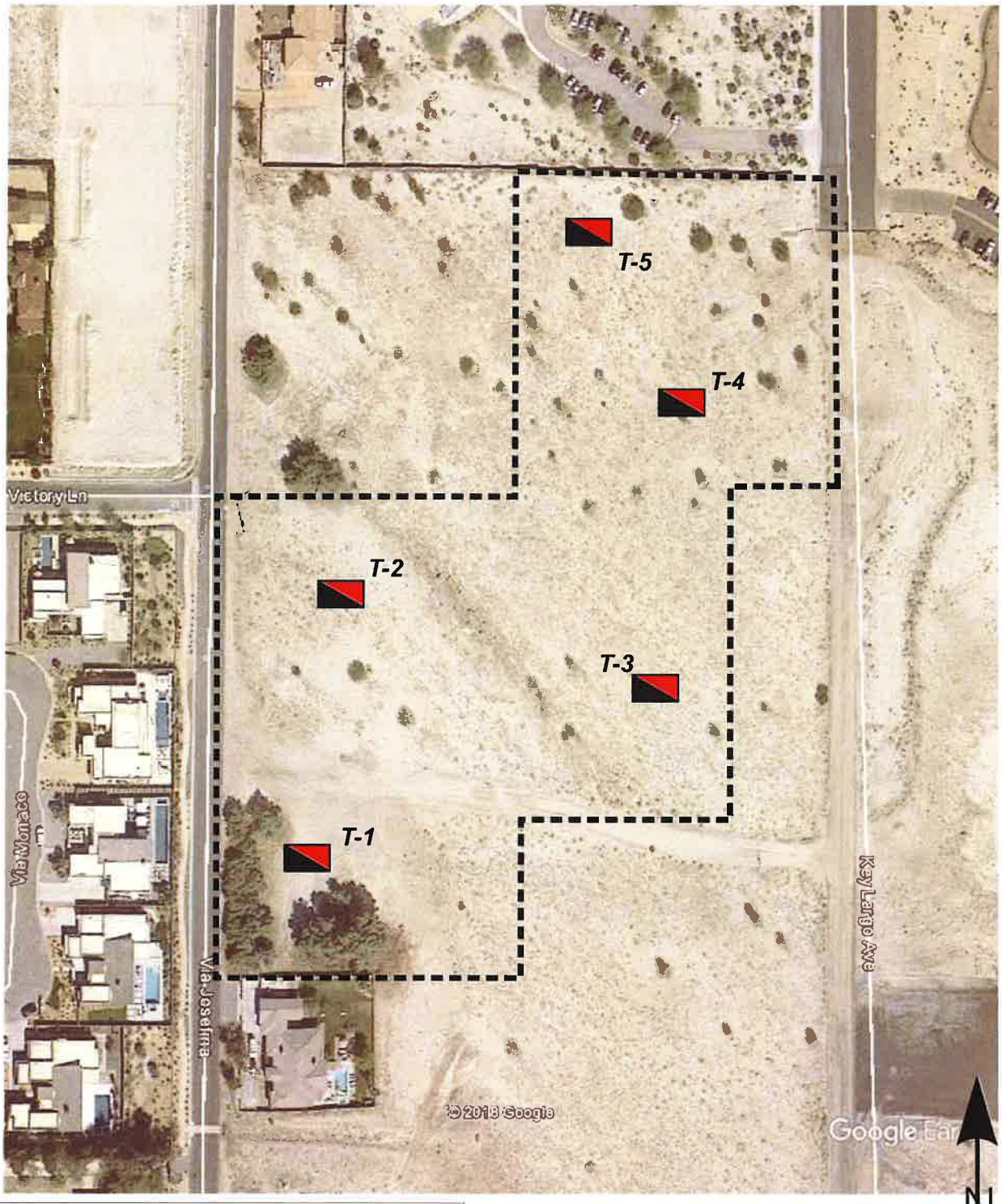
Geologic Time Scale			Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION: ON LAND	DESCRIPTION: OFFSHORE
Quaternary	Late Quaternary	Human				Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
			200				
		Holocene				[illegible]	[illegible]
			11,700				
		Pleistocene				[illegible]	[illegible]
			700,000				
	Early Quaternary					[illegible]	[illegible]
			1,600,000				
Pre-Quaternary						Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age.
			4.5 billion (Age of Earth)				

* Quaternary now recognized as extending to 2.6 Ma (Walker and Geissman, 2009). Quaternary faults in this map were established using the previous 1.6 Ma criterion.

APPENDIX A



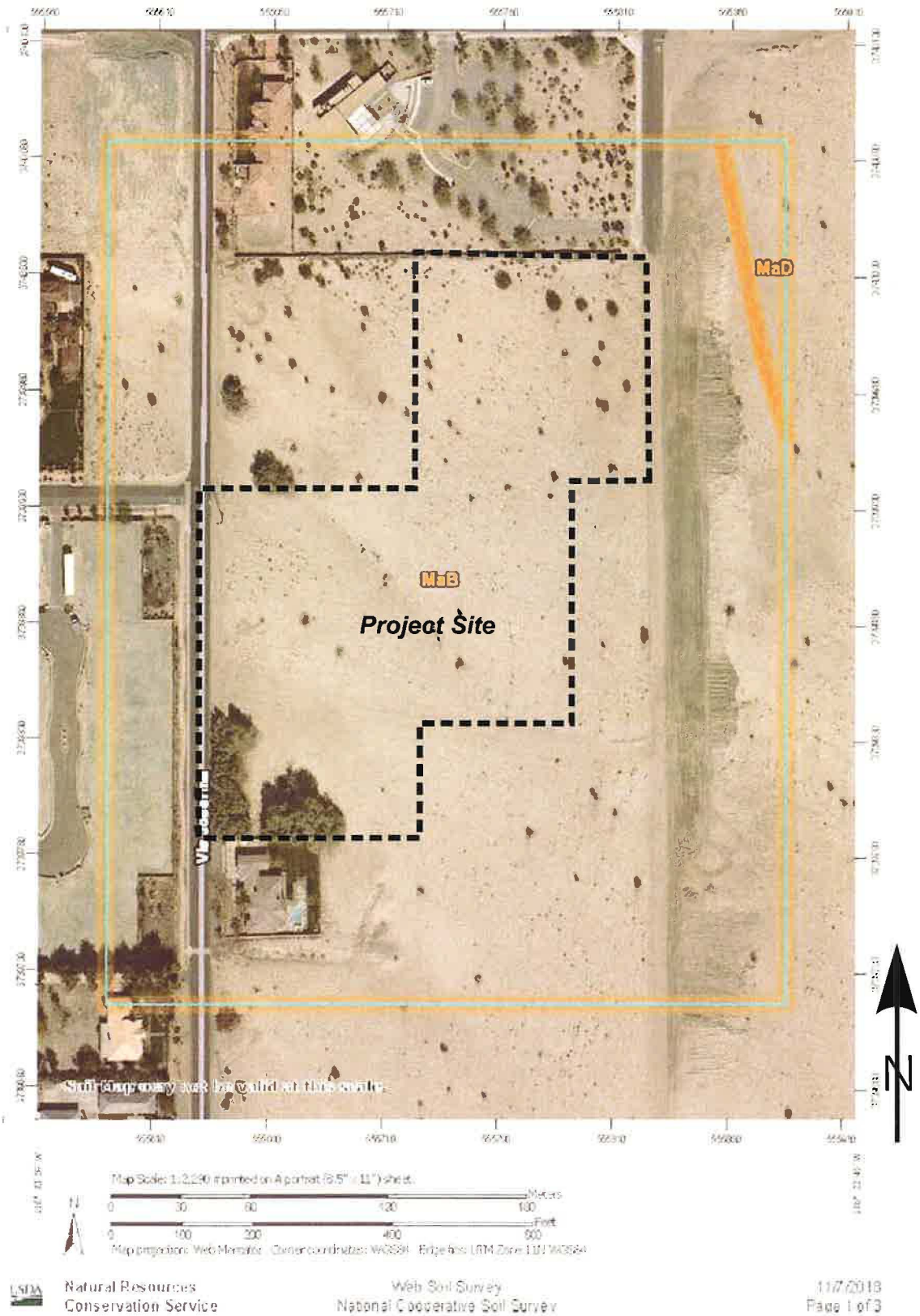
LANDMARK Geo-Engineers and Geologists Project No.: LP18149	Vicinity Map	Plate A-1



Legend

Approximate Test Pit Location

LANDMARK Geo-Engineers and Geologists **Project No.: LP18149**	**Site and Exploration Plan**	**Plate A-2**



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Project No.: LP18149

USDA Soil Conservation Soil Service Map

Plate A-3

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Riverside County, Coachella Valley Area, California
Survey Area Data: Version 10, Sep 13, 2018

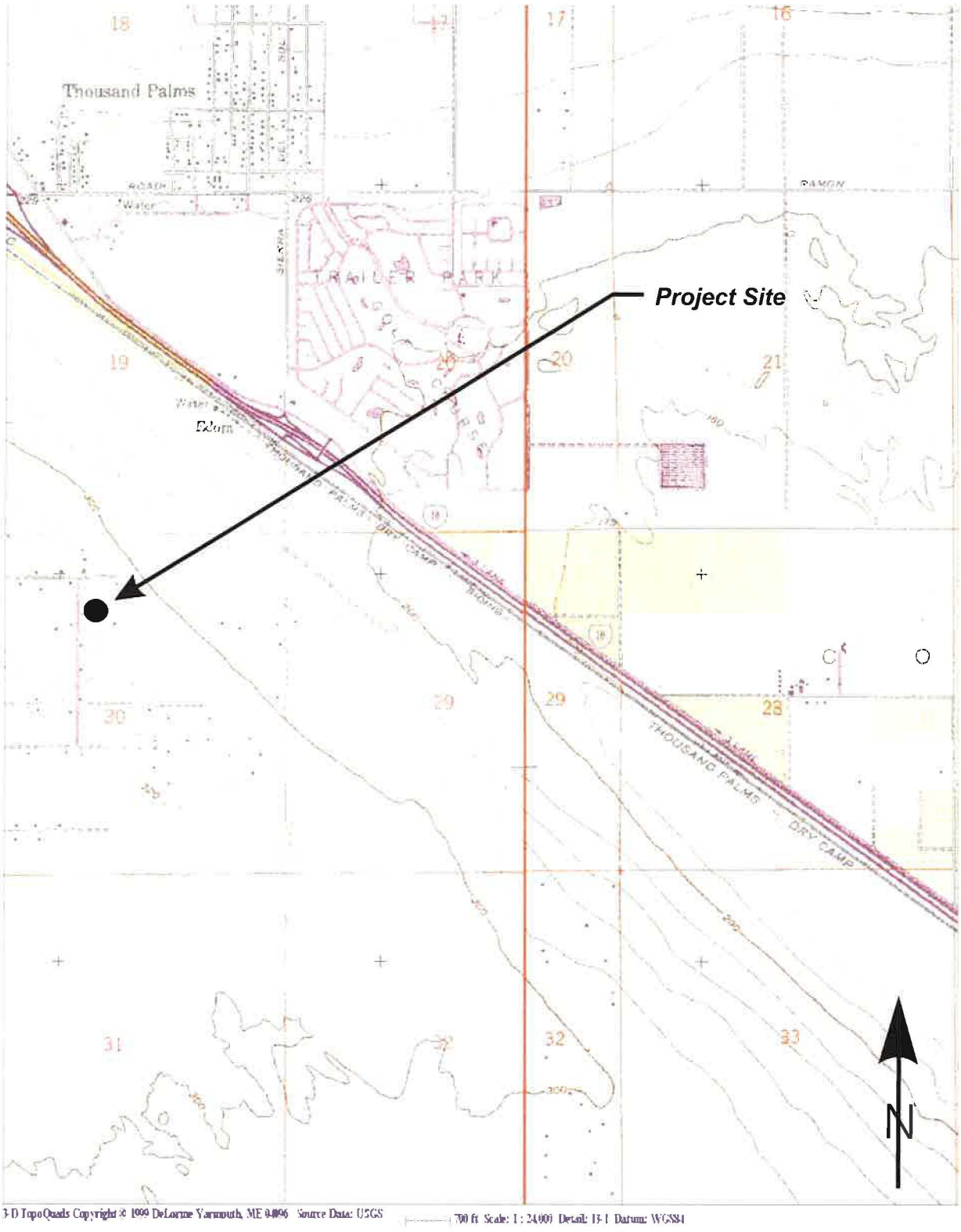
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 22, 2015—Feb 10, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

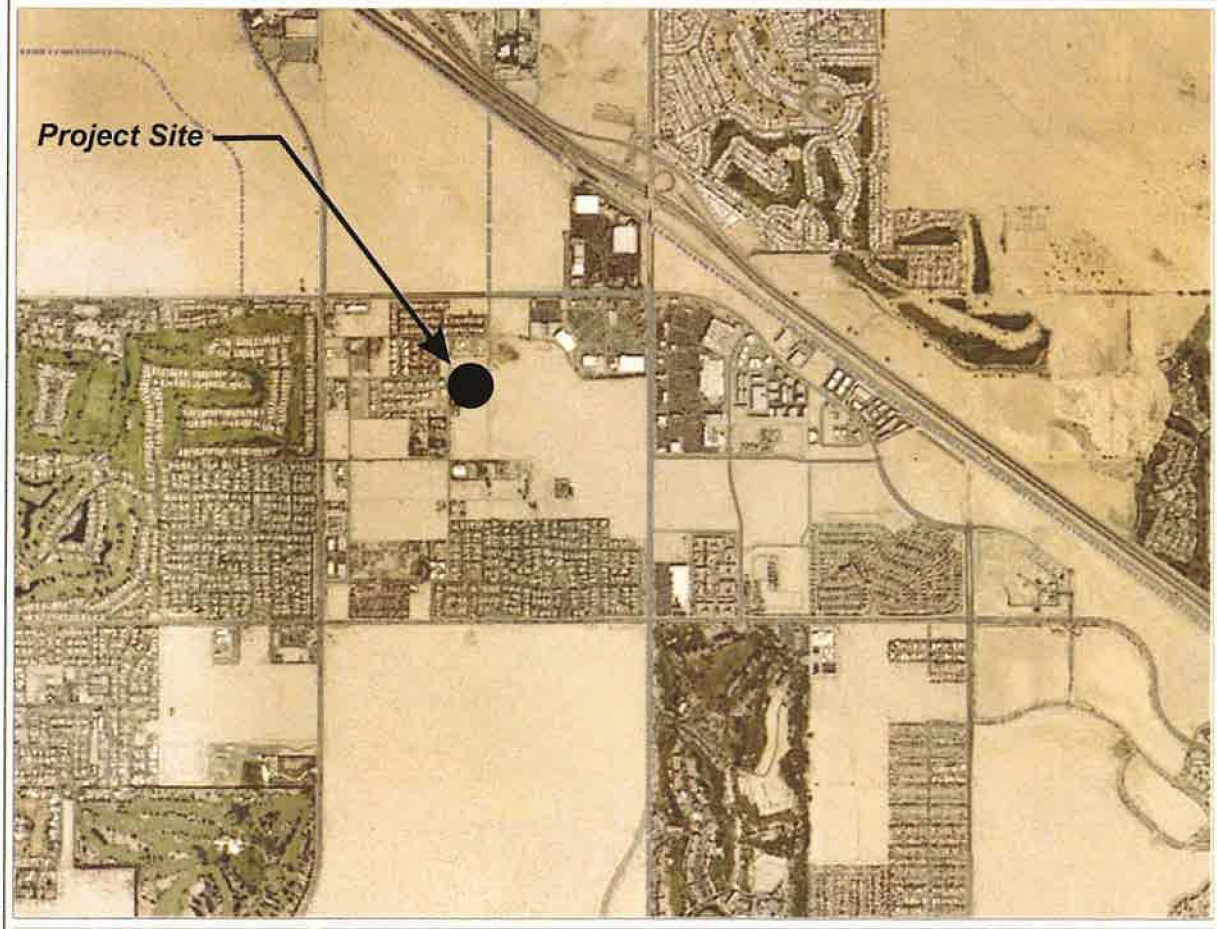
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MaB	Myoma fine sand, 0 to 5 percent slopes	26.7	98.2%
MaD	Myoma fine sand, 5 to 15 percent slopes	0.5	1.8%
Totals for Area of Interest		**27.2**	**100.0%**



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 700 ft Scale: 1 : 24,000 Detail: 13-1 Datum: WGS84

LANDMARK Geo-Engineers and Geologists Project No.: LP18149	Topographic Map	Plate A-4

Fault Map



Legend

Faults

Fault Zones

Notes

0 3,009 6,019 Feet

"IMPORTANT" Maps and data are to be used for reference purposes only. Map features are approximate and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

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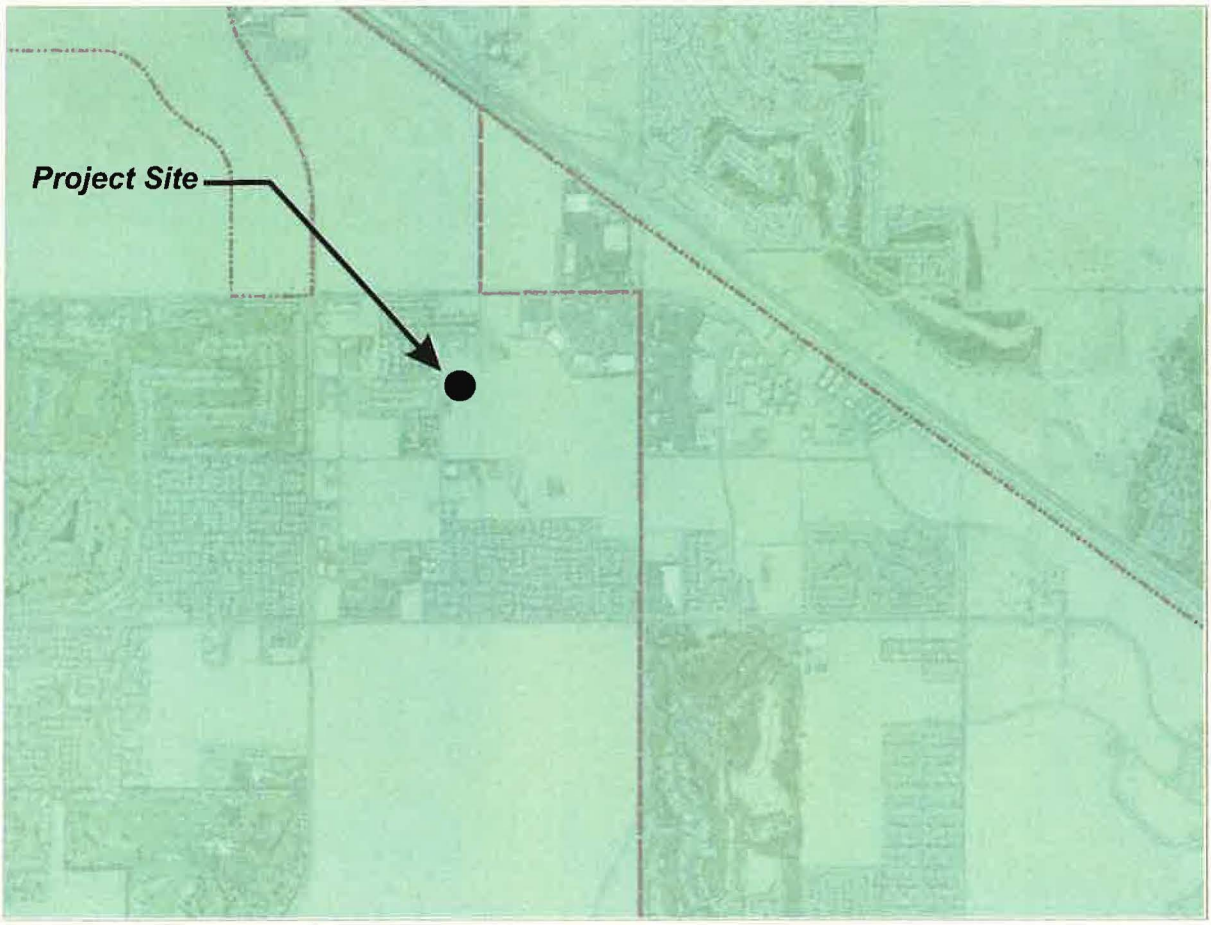
LANDMARK
Geo-Engineers and Geologists

Project No.: LP18149

Riverside County
Geographic Information System (GIS)
Fault Map

Plate
A-5

Subsidence Map



Legend

Subsidence

Notes

0 3,009 6,019 Feet

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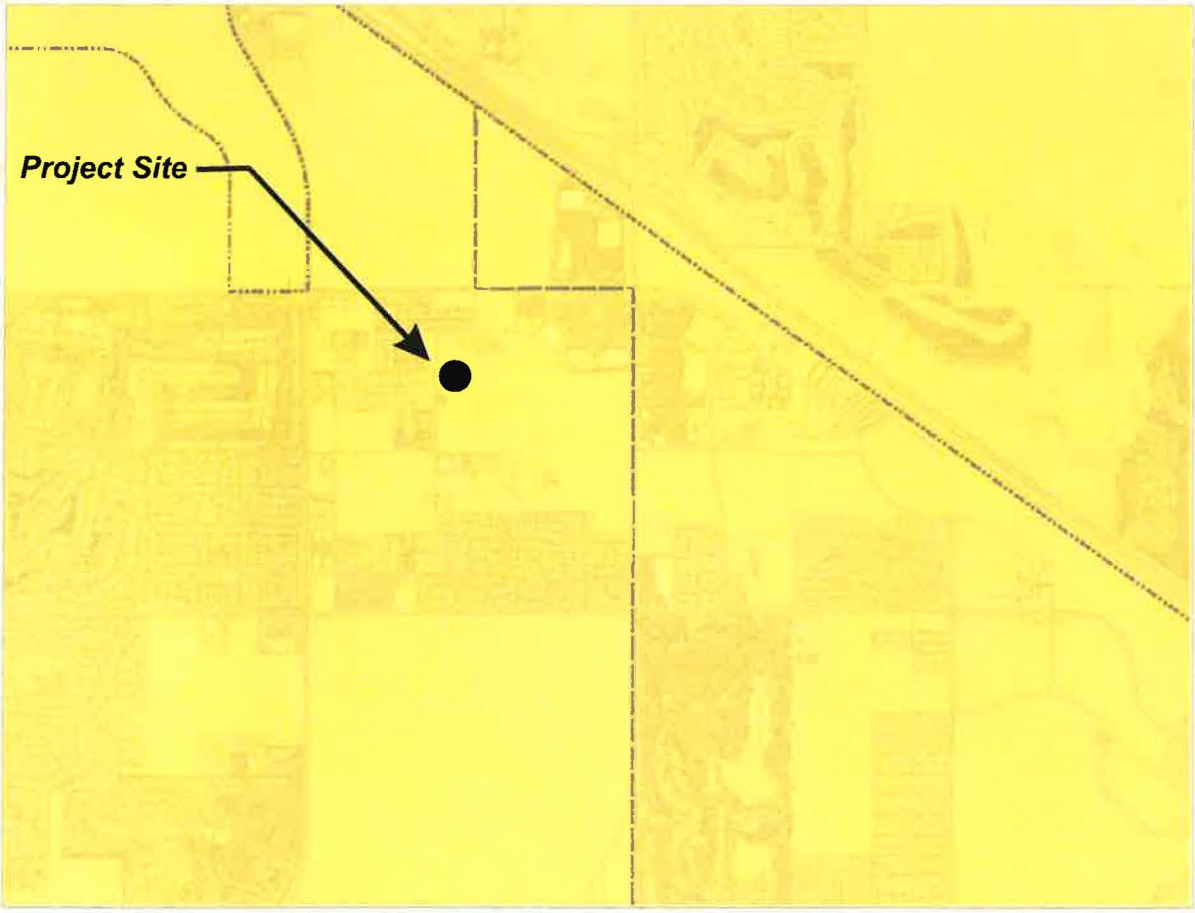
LANDMARK Geo-Engineers and Geologists **Project No.: LP18149**	**Riverside County Geographic Information System (GIS) Subsidence**	**Plate A-6**

Liquefaction Map



Legend

Liquefaction

Notes

0 3,009 6,019 Feet

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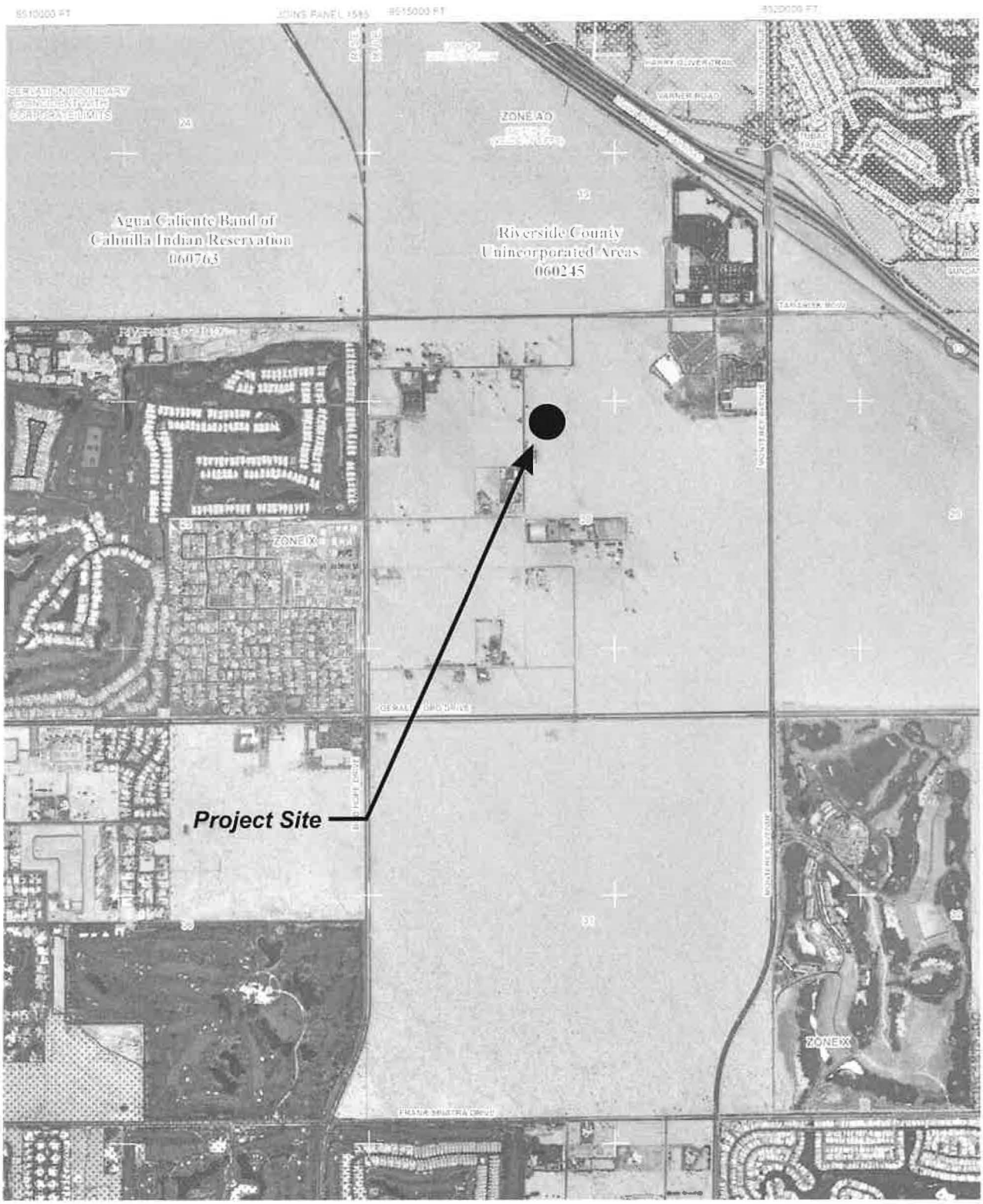
LANDMARK Geo-Engineers and Geologists **Project No.: LP18149**	**Riverside County Geographic Information System (GIS) Liquefaction Zones**	**Plate A-7**



LANDMARK Geo-Engineers and Geologists Project No.: LP18149	FEMA Flood Zones	Plate A-8

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A A	Cross section line
23 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4276000mN	1000-meter Universal Transverse Mercator grid values, zone 11N
600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone VI (FIPSZONE 0406), Lambert Conformal Conic projection
DX5510 x	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

APPENDIX B

LOG OF TEST PIT NO. T-1

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
0					SAND (SP-SM): Olive gray, dry, medium dense, fine grained	102.5	1.1	Passing #200 = 5.8%
5						97.1	1.5	
10					Total Depth = 10.0' Moisture and density values by Nuclear Densometer (ASTM 6938) Backfilled with excavated soil			
15								
20								
25								
30								

DATE EXCAVATED: 08/30/18 TOTAL DEPTH: 10.0 Feet DEPTH TO WATER: N/A

LOGGED BY: A. Arthen TYPE OF BIT: Backhoe DIAMETER: N/A

SURFACE ELEVATION: HAMMER WT.: N/A DROP: N/A

PROJECT NO. LP18149

LANDMARK Geo-Engineers and Geologists

PLATE B-1

LOG OF TEST PIT NO. T-2

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
0					SAND (SP-SM): Olive gray, dry, medium dense, fine grained	103.2	2.3	
						99.6	1.4	
5								
10					Total Depth = 10.0' Moisture and density values by Nuclear Densometer (ASTM 6938) Backfilled with excavated soil			
15								
20								
25								
30								

DATE EXCAVATED: 08/30/18 TOTAL DEPTH: 10.0 Feet DEPTH TO WATER: N/A

LOGGED BY: A. Arthen TYPE OF BIT: Backhoe DIAMETER: N/A

SURFACE ELEVATION: HAMMER WT.: N/A DROP: N/A

PROJECT NO. LP18149

LANDMARK Geo-Engineers and Geologists

PLATE B-2

LOG OF TEST PIT NO. T-3

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
0					SAND (SP-SM): Olive gray, dry, medium dense, fine grained	103.3	1.1	
5						101.1	2.0	
10					Total Depth = 10.0' Moisture and density values by Nuclear Densometer (ASTM 6938) Backfilled with excavated soil			
15								
20								
25								
30								

DATE EXCAVATED: 08/30/18 TOTAL DEPTH: 10.0 Feet DEPTH TO WATER: N/A

LOGGED BY: A. Arthen TYPE OF BIT: Backhoe DIAMETER: N/A

SURFACE ELEVATION: HAMMER WT.: N/A DROP: N/A

PROJECT NO. LP18149

LANDMARK Geo-Engineers and Geologists

PLATE B-3

LOG OF TEST PIT NO. T-4

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
0					SAND (SP-SM): Olive gray, dry, medium dense, fine grained	102.8	1.3	
5						99.9	1.9	
10								
15					Total Depth = 12.0' Moisture and density values by Nuclear Densometer (ASTM 6938) Backfilled with excavated soil			
20								
25								
30								

DATE EXCAVATED: 08/30/18 TOTAL DEPTH: 12.0 Feet DEPTH TO WATER: N/A

LOGGED BY: A. Arthen TYPE OF BIT: Backhoe DIAMETER: N/A

SURFACE ELEVATION: HAMMER WT.: N/A DROP: N/A

PROJECT NO. LP18149

LANDMARK Geo-Engineers and Geologists

PLATE B-4

LOG OF TEST PIT NO. T-5

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
0					SAND (SP-SM): Olive gray, dry, medium dense, fine grained	102.0	1.5	Passing #200 = 5.2%
						100.8	2.7	
10					Total Depth = 10.0' Moisture and density values by Nuclear Densometer (ASTM 6938) Backfilled with excavated soil			
30								

DATE EXCAVATED: 08/30/18 TOTAL DEPTH: 10.0 Feet DEPTH TO WATER: N/A

LOGGED BY: A. Arthen TYPE OF BIT: Backhoe DIAMETER: N/A

SURFACE ELEVATION: HAMMER WT.: N/A DROP: N/A

PROJECT NO. LP18149

LANDMARK
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PLATE B-5

DEFINITION OF TERMS

PRIMARY DIVISIONS			SYMBOLS	SECONDARY DIVISIONS
Coarse grained soils More than half of material is larger that No. 200 sieve	**Gravels** More than half of coarse fraction is larger than No. 4 sieve	Clean gravels (less than 5% fines)	**GW**	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels, or gravel-sand mixtures, little or no fines
		Gravel with fines	**GM**	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	Sands More than half of coarse fraction is smaller than No. 4 sieve	Clean sands (less than 5% fines)	**SW**	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands or gravelly sands, little or no fines
		Sands with fines	**SM**	Silty sands, sand-silt mixtures, non-plastic fines
			SC	Clayey sands, sand-clay mixtures, plastic fines
Fine grained soils More than half of material is smaller than No. 200 sieve	**Silts and clays** Liquid limit is less than 50%		**ML**	Inorganic silts, clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravely, sandy, or lean clays
			OL	Organic silts and organic clays of low plasticity
	Silts and clays Liquid limit is more than 50%		**MH**	Inorganic silts, micaceous or diatomaceous 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

GRAIN SIZES

Silts and Clays	Sand			Gravel		Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Coarse		
200	40	10	4	3/4"	3"	12"	

US Standard Series Sieve — Clear Square Openings

Sands, Gravels, etc.	Blows/ft. *
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

Clays & Plastic Silts	Strength **	Blows/ft. *
Very Soft	0-0.25	0-2
Soft	0.25-0.5	2-4
Firm	0.5-1.0	4-8
Stiff	1.0-2.0	8-16
Very Stiff	2.0-4.0	16-32
Hard	Over 4.0	Over 32

* Number of blows of 140 lb. hammer falling 30 inches to drive a 2 inch O.D. (1 3/8 in. I.D.) split spoon (ASTM D1586).

** Unconfined compressive strength in tons/s.f. as determined by laboratory testing or approximated by the Standard Penetration Test (ASTM D1586), Pocket Penetrometer, Torvane, or visual observation.

Type of Samples:

Ring Sample — Standard Penetration Test — Shelby Tube — Bulk (Bag) Sample

Drilling Notes:

1. Sampling and Blow Counts
   - Ring Sampler - Number of blows per foot of a 140 lb. hammer falling 30 inches.
   - Standard Penetration Test - Number of blows per foot.
   - Shelby Tube - Three (3) inch nominal diameter tube hydraulically pushed.
2. P. P. = Pocket Penetrometer (tons/s.f.).
3. NR = No recovery.
4. GWT = Ground Water Table observed @ specified time.

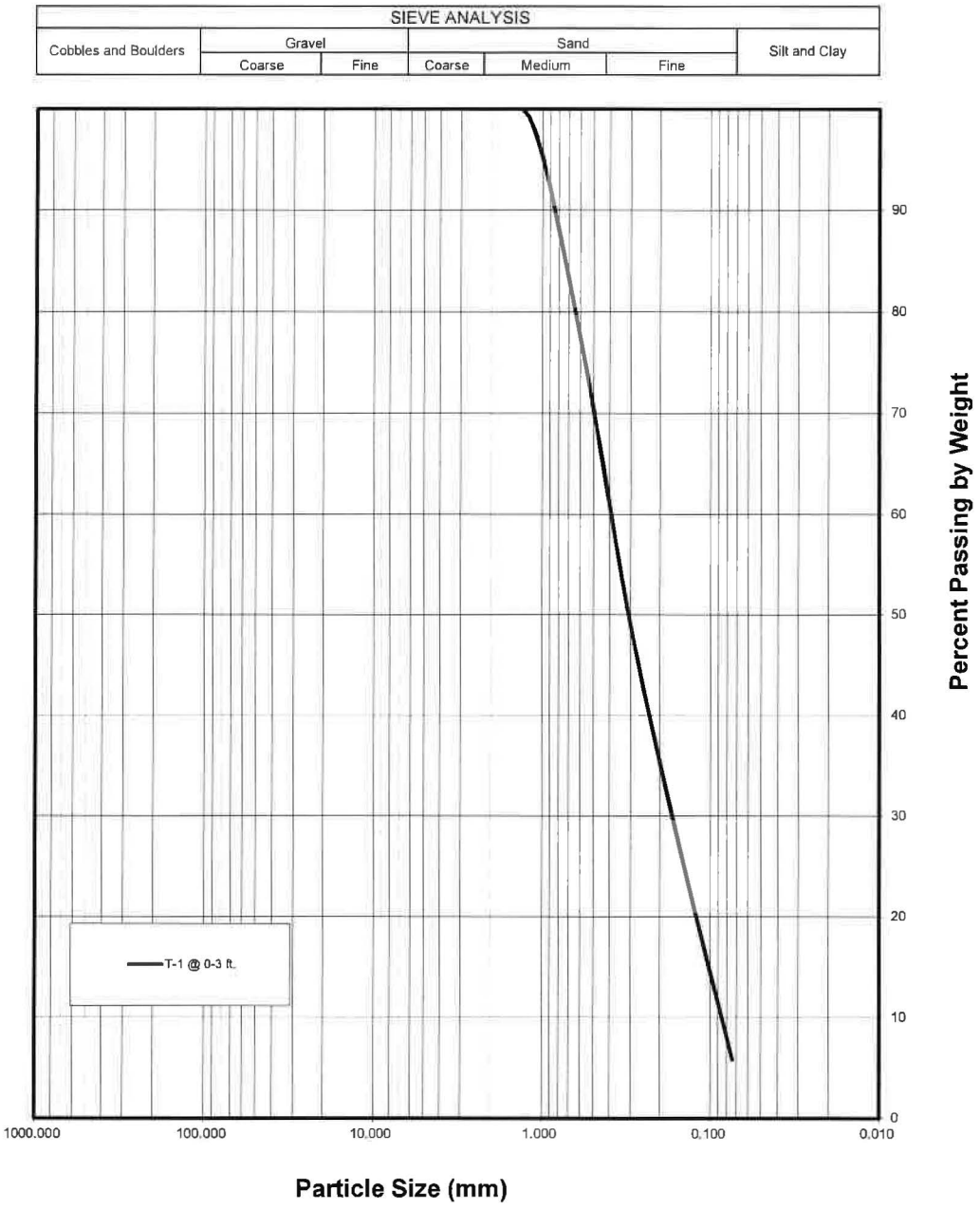
LANDMARK
Geo-Engineers and Geologists

Project No. LP18149

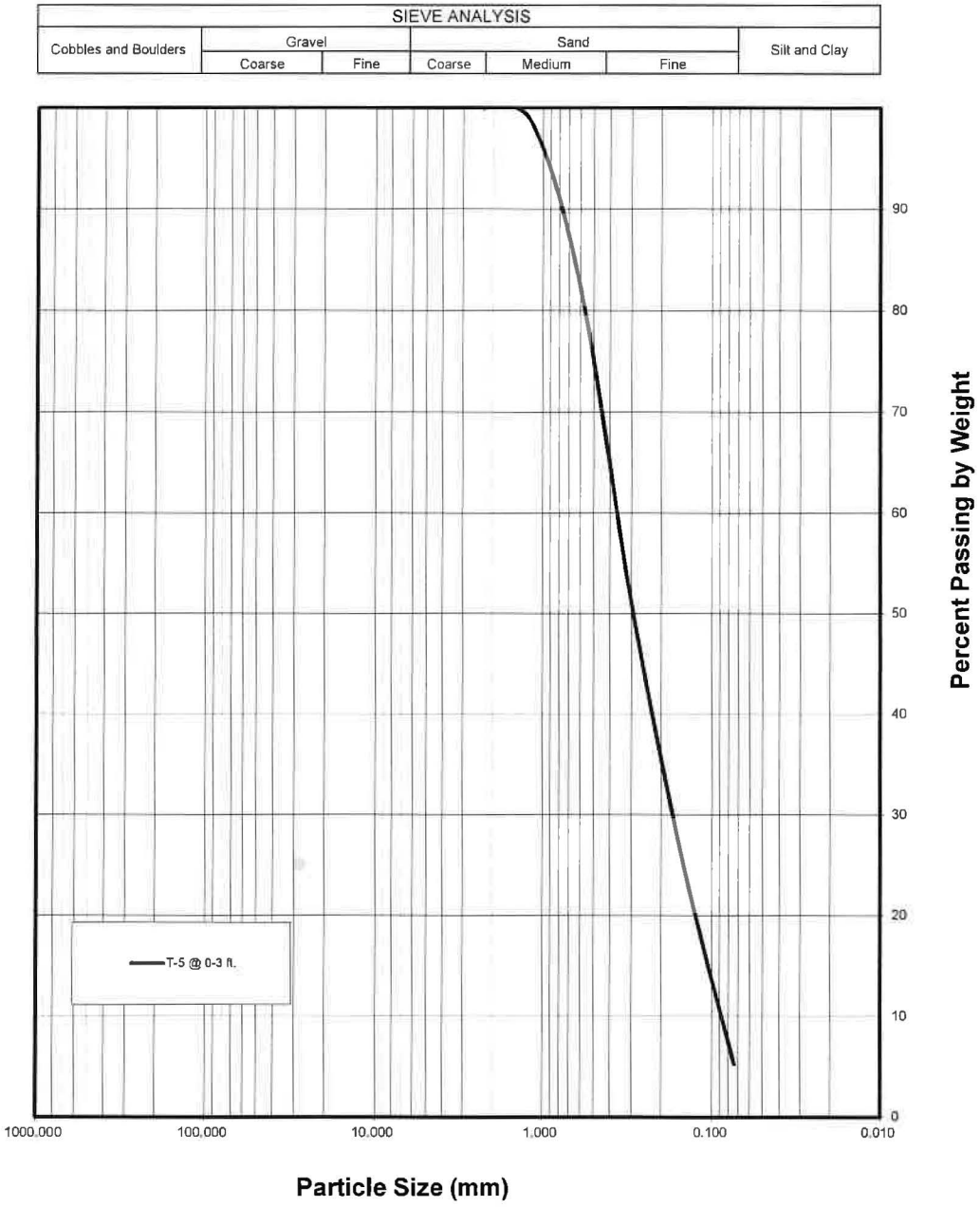
Key to Logs

Plate
B-6

APPENDIX C



LANDMARK Geo-Engineers and Geologists Project No.: LP18149	Grain Size Analysis	Plate C-1



LANDMARK Geo-Engineers and Geologists Project No.: LP18149	Grain Size Analysis	Plate C-2

LANDMARK CONSULTANTS, INC.

CLIENT: La Paloma Homes
PROJECT: APNs 685-030-006 & -080-031 -- Rancho Mirage, CA
JOB No.: LP18149
DATE: 10/30/18

CHEMICAL ANALYSIS

Boring:	T-1	**Caltrans**
Sample Depth, ft:	0-3	**Method**
pH:	9.0	**643**
Electrical Conductivity (mmhos):	--	**424**
Resistivity (ohm-cm):	25,000	**643**
Chloride (Cl), ppm:	80	**422**
Sulfate (SO4), ppm:	22	**417**

General Guidelines for Soil Corrosivity

Material Affected	Chemical Agent	Amount in Soil (ppm)	Degree of Corrosivity
Concrete	Soluble Sulfates	0 - 1,000	Low
		1,000 - 2,000	Moderate
		2,000 - 20,000	Severe
		> 20,000	Very Severe
Normal Grade Steel	Soluble Chlorides	0 - 200	Low
		200 - 700	Moderate
		700 - 1,500	Severe
		> 1,500	Very Severe
Normal Grade Steel	Resistivity	1 - 1,000	Very Severe
		1,000 - 2,000	Severe
		2,000 - 10,000	Moderate
		> 10,000	Low

LANDMARK
Geo-Engineers and Geologists

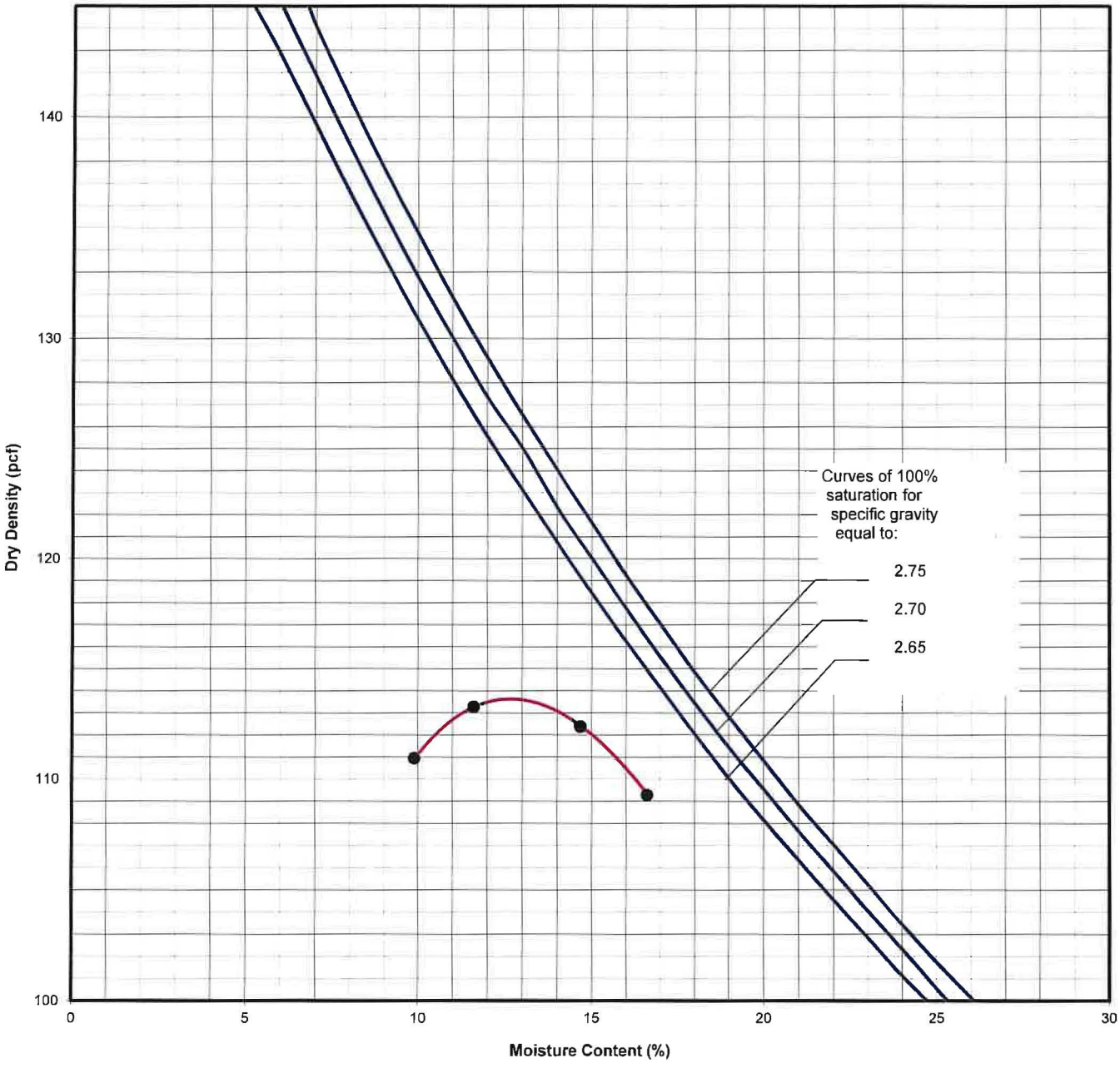
Project No.: LP18149

Selected Chemical Test Results

Plate C-3

Client: La Paloma Homes
Project: APN 685-030-006 & 685-080-031
Project No.: LP18149
Date: 9/18/2018
Lab. No.: N/A

Soil Description: Olive-Gray Silty Sand (SM)
Sample Location: T-1 @ 0-3 ft.
Test Method: ASTM D-1557 A
Maximum Dry Density (pcf): 113.6
Optimum Moisture Content (%): 12.6



LANDMARK
Geo-Engineers and Geologists

Project No.: LP18149

Moisture Density Relationship

Plate C-4

APPENDIX D

Sladden Engineering

45090 Golf Center Parkway, Suite F, Indio, CA. 92201 (760) 863-0713 Fax (760) 863-0847
6782 Stanton Avenue, Suite C, Buena Park, CA. 90621 (714) 523-0952 Fax (714) 523-1369
450 Egan Avenue, Beaumont, CA. 92223 (951) 845-7743 Fax (951) 845-8863
800 E. Florida Avenue, Hemet, CA. 92543 (951) 766-8777 Fax (951) 766-8778

December 19, 2016

Project No. 544-16293
16-12-514

La Paloma Homes, Inc.
42280 Beacon Hill
Palm Desert, California 92211

Project: Proposed Residential Development
Tentative Tract Map No. 36949
SEC Victory Lane and Via Josefina
Rancho Mirage, California

Subject: Percolation & Infiltration Testing for On-Site Storm Water Retention

Ref: Geotechnical Investigation report prepared by Sladden Engineering dated December 19, 2016; Project No. 544-16293, Report No. 16-12-506.

As requested, we have performed percolation and infiltration testing on the subject site to evaluate the infiltration potential of the near surface soil for the proposed residential development located at the southeast corner of Victory Lane and Via Josefina in the City of Rancho Mirage. The infiltration rates determined should be useful in the assessment of on-site storm water retention needs. The approximate locations of the tests are indicated on the attached Test Location Photograph (Figure 1).

Percolation testing was performed on November 18, 2016 within one (1) shallow test bore excavated on the site in conjunction with the referenced geotechnical investigation. Testing was performed at a depth of approximately 5.0 feet below existing grade. Testing was performed by placing water within the test bore and recording the drop in the water surface with time. Testing was performed in general accordance with the *United States Bureau of Reclamation (BOR) Procedure 7300-89 (1999)*. Test results are summarized in the following table.

PERCOLATION TEST RESULTS

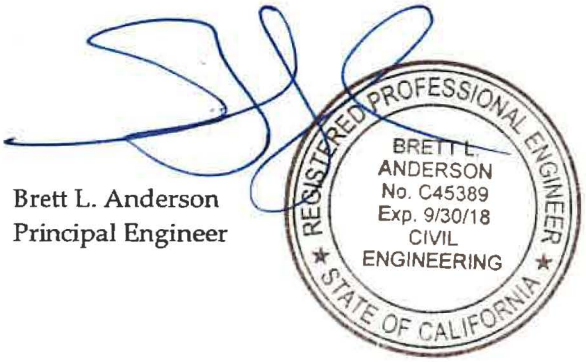
Test Location No.	Depth (ft)	Percolation Rate (in/hour)	Infiltration Rate Porchet's Method (in/hr)
P-1	5.0	33.5	11.08

Infiltration testing was performed on November 18, 2016 utilizing a double ring infiltrometer. Testing was performed in general accordance with the *Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer* (ASTM D-3385). **Testing indicated an infiltration rate of 8.8 inches per hour (in/hr) for Test Location No. P-2.**

The rates determined represent ultimate rates and an appropriate safety factor should be incorporated into the design to account for long-term saturation and potential "silting" of the surface soil. The safety factor should be determined with consideration to other factors considered in the storm water retention system design (specifically storm water volume estimates) and the safety factors associated with the related design components.

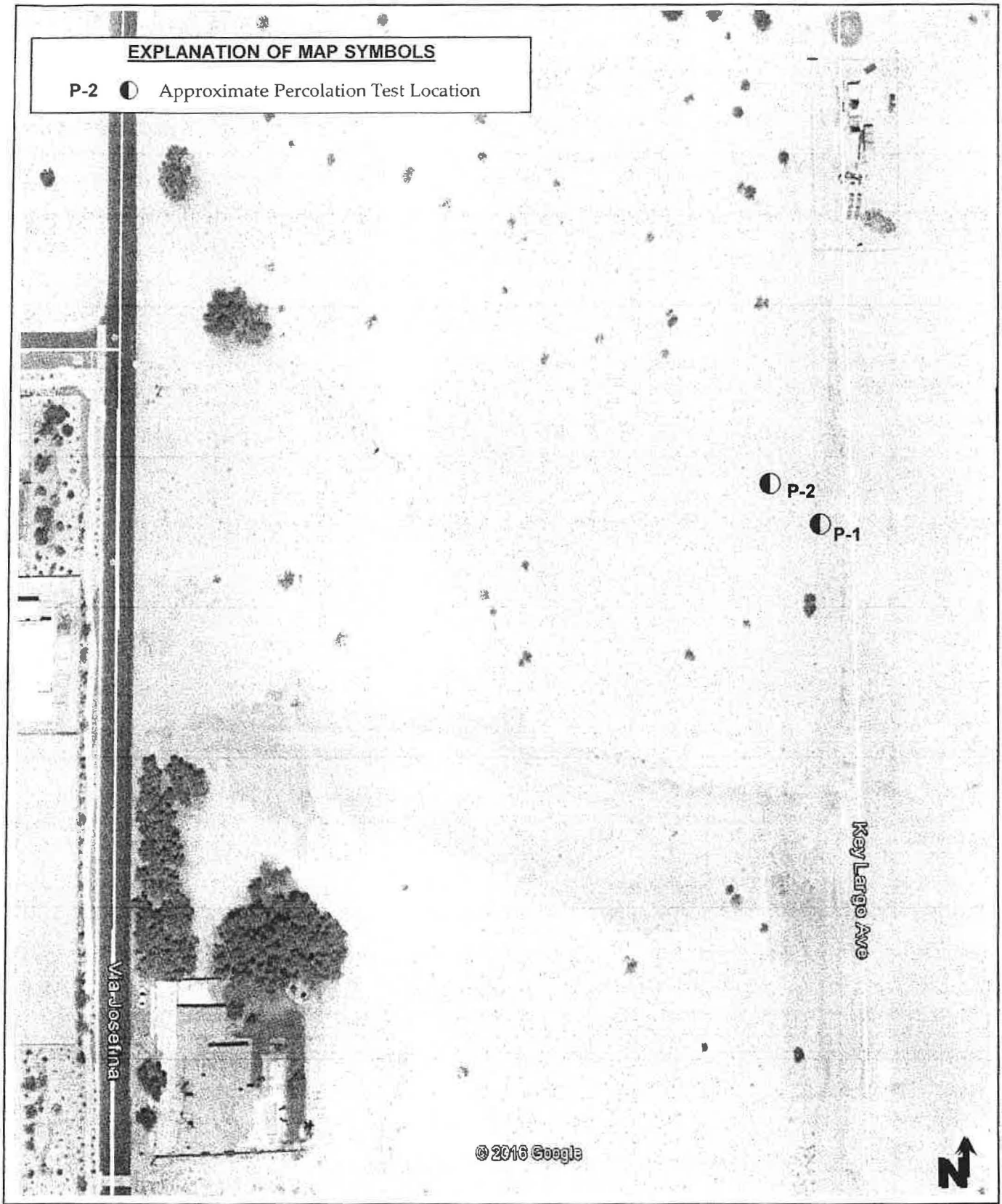
If you have any questions regarding this memo, please contact the undersigned.

Respectfully submitted,
SLADDEN ENGINEERING



Brett L. Anderson
Principal Engineer

Copies: 4 / Addressee



Sladden Engineering	TEST LOCATION PHOTOGRAPH		FIGURE 1
	Project Number:	544-16293	
	Report Number:	16-12-514	
	Date:	December 19, 2016	

STORM WATER PERCOLATION DATA SHEET

Project: Victory Lane & Via Josefina
Test Hole: P-1
Depth of Test Hole: 5.0 Feet
Check for Sandy Soil Criteria Tested by: Matt T.
Actual Percolation Tested by: Matt T.

Job No: 544-16293
Date Excavated: 11-18-16
Soil Classification: SP-SM
Date: 11-18-16
Date: 11-18-16

Reading Number	Time of Reading	Time Interval Minutes	Total Depth of Hole (ft)	Initial Water Level (in)	Final Water Level (in)	Difference Water Level (in)
A	9:00 9:25	25	5.0	10.0	0.0	10.0
B	9:25 9:50	25	5.0	10.0	0.0	10.0
1.	9:50 10:05	15	5.0	9.5	0.0	9.5
2.	10:05 10:20	15	5.0	8.0	0.0	8.0
3.	10:20 10:35	15	5.0	8.5	0.0	8.5
4.	10:35 10:50	15	5.0	8.0	0.0	8.0
5.	10:50 11:05	15	5.0	8.0	0.0	8.0
6.	11:05 11:20	15	5.0	9.0	0.0	9.0
7.						
8.						
9.						
10.						
11.						
12.						

PERCOLATION RATE CONVERSION (PORCHET METHOD), RIVERSIDE COUNTY

$$I_{t=} \quad \frac{\Delta H\ 60\ R}{\Delta t(r+2H_{avg})}$$

Δt (minutes)

D_f (Final Depth to water)

r (hole radius in inches)

D_0 (Initial Depth to water)

D_t (Total Depth of test hole)

H_0 (initial height of water at selected time interval)

$$H_0 = D_t - D_0$$

H_f (final height of water at the selected time interval)

$$H_f = D_t - D_f$$

ΔH (change in head over the time interval)

$$\Delta H = H_0 - H_f$$

H_{avg} (average head height over the time interval)

$$H_{avg} = (H_0 + H_f)/2$$

Test Hole: **P-1**

Δt =	15
D_f =	60
r =	4.00
D_0 =	51
D_t =	60.00
H_0 =	9
H_f =	0
ΔH =	9.00
H_{avg} =	4.50

I_t= 11.08 **in/hr**

DOUBLE RING PERCOLATION RATE CALCULATIONS

Job No. 544-16296

Test Hole P-2

INNER RING

Interval Number	Initial Water(cm)	Final Water(cm)	Con. Factor (cm to in)	Water (in)	Area Mar. (in2)	Volume (in3)	Area IR (in2)	Time (min)	Time (hr)	Vir (in/hr)
1	47.0	0.0	0.39	18.5	8.9	165.5	113.1	10	0.17	8.8
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										

AVERAGE RATE* = 8.8 (in/hr)

APPENDIX E

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ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent(2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. (½ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.

2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.

3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

RCFC & WCD
HYDROLOGY MANUAL

IMPERVIOUS COVER FOR DEVELOPED AREAS

PLATE D-5.6

PROPOSED CONDITION 100-YEAR
ONSITE RATIONAL METHOD DISCHARGES

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 03/30/23 File:ws1revq100.out

WS-1 100-year peak discharge offsite
JN 20073
03-30-2023
Fomotor Engineering

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6549

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.356(In.)
100 year, 1 hour precipitation = 1.540(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.540(In/Hr)
Slope of intensity duration curve = 0.4700

++

Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 277.500(Ft.)
Top (of initial area) elevation = 328.200(Ft.)
Bottom (of initial area) elevation = 316.400(Ft.)
Difference in elevation = 11.800(Ft.)
Slope = 0.04252 s(percent)= 4.25
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.459 min.
Rainfall intensity = 3.669(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.763
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 67.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 5.546(CFS)
Total initial stream area = 1.980(Ac.)
Pervious area fraction = 1.000
End of computations, total study area = 1.98 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number = 67.0

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 03/30/23 File:WS2OFFQ100.out

WS-2 OFFSITE 100-YEAR PEAK DISCHARGE
JN 20073
03-30-2023
FOMOTOR ENGINEERING

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6549

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.356(In.)
100 year, 1 hour precipitation = 1.540(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.540(In/Hr)
Slope of intensity duration curve = 0.4700

++

Process from Point/Station 200.000 to Point/Station 210.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 247.200(Ft.)
Top (of initial area) elevation = 320.300(Ft.)
Bottom (of initial area) elevation = 317.000(Ft.)
Difference in elevation = 3.300(Ft.)
Slope = 0.01335 s(percent)= 1.33
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.387 min.
Rainfall intensity = 3.363(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.753
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 67.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 2.026(CFS)
Total initial stream area = 0.800(Ac.)
Pervious area fraction = 1.000
End of computations, total study area = 0.80 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number = 67.0

100-YR SYNTHETIC UNIT HYDROGRAPH ANALYSIS (POST DEVELOPED CONDITION)

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/30/23 File: ONOFF100YR1HR1100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6549

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

100-YEAR / 1-HOUR TOTAL ON AND OFF SUH RUNOFF PROPOSED
JN 20073
03-30-2023
FOMOTOR ENGINEERING

Drainage Area = 10.52(Ac.) = 0.016 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.52(Ac.) = 0.016 Sq. Mi.
Length along longest watercourse = 200.00(Ft.)
Length along longest watercourse measured to centroid = 100.00(Ft.)
Length along longest watercourse = 0.038 Mi.
Length along longest watercourse measured to centroid = 0.019 Mi.
Difference in elevation = 1.00(Ft.)
Slope along watercourse = 26.4000 Ft./Mi.
Average Manning's 'N' = 0.020
Lag time = 0.016 Hr.
Lag time = 0.99 Min.
25% of lag time = 0.25 Min.
40% of lag time = 0.39 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.52	0.36	3.75

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.52	1.54	16.20

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.356(In)
Area Averaged 100-Year Rainfall = 1.540(In)

Point rain (area averaged) = 1.540(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.540(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.740	32.00	0.583
2.780	78.00	0.000

Total Area Entered = 10.52(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.583	0.353	0.736	0.259
78.0	78.0	0.268	0.000	0.268	0.264	0.071
					Sum (F) =	0.330

Area averaged mean soil loss (F) (In/Hr) = 0.330
Minimum soil loss rate ((In/Hr)) = 0.165
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.529

Slope of intensity-duration curve for a 1 hour storm =0.5800

U n i t H y d r o g r a p h
DESERT S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	506.399	71.408	7.571
2	0.167	1012.798	28.592	3.031
			Sum = 100.000 Sum=	10.602

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)		Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	3.60	0.665	0.330	(	0.352)	0.335
2	0.17	4.20	0.776	0.330	(	0.411)	0.446
3	0.25	4.40	0.813	0.330	(	0.430)	0.483
4	0.33	4.60	0.850	0.330	(	0.450)	0.520
5	0.42	5.00	0.924	0.330	(	0.489)	0.594
6	0.50	5.60	1.035	0.330	(	0.547)	0.705
7	0.58	6.40	1.183	0.330	(	0.626)	0.852
8	0.67	8.10	1.497	0.330	(	0.792)	1.167
9	0.75	13.10	2.421	0.330	(	1.281)	2.090
10	0.83	34.50	6.375	0.330	(	3.372)	6.045
11	0.92	6.70	1.238	0.330	(	0.655)	0.908
12	1.00	3.80	0.702	0.330	(	0.371)	0.372
		(Loss Rate Not Used)					
Sum =		100.0				Sum =	14.5

Flood volume = Effective rainfall 1.21(In)
times area 10.5(Ac.)/[(In)/(Ft.)] = 1.1(Ac.Ft)
Total soil loss = 0.33(In)
Total soil loss = 0.289(Ac.Ft)
Total rainfall = 1.54(In)
Flood volume = 46194.1 Cubic Feet
Total soil loss = 12609.2 Cubic Feet

Peak flow rate of this hydrograph = 52.128(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0175	2.54	VQ				
0+10	0.0477	4.39	VQ				
0+15	0.0822	5.01	Q				
0+20	0.1194	5.40	QV				
0+25	0.1613	6.07	Q V				
0+30	0.2104	7.14	Q V				
0+35	0.2696	8.59	Q	V			
0+40	0.3483	11.42	Q	V			
0+45	0.4817	19.37		Q V			
0+50	0.8407	52.13				V Q	
0+55	1.0143	25.21		Q		V	
1+ 0	1.0527	5.57	Q			V	
1+ 5	1.0605	1.13	Q			V	

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/30/23 File: ONOFF100YR1HR3100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6549

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

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100 YEAR / 3 HOUR ON AND OFFSITE PROPOSED SUH RUNOFF
JN 20073
03-30-2023
FOMOTOR ENGINEERING

Drainage Area = 10.52(Ac.) = 0.016 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.52(Ac.) = 0.016 Sq. Mi.
Length along longest watercourse = 200.00(Ft.)
Length along longest watercourse measured to centroid = 100.00(Ft.)
Length along longest watercourse = 0.038 Mi.
Length along longest watercourse measured to centroid = 0.019 Mi.
Difference in elevation = 1.00(Ft.)
Slope along watercourse = 26.4000 Ft./Mi.
Average Manning's 'N' = 0.020
Lag time = 0.016 Hr.
Lag time = 0.99 Min.
25% of lag time = 0.25 Min.
40% of lag time = 0.39 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.52	0.60	6.35

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.52	2.29	24.09

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.604(In)
Area Averaged 100-Year Rainfall = 2.290(In)

Point rain (area averaged) = 2.290(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.290(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.740	32.00	0.583
2.780	78.00	0.000

Total Area Entered = 10.52(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.583	0.353	0.736	0.259
78.0	78.0	0.268	0.000	0.268	0.264	0.071
					Sum (F) =	0.330

Area averaged mean soil loss (F) (In/Hr) = 0.330
Minimum soil loss rate ((In/Hr)) = 0.165
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.529

U n i t H y d r o g r a p h
DESERT S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	506.399	71.408	7.571
2	0.167	1012.798	28.592	3.031
			Sum = 100.000 Sum=	10.602

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.357	(0.330) 0.189	0.168
2	0.17	1.30	0.357	(0.330) 0.189	0.168
3	0.25	1.10	0.302	(0.330) 0.160	0.142
4	0.33	1.50	0.412	(0.330) 0.218	0.194
5	0.42	1.50	0.412	(0.330) 0.218	0.194
6	0.50	1.80	0.495	(0.330) 0.262	0.233
7	0.58	1.50	0.412	(0.330) 0.218	0.194
8	0.67	1.80	0.495	(0.330) 0.262	0.233
9	0.75	1.80	0.495	(0.330) 0.262	0.233
10	0.83	1.50	0.412	(0.330) 0.218	0.194
11	0.92	1.60	0.440	(0.330) 0.233	0.207
12	1.00	1.80	0.495	(0.330) 0.262	0.233
13	1.08	2.20	0.605	(0.330) 0.320	0.285
14	1.17	2.20	0.605	(0.330) 0.320	0.285
15	1.25	2.20	0.605	(0.330) 0.320	0.285
16	1.33	2.00	0.550	(0.330) 0.291	0.259
17	1.42	2.60	0.714	0.330 (0.378)	0.384
18	1.50	2.70	0.742	0.330 (0.392)	0.412
19	1.58	2.40	0.659	0.330 (0.349)	0.329
20	1.67	2.70	0.742	0.330 (0.392)	0.412
21	1.75	3.30	0.907	0.330 (0.480)	0.577
22	1.83	3.10	0.852	0.330 (0.451)	0.522
23	1.92	2.90	0.797	0.330 (0.422)	0.467
24	2.00	3.00	0.824	0.330 (0.436)	0.494
25	2.08	3.10	0.852	0.330 (0.451)	0.522
26	2.17	4.20	1.154	0.330 (0.611)	0.824
27	2.25	5.00	1.374	0.330 (0.727)	1.044
28	2.33	3.50	0.962	0.330 (0.509)	0.632
29	2.42	6.80	1.869	0.330 (0.988)	1.538
30	2.50	7.30	2.006	0.330 (1.061)	1.676
31	2.58	8.20	2.253	0.330 (1.192)	1.923
32	2.67	5.90	1.621	0.330 (0.858)	1.291
33	2.75	2.00	0.550	(0.330) 0.291	0.259
34	2.83	1.80	0.495	(0.330) 0.262	0.233
35	2.92	1.80	0.495	(0.330) 0.262	0.233
36	3.00	0.60	0.165	(0.330) 0.087	0.078
		(Loss Rate Not Used)			
Sum =		100.0			Sum = 17.4

Flood volume = Effective rainfall 1.45(In)
times area 10.5(Ac.)/[(In)/(Ft.)] = 1.3(Ac.Ft)
Total soil loss = 0.84(In)
Total soil loss = 0.740(Ac.Ft)
Total rainfall = 2.29(In)
Flood volume = 55229.1 Cubic Feet
Total soil loss = 32216.4 Cubic Feet

Peak flow rate of this hydrograph = 19.649(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 5.0 10.0 15.0 20.0
0+ 5	0.0088	1.27	V Q
0+10	0.0211	1.78	V Q
0+15	0.0320	1.59	V Q
0+20	0.0451	1.90	V Q
0+25	0.0593	2.06	V Q
0+30	0.0755	2.35	V Q
0+35	0.0905	2.18	V Q
0+40	0.1067	2.35	VQ
0+45	0.1237	2.47	VQ
0+50	0.1387	2.18	Q
0+55	0.1536	2.16	Q
1+ 0	0.1701	2.39	QV
1+ 5	0.1898	2.86	Q
1+10	0.2106	3.02	Q
1+15	0.2314	3.02	QV
1+20	0.2508	2.82	Q V
1+25	0.2763	3.70	QV
1+30	0.3058	4.28	QV
1+35	0.3316	3.74	Q V
1+40	0.3599	4.12	Q V
1+45	0.3986	5.62	QV
1+50	0.4379	5.70	Q V
1+55	0.4731	5.12	Q V
2+ 0	0.5086	5.16	Q V
2+ 5	0.5462	5.45	Q V
2+10	0.6000	7.82	Q V
2+15	0.6717	10.40	QV
2+20	0.7265	7.95	Q V
2+25	0.8199	13.57	V Q
2+30	0.9395	17.36	V Q
2+35	1.0748	19.65	V Q
2+40	1.1823	15.61	Q V
2+45	1.2228	5.88	Q V
2+50	1.2403	2.55	Q V
2+55	1.2573	2.47	Q V
3+ 0	1.2663	1.29	Q V
3+ 5	1.2679	0.24	Q V

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/30/23 File: ONOFF100YR1HR6100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6549

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

100-YEAR / 6-HOUR ON AND OFF PROPOSED SUH RUNOFF
JN 20073
03-30-2023
FOMOTOR ENGINEERING

Drainage Area = 10.52(Ac.) = 0.016 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.52(Ac.) = 0.016 Sq. Mi.
Length along longest watercourse = 200.00(Ft.)
Length along longest watercourse measured to centroid = 100.00(Ft.)
Length along longest watercourse = 0.038 Mi.
Length along longest watercourse measured to centroid = 0.019 Mi.
Difference in elevation = 1.00(Ft.)
Slope along watercourse = 26.4000 Ft./Mi.
Average Manning's 'N' = 0.020
Lag time = 0.016 Hr.
Lag time = 0.99 Min.
25% of lag time = 0.25 Min.
40% of lag time = 0.39 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.52	0.83	8.71

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.52	3.07	32.30

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.828(In)
Area Averaged 100-Year Rainfall = 3.070(In)

Point rain (area averaged) = 3.070(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 3.070(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.740	32.00	0.583
2.780	78.00	0.000

Total Area Entered = 10.52(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.583	0.353	0.736	0.259
78.0	78.0	0.268	0.000	0.268	0.264	0.071
					Sum (F) =	0.330

Area averaged mean soil loss (F) (In/Hr) = 0.330
Minimum soil loss rate ((In/Hr)) = 0.165
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.529

U n i t H y d r o g r a p h
DESERT S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	506.399	71.408	7.571
2	0.167	1012.798	28.592	3.031
			Sum = 100.000	Sum= 10.602

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.184	(0.330)	0.097	0.087
2	0.17	0.60	0.221	(0.330)	0.117	0.104
3	0.25	0.60	0.221	(0.330)	0.117	0.104
4	0.33	0.60	0.221	(0.330)	0.117	0.104
5	0.42	0.60	0.221	(0.330)	0.117	0.104
6	0.50	0.70	0.258	(0.330)	0.136	0.121
7	0.58	0.70	0.258	(0.330)	0.136	0.121
8	0.67	0.70	0.258	(0.330)	0.136	0.121
9	0.75	0.70	0.258	(0.330)	0.136	0.121
10	0.83	0.70	0.258	(0.330)	0.136	0.121
11	0.92	0.70	0.258	(0.330)	0.136	0.121
12	1.00	0.80	0.295	(0.330)	0.156	0.139
13	1.08	0.80	0.295	(0.330)	0.156	0.139
14	1.17	0.80	0.295	(0.330)	0.156	0.139
15	1.25	0.80	0.295	(0.330)	0.156	0.139
16	1.33	0.80	0.295	(0.330)	0.156	0.139
17	1.42	0.80	0.295	(0.330)	0.156	0.139
18	1.50	0.80	0.295	(0.330)	0.156	0.139
19	1.58	0.80	0.295	(0.330)	0.156	0.139
20	1.67	0.80	0.295	(0.330)	0.156	0.139
21	1.75	0.80	0.295	(0.330)	0.156	0.139
22	1.83	0.80	0.295	(0.330)	0.156	0.139
23	1.92	0.80	0.295	(0.330)	0.156	0.139
24	2.00	0.90	0.332	(0.330)	0.175	0.156
25	2.08	0.80	0.295	(0.330)	0.156	0.139
26	2.17	0.90	0.332	(0.330)	0.175	0.156
27	2.25	0.90	0.332	(0.330)	0.175	0.156
28	2.33	0.90	0.332	(0.330)	0.175	0.156
29	2.42	0.90	0.332	(0.330)	0.175	0.156
30	2.50	0.90	0.332	(0.330)	0.175	0.156
31	2.58	0.90	0.332	(0.330)	0.175	0.156
32	2.67	0.90	0.332	(0.330)	0.175	0.156
33	2.75	1.00	0.368	(0.330)	0.195	0.174
34	2.83	1.00	0.368	(0.330)	0.195	0.174
35	2.92	1.00	0.368	(0.330)	0.195	0.174
36	3.00	1.00	0.368	(0.330)	0.195	0.174
37	3.08	1.00	0.368	(0.330)	0.195	0.174
38	3.17	1.10	0.405	(0.330)	0.214	0.191
39	3.25	1.10	0.405	(0.330)	0.214	0.191
40	3.33	1.10	0.405	(0.330)	0.214	0.191
41	3.42	1.20	0.442	(0.330)	0.234	0.208
42	3.50	1.30	0.479	(0.330)	0.253	0.226
43	3.58	1.40	0.516	(0.330)	0.273	0.243
44	3.67	1.40	0.516	(0.330)	0.273	0.243
45	3.75	1.50	0.553	(0.330)	0.292	0.260
46	3.83	1.50	0.553	(0.330)	0.292	0.260
47	3.92	1.60	0.589	(0.330)	0.312	0.278
48	4.00	1.60	0.589	(0.330)	0.312	0.278
49	4.08	1.70	0.626	0.330	(0.331)	0.296
50	4.17	1.80	0.663	0.330	(0.351)	0.333
51	4.25	1.90	0.700	0.330	(0.370)	0.370
52	4.33	2.00	0.737	0.330	(0.390)	0.407
53	4.42	2.10	0.774	0.330	(0.409)	0.443
54	4.50	2.10	0.774	0.330	(0.409)	0.443

55	4.58	2.20	0.810	0.330	(0.429)		0.480
56	4.67	2.30	0.847	0.330	(0.448)		0.517
57	4.75	2.40	0.884	0.330	(0.468)		0.554
58	4.83	2.40	0.884	0.330	(0.468)		0.554
59	4.92	2.50	0.921	0.330	(0.487)		0.591
60	5.00	2.60	0.958	0.330	(0.507)		0.628
61	5.08	3.10	1.142	0.330	(0.604)		0.812
62	5.17	3.60	1.326	0.330	(0.702)		0.996
63	5.25	3.90	1.437	0.330	(0.760)		1.107
64	5.33	4.20	1.547	0.330	(0.818)		1.217
65	5.42	4.70	1.731	0.330	(0.916)		1.401
66	5.50	5.60	2.063	0.330	(1.091)		1.733
67	5.58	1.90	0.700	0.330	(0.370)		0.370
68	5.67	0.90	0.332	(0.330)	0.175		0.156
69	5.75	0.60	0.221	(0.330)	0.117		0.104
70	5.83	0.50	0.184	(0.330)	0.097		0.087
71	5.92	0.30	0.111	(0.330)	0.058		0.052
72	6.00	0.20	0.074	(0.330)	0.039		0.035

(Loss Rate Not Used)

Sum = 100.0 Sum = 21.4

Flood volume = Effective rainfall 1.78(In)
times area 10.5(Ac.)/[(In)/(Ft.)] = 1.6(Ac.Ft)

Total soil loss = 1.29(In)

Total soil loss = 1.127(Ac.Ft)

Total rainfall = 3.07(In)

Flood volume = 68119.8 Cubic Feet

Total soil loss = 49111.9 Cubic Feet

Peak flow rate of this hydrograph = 17.375(CFS)

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6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0045	0.66	VQ				
0+10	0.0118	1.05	V Q				
0+15	0.0194	1.10	V Q				
0+20	0.0270	1.10	V Q				
0+25	0.0346	1.10	V Q				
0+30	0.0431	1.24	|VQ				
0+35	0.0520	1.29	|VQ				
0+40	0.0608	1.29	|VQ				
0+45	0.0697	1.29	|VQ				
0+50	0.0786	1.29	| Q				
0+55	0.0875	1.29	| Q				
1+ 0	0.0972	1.42	| Q				
1+ 5	0.1074	1.47	| Q				
1+10	0.1175	1.47	| QV				
1+15	0.1277	1.47	| QV				
1+20	0.1378	1.47	| QV				
1+25	0.1479	1.47	| QV				
1+30	0.1581	1.47	| Q V				
1+35	0.1682	1.47	| Q V				
1+40	0.1784	1.47	| Q V				
1+45	0.1885	1.47	| Q V				
1+50	0.1986	1.47	| Q V				
1+55	0.2088	1.47	| Q V				
2+ 0	0.2198	1.60	| Q V				
2+ 5	0.2303	1.53	| Q V				
2+10	0.2414	1.60	| Q V				
2+15	0.2528	1.66	| Q V				
2+20	0.2642	1.66	| Q V				
2+25	0.2756	1.66	| Q V				
2+30	0.2870	1.66	| Q V				
2+35	0.2984	1.66	| Q V				
2+40	0.3098	1.66	| Q V				
2+45	0.3221	1.79	| Q V				
2+50	0.3348	1.84	| Q V				
2+55	0.3475	1.84	| Q V				
3+ 0	0.3602	1.84	| Q V				
3+ 5	0.3728	1.84	| Q V				
3+10	0.3864	1.97	| Q V				
3+15	0.4004	2.02	| Q V				
3+20	0.4143	2.02	| Q V				

3+25	0.4292	2.16	Q	V			
3+30	0.4453	2.34	Q	V			
3+35	0.4627	2.52	Q	V			
3+40	0.4804	2.58	Q	V			
3+45	0.4991	2.71	Q	V			
3+50	0.5181	2.76	Q	V			
3+55	0.5380	2.89	Q	V			
4+ 0	0.5583	2.94	Q	V			
4+ 5	0.5795	3.08	Q	V			
4+10	0.6031	3.42	Q	V			
4+15	0.6293	3.81	Q	V			
4+20	0.6582	4.20	Q	V			
4+25	0.6899	4.59	Q	V			
4+30	0.7223	4.70	Q	V			
4+35	0.7566	4.98	Q	V			
4+40	0.7936	5.37	Q	V			
4+45	0.8333	5.76	Q	V			
4+50	0.8738	5.88	Q	V			
4+55	0.9161	6.16	Q	V			
5+ 0	0.9612	6.55	Q	V			
5+ 5	1.0167	8.05	Q	V			
5+10	1.0856	10.01	Q	V			
5+15	1.1641	11.40	Q	V			
5+20	1.2507	12.57	Q	V			
5+25	1.3493	14.31	Q	V			
5+30	1.4689	17.38	Q	V			
5+35	1.5244	8.06	Q	V			
5+40	1.5403	2.30	Q	V			
5+45	1.5490	1.26	Q	V			
5+50	1.5557	0.97	Q	V			
5+55	1.5602	0.66	Q	V			
6+ 0	1.5631	0.42	Q	V			
6+ 5	1.5638	0.11	Q	V			

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/30/23 File: ONOFF100YR1HR24100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6549

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English Rainfall Data (Inches) Input Values Used

English Units used in output format

100-YEAR / 24-HOUR ON AND OFF SUH PROPOSED RUNOFF
JN 20073
03-30-2023
FOMOTOR ENGINEERING

Drainage Area = 10.52(Ac.) = 0.016 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.52(Ac.) = 0.016 Sq. Mi.
Length along longest watercourse = 200.00(Ft.)
Length along longest watercourse measured to centroid = 100.00(Ft.)
Length along longest watercourse = 0.038 Mi.
Length along longest watercourse measured to centroid = 0.019 Mi.
Difference in elevation = 1.00(Ft.)
Slope along watercourse = 26.4000 Ft./Mi.
Average Manning's 'N' = 0.020
Lag time = 0.016 Hr.
Lag time = 0.99 Min.
25% of lag time = 0.25 Min.
40% of lag time = 0.39 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.52	1.19	12.52

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.52	4.76	50.08

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.190(In)
Area Averaged 100-Year Rainfall = 4.760(In)

Point rain (area averaged) = 4.760(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.760(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.740	32.00	0.583
2.780	78.00	0.000

Total Area Entered = 10.52(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.583	0.353	0.736	0.259
78.0	78.0	0.268	0.000	0.268	0.264	0.071
					Sum (F) =	0.330

Area averaged mean soil loss (F) (In/Hr) = 0.330
Minimum soil loss rate ((In/Hr)) = 0.165
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.529

U n i t H y d r o g r a p h
DESERT S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	506.399	71.408	7.571
2	0.167	1012.798	28.592	3.031
			Sum = 100.000 Sum=	10.602

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.038	(0.585)	0.020	0.018
2	0.17	0.07	0.038	(0.583)	0.020	0.018
3	0.25	0.07	0.038	(0.581)	0.020	0.018
4	0.33	0.10	0.057	(0.579)	0.030	0.027
5	0.42	0.10	0.057	(0.576)	0.030	0.027
6	0.50	0.10	0.057	(0.574)	0.030	0.027
7	0.58	0.10	0.057	(0.572)	0.030	0.027
8	0.67	0.10	0.057	(0.570)	0.030	0.027
9	0.75	0.10	0.057	(0.567)	0.030	0.027
10	0.83	0.13	0.076	(0.565)	0.040	0.036
11	0.92	0.13	0.076	(0.563)	0.040	0.036
12	1.00	0.13	0.076	(0.561)	0.040	0.036
13	1.08	0.10	0.057	(0.558)	0.030	0.027
14	1.17	0.10	0.057	(0.556)	0.030	0.027
15	1.25	0.10	0.057	(0.554)	0.030	0.027
16	1.33	0.10	0.057	(0.552)	0.030	0.027
17	1.42	0.10	0.057	(0.550)	0.030	0.027
18	1.50	0.10	0.057	(0.547)	0.030	0.027
19	1.58	0.10	0.057	(0.545)	0.030	0.027
20	1.67	0.10	0.057	(0.543)	0.030	0.027
21	1.75	0.10	0.057	(0.541)	0.030	0.027
22	1.83	0.13	0.076	(0.539)	0.040	0.036
23	1.92	0.13	0.076	(0.537)	0.040	0.036
24	2.00	0.13	0.076	(0.534)	0.040	0.036
25	2.08	0.13	0.076	(0.532)	0.040	0.036
26	2.17	0.13	0.076	(0.530)	0.040	0.036
27	2.25	0.13	0.076	(0.528)	0.040	0.036
28	2.33	0.13	0.076	(0.526)	0.040	0.036
29	2.42	0.13	0.076	(0.524)	0.040	0.036
30	2.50	0.13	0.076	(0.521)	0.040	0.036
31	2.58	0.17	0.095	(0.519)	0.050	0.045
32	2.67	0.17	0.095	(0.517)	0.050	0.045
33	2.75	0.17	0.095	(0.515)	0.050	0.045
34	2.83	0.17	0.095	(0.513)	0.050	0.045
35	2.92	0.17	0.095	(0.511)	0.050	0.045
36	3.00	0.17	0.095	(0.509)	0.050	0.045
37	3.08	0.17	0.095	(0.507)	0.050	0.045
38	3.17	0.17	0.095	(0.505)	0.050	0.045
39	3.25	0.17	0.095	(0.502)	0.050	0.045
40	3.33	0.17	0.095	(0.500)	0.050	0.045
41	3.42	0.17	0.095	(0.498)	0.050	0.045
42	3.50	0.17	0.095	(0.496)	0.050	0.045
43	3.58	0.17	0.095	(0.494)	0.050	0.045
44	3.67	0.17	0.095	(0.492)	0.050	0.045
45	3.75	0.17	0.095	(0.490)	0.050	0.045
46	3.83	0.20	0.114	(0.488)	0.060	0.054
47	3.92	0.20	0.114	(0.486)	0.060	0.054
48	4.00	0.20	0.114	(0.484)	0.060	0.054
49	4.08	0.20	0.114	(0.482)	0.060	0.054
50	4.17	0.20	0.114	(0.480)	0.060	0.054
51	4.25	0.20	0.114	(0.478)	0.060	0.054
52	4.33	0.23	0.133	(0.476)	0.071	0.063
53	4.42	0.23	0.133	(0.474)	0.071	0.063
54	4.50	0.23	0.133	(0.472)	0.071	0.063

55	4.58	0.23	0.133	(0.470)	0.071	0.063
56	4.67	0.23	0.133	(0.467)	0.071	0.063
57	4.75	0.23	0.133	(0.465)	0.071	0.063
58	4.83	0.27	0.152	(0.463)	0.081	0.072
59	4.92	0.27	0.152	(0.461)	0.081	0.072
60	5.00	0.27	0.152	(0.459)	0.081	0.072
61	5.08	0.20	0.114	(0.457)	0.060	0.054
62	5.17	0.20	0.114	(0.455)	0.060	0.054
63	5.25	0.20	0.114	(0.453)	0.060	0.054
64	5.33	0.23	0.133	(0.452)	0.071	0.063
65	5.42	0.23	0.133	(0.450)	0.071	0.063
66	5.50	0.23	0.133	(0.448)	0.071	0.063
67	5.58	0.27	0.152	(0.446)	0.081	0.072
68	5.67	0.27	0.152	(0.444)	0.081	0.072
69	5.75	0.27	0.152	(0.442)	0.081	0.072
70	5.83	0.27	0.152	(0.440)	0.081	0.072
71	5.92	0.27	0.152	(0.438)	0.081	0.072
72	6.00	0.27	0.152	(0.436)	0.081	0.072
73	6.08	0.30	0.171	(0.434)	0.091	0.081
74	6.17	0.30	0.171	(0.432)	0.091	0.081
75	6.25	0.30	0.171	(0.430)	0.091	0.081
76	6.33	0.30	0.171	(0.428)	0.091	0.081
77	6.42	0.30	0.171	(0.426)	0.091	0.081
78	6.50	0.30	0.171	(0.424)	0.091	0.081
79	6.58	0.33	0.190	(0.422)	0.101	0.090
80	6.67	0.33	0.190	(0.420)	0.101	0.090
81	6.75	0.33	0.190	(0.419)	0.101	0.090
82	6.83	0.33	0.190	(0.417)	0.101	0.090
83	6.92	0.33	0.190	(0.415)	0.101	0.090
84	7.00	0.33	0.190	(0.413)	0.101	0.090
85	7.08	0.33	0.190	(0.411)	0.101	0.090
86	7.17	0.33	0.190	(0.409)	0.101	0.090
87	7.25	0.33	0.190	(0.407)	0.101	0.090
88	7.33	0.37	0.209	(0.405)	0.111	0.099
89	7.42	0.37	0.209	(0.404)	0.111	0.099
90	7.50	0.37	0.209	(0.402)	0.111	0.099
91	7.58	0.40	0.228	(0.400)	0.121	0.108
92	7.67	0.40	0.228	(0.398)	0.121	0.108
93	7.75	0.40	0.228	(0.396)	0.121	0.108
94	7.83	0.43	0.248	(0.394)	0.131	0.117
95	7.92	0.43	0.248	(0.393)	0.131	0.117
96	8.00	0.43	0.248	(0.391)	0.131	0.117
97	8.08	0.50	0.286	(0.389)	0.151	0.135
98	8.17	0.50	0.286	(0.387)	0.151	0.135
99	8.25	0.50	0.286	(0.385)	0.151	0.135
100	8.33	0.50	0.286	(0.384)	0.151	0.135
101	8.42	0.50	0.286	(0.382)	0.151	0.135
102	8.50	0.50	0.286	(0.380)	0.151	0.135
103	8.58	0.53	0.305	(0.378)	0.161	0.143
104	8.67	0.53	0.305	(0.376)	0.161	0.143
105	8.75	0.53	0.305	(0.375)	0.161	0.143
106	8.83	0.57	0.324	(0.373)	0.171	0.152
107	8.92	0.57	0.324	(0.371)	0.171	0.152
108	9.00	0.57	0.324	(0.369)	0.171	0.152
109	9.08	0.63	0.362	(0.368)	0.191	0.170
110	9.17	0.63	0.362	(0.366)	0.191	0.170
111	9.25	0.63	0.362	(0.364)	0.191	0.170
112	9.33	0.67	0.381	(0.362)	0.201	0.179
113	9.42	0.67	0.381	(0.361)	0.201	0.179
114	9.50	0.67	0.381	(0.359)	0.201	0.179
115	9.58	0.70	0.400	(0.357)	0.212	0.188
116	9.67	0.70	0.400	(0.355)	0.212	0.188
117	9.75	0.70	0.400	(0.354)	0.212	0.188
118	9.83	0.73	0.419	(0.352)	0.222	0.197
119	9.92	0.73	0.419	(0.350)	0.222	0.197
120	10.00	0.73	0.419	(0.349)	0.222	0.197
121	10.08	0.50	0.286	(0.347)	0.151	0.135
122	10.17	0.50	0.286	(0.345)	0.151	0.135
123	10.25	0.50	0.286	(0.344)	0.151	0.135
124	10.33	0.50	0.286	(0.342)	0.151	0.135
125	10.42	0.50	0.286	(0.340)	0.151	0.135
126	10.50	0.50	0.286	(0.339)	0.151	0.135
127	10.58	0.67	0.381	(0.337)	0.201	0.179
128	10.67	0.67	0.381	(0.335)	0.201	0.179
129	10.75	0.67	0.381	(0.334)	0.201	0.179
130	10.83	0.67	0.381	(0.332)	0.201	0.179
131	10.92	0.67	0.381	(0.330)	0.201	0.179
132	11.00	0.67	0.381	(0.329)	0.201	0.179
133	11.08	0.63	0.362	(0.327)	0.191	0.170

134	11.17	0.63	0.362	(0.326)	0.191	0.170
135	11.25	0.63	0.362	(0.324)	0.191	0.170
136	11.33	0.63	0.362	(0.322)	0.191	0.170
137	11.42	0.63	0.362	(0.321)	0.191	0.170
138	11.50	0.63	0.362	(0.319)	0.191	0.170
139	11.58	0.57	0.324	(0.318)	0.171	0.152
140	11.67	0.57	0.324	(0.316)	0.171	0.152
141	11.75	0.57	0.324	(0.314)	0.171	0.152
142	11.83	0.60	0.343	(0.313)	0.181	0.161
143	11.92	0.60	0.343	(0.311)	0.181	0.161
144	12.00	0.60	0.343	(0.310)	0.181	0.161
145	12.08	0.83	0.476	(0.308)	0.252	0.224
146	12.17	0.83	0.476	(0.307)	0.252	0.224
147	12.25	0.83	0.476	(0.305)	0.252	0.224
148	12.33	0.87	0.495	(0.304)	0.262	0.233
149	12.42	0.87	0.495	(0.302)	0.262	0.233
150	12.50	0.87	0.495	(0.301)	0.262	0.233
151	12.58	0.93	0.533	(0.299)	0.282	0.251
152	12.67	0.93	0.533	(0.298)	0.282	0.251
153	12.75	0.93	0.533	(0.296)	0.282	0.251
154	12.83	0.97	0.552	(0.295)	0.292	0.260
155	12.92	0.97	0.552	(0.293)	0.292	0.260
156	13.00	0.97	0.552	0.292	(0.292)	0.261
157	13.08	1.13	0.647	0.290	(0.342)	0.357
158	13.17	1.13	0.647	0.289	(0.342)	0.359
159	13.25	1.13	0.647	0.287	(0.342)	0.360
160	13.33	1.13	0.647	0.286	(0.342)	0.362
161	13.42	1.13	0.647	0.284	(0.342)	0.363
162	13.50	1.13	0.647	0.283	(0.342)	0.365
163	13.58	0.77	0.438	(0.281)	0.232	0.206
164	13.67	0.77	0.438	(0.280)	0.232	0.206
165	13.75	0.77	0.438	(0.279)	0.232	0.206
166	13.83	0.77	0.438	(0.277)	0.232	0.206
167	13.92	0.77	0.438	(0.276)	0.232	0.206
168	14.00	0.77	0.438	(0.274)	0.232	0.206
169	14.08	0.90	0.514	(0.273)	0.272	0.242
170	14.17	0.90	0.514	0.271	(0.272)	0.243
171	14.25	0.90	0.514	0.270	(0.272)	0.244
172	14.33	0.87	0.495	(0.269)	0.262	0.233
173	14.42	0.87	0.495	(0.267)	0.262	0.233
174	14.50	0.87	0.495	(0.266)	0.262	0.233
175	14.58	0.87	0.495	(0.265)	0.262	0.233
176	14.67	0.87	0.495	(0.263)	0.262	0.233
177	14.75	0.87	0.495	(0.262)	0.262	0.233
178	14.83	0.83	0.476	(0.261)	0.252	0.224
179	14.92	0.83	0.476	(0.259)	0.252	0.224
180	15.00	0.83	0.476	(0.258)	0.252	0.224
181	15.08	0.80	0.457	(0.257)	0.242	0.215
182	15.17	0.80	0.457	(0.255)	0.242	0.215
183	15.25	0.80	0.457	(0.254)	0.242	0.215
184	15.33	0.77	0.438	(0.253)	0.232	0.206
185	15.42	0.77	0.438	(0.251)	0.232	0.206
186	15.50	0.77	0.438	(0.250)	0.232	0.206
187	15.58	0.63	0.362	(0.249)	0.191	0.170
188	15.67	0.63	0.362	(0.248)	0.191	0.170
189	15.75	0.63	0.362	(0.246)	0.191	0.170
190	15.83	0.63	0.362	(0.245)	0.191	0.170
191	15.92	0.63	0.362	(0.244)	0.191	0.170
192	16.00	0.63	0.362	(0.242)	0.191	0.170
193	16.08	0.13	0.076	(0.241)	0.040	0.036
194	16.17	0.13	0.076	(0.240)	0.040	0.036
195	16.25	0.13	0.076	(0.239)	0.040	0.036
196	16.33	0.13	0.076	(0.238)	0.040	0.036
197	16.42	0.13	0.076	(0.236)	0.040	0.036
198	16.50	0.13	0.076	(0.235)	0.040	0.036
199	16.58	0.10	0.057	(0.234)	0.030	0.027
200	16.67	0.10	0.057	(0.233)	0.030	0.027
201	16.75	0.10	0.057	(0.232)	0.030	0.027
202	16.83	0.10	0.057	(0.230)	0.030	0.027
203	16.92	0.10	0.057	(0.229)	0.030	0.027
204	17.00	0.10	0.057	(0.228)	0.030	0.027
205	17.08	0.17	0.095	(0.227)	0.050	0.045
206	17.17	0.17	0.095	(0.226)	0.050	0.045
207	17.25	0.17	0.095	(0.225)	0.050	0.045
208	17.33	0.17	0.095	(0.224)	0.050	0.045
209	17.42	0.17	0.095	(0.222)	0.050	0.045
210	17.50	0.17	0.095	(0.221)	0.050	0.045
211	17.58	0.17	0.095	(0.220)	0.050	0.045
212	17.67	0.17	0.095	(0.219)	0.050	0.045

213	17.75	0.17	0.095	(0.218)	0.050	0.045
214	17.83	0.13	0.076	(0.217)	0.040	0.036
215	17.92	0.13	0.076	(0.216)	0.040	0.036
216	18.00	0.13	0.076	(0.215)	0.040	0.036
217	18.08	0.13	0.076	(0.214)	0.040	0.036
218	18.17	0.13	0.076	(0.213)	0.040	0.036
219	18.25	0.13	0.076	(0.212)	0.040	0.036
220	18.33	0.13	0.076	(0.211)	0.040	0.036
221	18.42	0.13	0.076	(0.210)	0.040	0.036
222	18.50	0.13	0.076	(0.209)	0.040	0.036
223	18.58	0.10	0.057	(0.208)	0.030	0.027
224	18.67	0.10	0.057	(0.207)	0.030	0.027
225	18.75	0.10	0.057	(0.206)	0.030	0.027
226	18.83	0.07	0.038	(0.205)	0.020	0.018
227	18.92	0.07	0.038	(0.204)	0.020	0.018
228	19.00	0.07	0.038	(0.203)	0.020	0.018
229	19.08	0.10	0.057	(0.202)	0.030	0.027
230	19.17	0.10	0.057	(0.201)	0.030	0.027
231	19.25	0.10	0.057	(0.200)	0.030	0.027
232	19.33	0.13	0.076	(0.199)	0.040	0.036
233	19.42	0.13	0.076	(0.198)	0.040	0.036
234	19.50	0.13	0.076	(0.197)	0.040	0.036
235	19.58	0.10	0.057	(0.196)	0.030	0.027
236	19.67	0.10	0.057	(0.195)	0.030	0.027
237	19.75	0.10	0.057	(0.194)	0.030	0.027
238	19.83	0.07	0.038	(0.193)	0.020	0.018
239	19.92	0.07	0.038	(0.193)	0.020	0.018
240	20.00	0.07	0.038	(0.192)	0.020	0.018
241	20.08	0.10	0.057	(0.191)	0.030	0.027
242	20.17	0.10	0.057	(0.190)	0.030	0.027
243	20.25	0.10	0.057	(0.189)	0.030	0.027
244	20.33	0.10	0.057	(0.188)	0.030	0.027
245	20.42	0.10	0.057	(0.188)	0.030	0.027
246	20.50	0.10	0.057	(0.187)	0.030	0.027
247	20.58	0.10	0.057	(0.186)	0.030	0.027
248	20.67	0.10	0.057	(0.185)	0.030	0.027
249	20.75	0.10	0.057	(0.184)	0.030	0.027
250	20.83	0.07	0.038	(0.184)	0.020	0.018
251	20.92	0.07	0.038	(0.183)	0.020	0.018
252	21.00	0.07	0.038	(0.182)	0.020	0.018
253	21.08	0.10	0.057	(0.182)	0.030	0.027
254	21.17	0.10	0.057	(0.181)	0.030	0.027
255	21.25	0.10	0.057	(0.180)	0.030	0.027
256	21.33	0.07	0.038	(0.179)	0.020	0.018
257	21.42	0.07	0.038	(0.179)	0.020	0.018
258	21.50	0.07	0.038	(0.178)	0.020	0.018
259	21.58	0.10	0.057	(0.177)	0.030	0.027
260	21.67	0.10	0.057	(0.177)	0.030	0.027
261	21.75	0.10	0.057	(0.176)	0.030	0.027
262	21.83	0.07	0.038	(0.176)	0.020	0.018
263	21.92	0.07	0.038	(0.175)	0.020	0.018
264	22.00	0.07	0.038	(0.174)	0.020	0.018
265	22.08	0.10	0.057	(0.174)	0.030	0.027
266	22.17	0.10	0.057	(0.173)	0.030	0.027
267	22.25	0.10	0.057	(0.173)	0.030	0.027
268	22.33	0.07	0.038	(0.172)	0.020	0.018
269	22.42	0.07	0.038	(0.172)	0.020	0.018
270	22.50	0.07	0.038	(0.171)	0.020	0.018
271	22.58	0.07	0.038	(0.171)	0.020	0.018
272	22.67	0.07	0.038	(0.170)	0.020	0.018
273	22.75	0.07	0.038	(0.170)	0.020	0.018
274	22.83	0.07	0.038	(0.169)	0.020	0.018
275	22.92	0.07	0.038	(0.169)	0.020	0.018
276	23.00	0.07	0.038	(0.168)	0.020	0.018
277	23.08	0.07	0.038	(0.168)	0.020	0.018
278	23.17	0.07	0.038	(0.168)	0.020	0.018
279	23.25	0.07	0.038	(0.167)	0.020	0.018
280	23.33	0.07	0.038	(0.167)	0.020	0.018
281	23.42	0.07	0.038	(0.167)	0.020	0.018
282	23.50	0.07	0.038	(0.166)	0.020	0.018
283	23.58	0.07	0.038	(0.166)	0.020	0.018
284	23.67	0.07	0.038	(0.166)	0.020	0.018
285	23.75	0.07	0.038	(0.166)	0.020	0.018
286	23.83	0.07	0.038	(0.165)	0.020	0.018
287	23.92	0.07	0.038	(0.165)	0.020	0.018
288	24.00	0.07	0.038	(0.165)	0.020	0.018

(Loss Rate Not Used)

Sum = 100.0 Sum = 27.2

Flood volume = Effective rainfall 2.27(In)

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 times area      10.5(Ac.)/[(In)/(Ft.)] =       2.0(Ac.Ft)
Total soil loss =      2.49(In)
Total soil loss =     2.183(Ac.Ft)
Total rainfall =      4.76(In)
Flood volume =       86691.5 Cubic Feet
Total soil loss =       95077.8 Cubic Feet
---------------------------------------------------------------------
 Peak flow rate of this hydrograph =      3.862(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    24 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
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Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0009	0.14	Q				
0+10	0.0022	0.19	Q				
0+15	0.0036	0.19	Q				
0+20	0.0053	0.26	VQ				
0+25	0.0073	0.29	VQ				
0+30	0.0093	0.29	VQ				
0+35	0.0112	0.29	VQ				
0+40	0.0132	0.29	VQ				
0+45	0.0152	0.29	VQ				
0+50	0.0176	0.35	VQ				
0+55	0.0202	0.38	VQ				
1+ 0	0.0228	0.38	VQ				
1+ 5	0.0250	0.31	VQ				
1+10	0.0270	0.29	VQ				
1+15	0.0289	0.29	VQ				
1+20	0.0309	0.29	VQ				
1+25	0.0329	0.29	VQ				
1+30	0.0348	0.29	VQ				
1+35	0.0368	0.29	VQ				
1+40	0.0387	0.29	VQ				
1+45	0.0407	0.29	VQ				
1+50	0.0431	0.35	VQ				
1+55	0.0458	0.38	VQ				
2+ 0	0.0484	0.38	VQ				
2+ 5	0.0510	0.38	|Q				
2+10	0.0536	0.38	|Q				
2+15	0.0562	0.38	|Q				
2+20	0.0589	0.38	|Q				
2+25	0.0615	0.38	|Q				
2+30	0.0641	0.38	|Q				
2+35	0.0672	0.45	|Q				
2+40	0.0705	0.48	|Q				
2+45	0.0737	0.48	|Q				
2+50	0.0770	0.48	|Q				
2+55	0.0803	0.48	|Q				
3+ 0	0.0836	0.48	|Q				
3+ 5	0.0869	0.48	|Q				
3+10	0.0901	0.48	|Q				
3+15	0.0934	0.48	|Q				
3+20	0.0967	0.48	|Q				
3+25	0.1000	0.48	|QV				
3+30	0.1032	0.48	|QV				
3+35	0.1065	0.48	|QV				
3+40	0.1098	0.48	|QV				
3+45	0.1131	0.48	|QV				
3+50	0.1168	0.54	| Q				
3+55	0.1207	0.57	| Q				
4+ 0	0.1247	0.57	| Q				
4+ 5	0.1286	0.57	| Q				
4+10	0.1325	0.57	| Q				
4+15	0.1365	0.57	| Q				
4+20	0.1409	0.64	| Q				
4+25	0.1454	0.67	| Q				
4+30	0.1500	0.67	| QV				
4+35	0.1546	0.67	| QV				
4+40	0.1592	0.67	| QV				
4+45	0.1638	0.67	| QV				
4+50	0.1688	0.73	| QV				
4+55	0.1741	0.76	| Q				
5+ 0	0.1793	0.76	| Q				
5+ 5	0.1836	0.63	| QV				

5+10	0.1876	0.57	QV			
5+15	0.1915	0.57	QV			
5+20	0.1959	0.64	QV			
5+25	0.2005	0.67	Q V			
5+30	0.2051	0.67	Q V			
5+35	0.2101	0.73	Q V			
5+40	0.2154	0.76	QV			
5+45	0.2206	0.76	QV			
5+50	0.2258	0.76	QV			
5+55	0.2311	0.76	QV			
6+ 0	0.2363	0.76	QV			
6+ 5	0.2420	0.83	QV			
6+10	0.2479	0.86	QV			
6+15	0.2538	0.86	Q V			
6+20	0.2597	0.86	Q V			
6+25	0.2656	0.86	Q V			
6+30	0.2715	0.86	Q V			
6+35	0.2779	0.92	Q V			
6+40	0.2844	0.95	Q V			
6+45	0.2910	0.95	Q V			
6+50	0.2975	0.95	Q V			
6+55	0.3041	0.95	Q V			
7+ 0	0.3106	0.95	Q V			
7+ 5	0.3172	0.95	Q V			
7+10	0.3237	0.95	Q V			
7+15	0.3303	0.95	Q V			
7+20	0.3373	1.02	Q V			
7+25	0.3445	1.05	Q V			
7+30	0.3517	1.05	Q V			
7+35	0.3594	1.11	Q V			
7+40	0.3672	1.14	Q V			
7+45	0.3751	1.14	Q V			
7+50	0.3834	1.21	Q V			
7+55	0.3920	1.24	Q V			
8+ 0	0.4005	1.24	Q V			
8+ 5	0.4099	1.37	Q V			
8+10	0.4198	1.43	Q V			
8+15	0.4296	1.43	Q V			
8+20	0.4394	1.43	Q V			
8+25	0.4492	1.43	Q V			
8+30	0.4591	1.43	Q V			
8+35	0.4694	1.49	Q V			
8+40	0.4798	1.52	Q V			
8+45	0.4903	1.52	Q V			
8+50	0.5013	1.59	Q V			
8+55	0.5124	1.62	Q V			
9+ 0	0.5235	1.62	Q V			
9+ 5	0.5356	1.75	Q V			
9+10	0.5481	1.81	Q V			
9+15	0.5605	1.81	Q V			
9+20	0.5734	1.88	Q V			
9+25	0.5865	1.90	Q V			
9+30	0.5996	1.90	Q V			
9+35	0.6132	1.97	Q V			
9+40	0.6270	2.00	Q V			
9+45	0.6407	2.00	Q V			
9+50	0.6549	2.07	Q V			
9+55	0.6694	2.09	Q V			
10+ 0	0.6838	2.09	Q V			
10+ 5	0.6949	1.62	Q V			
10+10	0.7047	1.43	Q V			
10+15	0.7146	1.43	Q V			
10+20	0.7244	1.43	Q V			
10+25	0.7342	1.43	Q V			
10+30	0.7440	1.43	Q V			
10+35	0.7562	1.77	Q V			
10+40	0.7693	1.90	Q V			
10+45	0.7824	1.90	Q V			
10+50	0.7955	1.90	Q V			
10+55	0.8086	1.90	Q V			
11+ 0	0.8217	1.90	Q V			
11+ 5	0.8344	1.83	Q V			
11+10	0.8468	1.81	Q V			
11+15	0.8593	1.81	Q V			
11+20	0.8717	1.81	Q V			
11+25	0.8842	1.81	Q V			
11+30	0.8966	1.81	Q V			
11+35	0.9081	1.67	Q V			
11+40	0.9192	1.62	Q V			

11+45	0.9304	1.62	Q	V			
11+50	0.9420	1.69	Q	V			
11+55	0.9538	1.71	Q	V			
12+ 0	0.9656	1.71	Q	V			
12+ 5	0.9806	2.19	Q	V			
12+10	0.9970	2.38	Q	V			
12+15	1.0134	2.38	Q	V			
12+20	1.0302	2.45	Q	V			
12+25	1.0473	2.47	Q	V			
12+30	1.0643	2.47	Q	V			
12+35	1.0823	2.61	Q	V			
12+40	1.1006	2.66	Q	V			
12+45	1.1190	2.66	Q	V			
12+50	1.1378	2.73	Q	V			
12+55	1.1568	2.76	Q	V			
13+ 0	1.1758	2.76	Q	V			
13+ 5	1.1999	3.50	Q	V			
13+10	1.2261	3.80	Q	V			
13+15	1.2523	3.82	Q	V			
13+20	1.2787	3.83	Q	V			
13+25	1.3052	3.85	Q	V			
13+30	1.3318	3.86	Q	V			
13+35	1.3502	2.67	Q	V			
13+40	1.3653	2.19	Q	V			
13+45	1.3803	2.19	Q	V			
13+50	1.3954	2.19	Q	V			
13+55	1.4105	2.19	Q	V			
14+ 0	1.4255	2.19	Q	V			
14+ 5	1.4425	2.46	Q	V			
14+10	1.4602	2.57	Q	V			
14+15	1.4780	2.58	Q	V			
14+20	1.4952	2.51	Q	V			
14+25	1.5123	2.47	Q	V			
14+30	1.5293	2.47	Q	V			
14+35	1.5463	2.47	Q	V			
14+40	1.5634	2.47	Q	V			
14+45	1.5804	2.47	Q	V			
14+50	1.5970	2.41	Q	V			
14+55	1.6134	2.38	Q	V			
15+ 0	1.6297	2.38	Q	V			
15+ 5	1.6457	2.31	Q	V			
15+10	1.6614	2.28	Q	V			
15+15	1.6771	2.28	Q	V			
15+20	1.6924	2.22	Q	V			
15+25	1.7074	2.19	Q	V			
15+30	1.7225	2.19	Q	V			
15+35	1.7357	1.92	Q	V			
15+40	1.7481	1.81	Q	V			
15+45	1.7606	1.81	Q	V			
15+50	1.7730	1.81	Q	V			
15+55	1.7855	1.81	Q	V			
16+ 0	1.7979	1.81	Q	V			
16+ 5	1.8034	0.79	Q	V			
16+10	1.8060	0.38	Q	V			
16+15	1.8086	0.38	Q	V			
16+20	1.8112	0.38	Q	V			
16+25	1.8138	0.38	Q	V			
16+30	1.8165	0.38	Q	V			
16+35	1.8186	0.31	Q	V			
16+40	1.8206	0.29	Q	V			
16+45	1.8225	0.29	Q	V			
16+50	1.8245	0.29	Q	V			
16+55	1.8265	0.29	Q	V			
17+ 0	1.8284	0.29	Q	V			
17+ 5	1.8313	0.42	Q	V			
17+10	1.8346	0.48	Q	V			
17+15	1.8379	0.48	Q	V			
17+20	1.8412	0.48	Q	V			
17+25	1.8444	0.48	Q	V			
17+30	1.8477	0.48	Q	V			
17+35	1.8510	0.48	Q	V			
17+40	1.8543	0.48	Q	V			
17+45	1.8575	0.48	Q	V			
17+50	1.8604	0.41	Q	V			
17+55	1.8630	0.38	Q	V			
18+ 0	1.8656	0.38	Q	V			
18+ 5	1.8682	0.38	Q	V			
18+10	1.8708	0.38	Q	V			
18+15	1.8735	0.38	Q	V			

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  18+20       1.8761      0.38  |Q        |         |         |      V  |
  18+25       1.8787      0.38  |Q        |         |         |      V  |
  18+30       1.8813      0.38  |Q        |         |         |      V  |
  18+35       1.8835      0.31  |Q        |         |         |      V  |
  18+40       1.8854      0.29  |Q        |         |         |      V  |
  18+45       1.8874      0.29  |Q        |         |         |      V  |
  18+50       1.8889      0.22  Q         |         |         |      V  |
  18+55       1.8902      0.19  Q         |         |         |      V  |
  19+ 0       1.8915      0.19  Q         |         |         |       V |
  19+ 5       1.8933      0.26  |Q        |         |         |       V |
  19+10       1.8953      0.29  |Q        |         |         |       V |
  19+15       1.8972      0.29  |Q        |         |         |       V |
  19+20       1.8997      0.35  |Q        |         |         |       V |
  19+25       1.9023      0.38  |Q        |         |         |       V |
  19+30       1.9049      0.38  |Q        |         |         |       V |
  19+35       1.9071      0.31  |Q        |         |         |       V |
  19+40       1.9090      0.29  |Q        |         |         |       V |
  19+45       1.9110      0.29  |Q        |         |         |       V |
  19+50       1.9125      0.22  Q         |         |         |       V |
  19+55       1.9138      0.19  Q         |         |         |       V |
  20+ 0       1.9151      0.19  Q         |         |         |       V |
  20+ 5       1.9169      0.26  |Q        |         |         |       V |
  20+10       1.9188      0.29  |Q        |         |         |       V |
  20+15       1.9208      0.29  |Q        |         |         |       V |
  20+20       1.9228      0.29  |Q        |         |         |       V |
  20+25       1.9247      0.29  |Q        |         |         |       V |
  20+30       1.9267      0.29  |Q        |         |         |       V |
  20+35       1.9287      0.29  |Q        |         |         |       V |
  20+40       1.9306      0.29  |Q        |         |         |       V |
  20+45       1.9326      0.29  |Q        |         |         |       V |
  20+50       1.9341      0.22  Q         |         |         |       V |
  20+55       1.9354      0.19  Q         |         |         |       V |
  21+ 0       1.9367      0.19  Q         |         |         |       V |
  21+ 5       1.9385      0.26  |Q        |         |         |       V |
  21+10       1.9405      0.29  |Q        |         |         |        V|
  21+15       1.9424      0.29  |Q        |         |         |        V|
  21+20       1.9439      0.22  Q         |         |         |        V|
  21+25       1.9452      0.19  Q         |         |         |        V|
  21+30       1.9465      0.19  Q         |         |         |        V|
  21+35       1.9483      0.26  |Q        |         |         |        V|
  21+40       1.9503      0.29  |Q        |         |         |        V|
  21+45       1.9523      0.29  |Q        |         |         |        V|
  21+50       1.9538      0.22  Q         |         |         |        V|
  21+55       1.9551      0.19  Q         |         |         |        V|
  22+ 0       1.9564      0.19  Q         |         |         |        V|
  22+ 5       1.9582      0.26  |Q        |         |         |        V|
  22+10       1.9601      0.29  |Q        |         |         |        V|
  22+15       1.9621      0.29  |Q        |         |         |        V|
  22+20       1.9636      0.22  Q         |         |         |        V|
  22+25       1.9649      0.19  Q         |         |         |        V|
  22+30       1.9662      0.19  Q         |         |         |        V|
  22+35       1.9675      0.19  Q         |         |         |        V|
  22+40       1.9688      0.19  Q         |         |         |        V|
  22+45       1.9701      0.19  Q         |         |         |        V|
  22+50       1.9714      0.19  Q         |         |         |        V|
  22+55       1.9728      0.19  Q         |         |         |        V|
  23+ 0       1.9741      0.19  Q         |         |         |        V|
  23+ 5       1.9754      0.19  Q         |         |         |        V|
  23+10       1.9767      0.19  Q         |         |         |        V|
  23+15       1.9780      0.19  Q         |         |         |        V|
  23+20       1.9793      0.19  Q         |         |         |        V|
  23+25       1.9806      0.19  Q         |         |         |        V|
  23+30       1.9819      0.19  Q         |         |         |        V|
  23+35       1.9832      0.19  Q         |         |         |        V|
  23+40       1.9845      0.19  Q         |         |         |        V|
  23+45       1.9859      0.19  Q         |         |         |        V|
  23+50       1.9872      0.19  Q         |         |         |        V|
  23+55       1.9885      0.19  Q         |         |         |        V|
  24+ 0       1.9898      0.19  Q         |         |         |        V|
  24+ 5       1.9902      0.05  Q         |         |         |         V
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EXHIBITS

IN THE CITY OF RANCHO MIRAGE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

PRELIMINARY HYDROLOGY PLAN

FOR

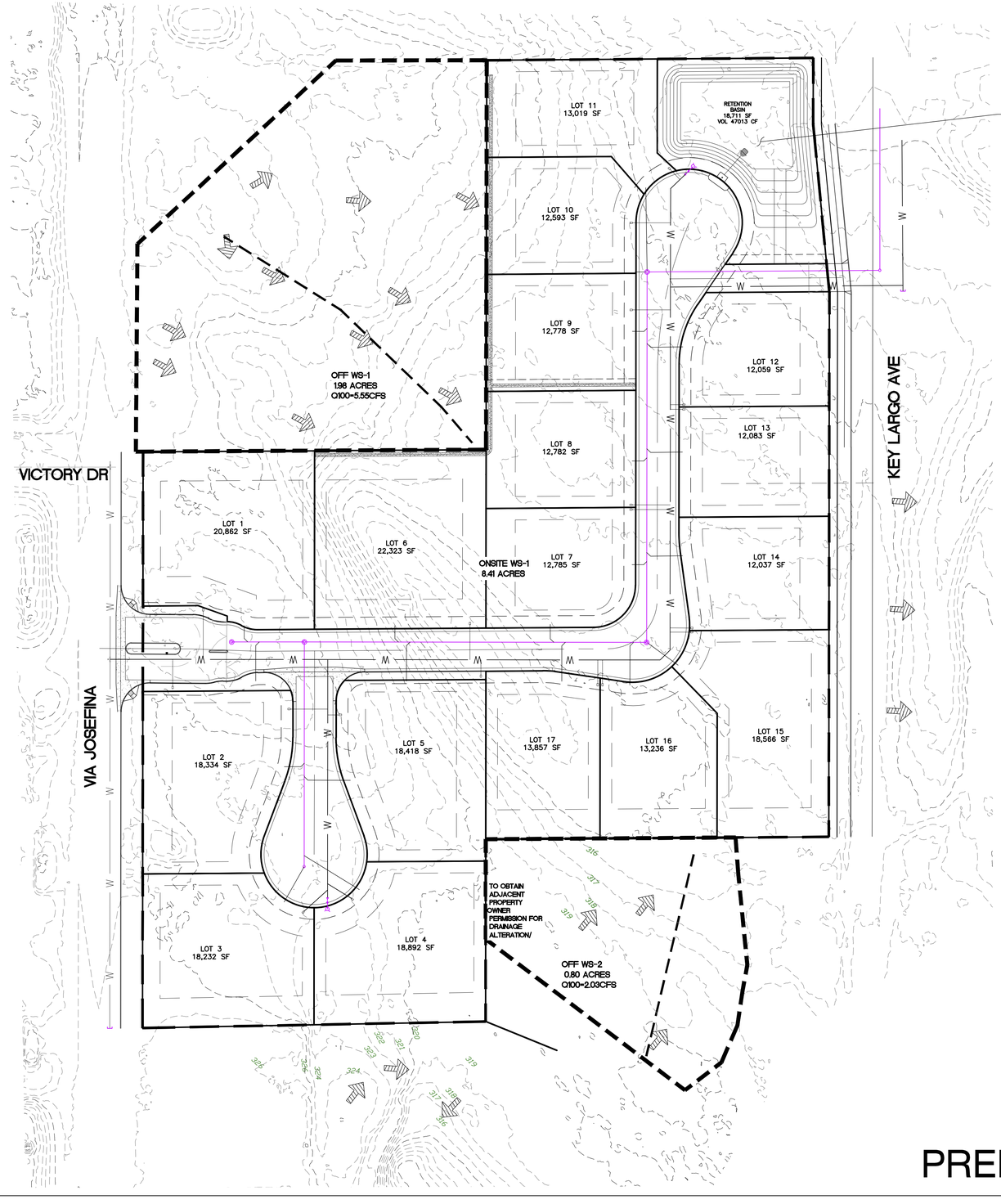
TENTATIVE TRACT MAP NO.38041

APNS: 685-080-031, -010 & 685-030-006

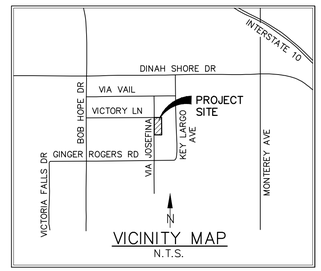
NORTH

0 50' 100' 150' 200'

SCALE 1"=50'



PROP. RETENTION BASIN: WORST CASE EVENT
ONSITE RUN-ON AND PROPOSED ONSITE:
100-YEAR / 6-HOUR STORM.
PRE-INFILTRATION RUNOFF =68,120CU-FT
POST-INFILTRATION PEAK RUNOFF =43,736CU-FT
BASIN DEPTH=5FT
BASIN VOLUME CAPACITY=47,001 CU-FT
DESIGN INFILTRATION 5IN/HR
100 YEAR PEAK WATER DEPTH=4.74FT



VICINITY MAP
N.T.S.

LEGEND

- WATERSHED AREA
- SUB-WATERSHED AREA
- PROPOSED FLOW PATH
- ONSITE FLOW DIRECTION
- OFFSITE RUN-ON FLOW DIRECTION
- XXX EXISTING CONTOUR ELEVATION

PRELIMINARY

FOMOTOR ENGINEERING
225 S. CIVIC DRIVE, SUITE 1-5
PALM SPRINGS, CA. 92262
(760) 323-1842 FAX (760) 323-1742

FOR REVIEW PURPOSES

PHILLIP K. FOMOTOR, RCE 47284

DATE: 06/07/2023

SHEET 1 OF SHEET 1

LANDMARK
Geo-Engineers and Geologists

780 N. 4th Street
El Centro, CA 92243
(760) 370-3000
(760) 337-8900 fax

77-948 Wildcat Drive
Palm Desert, CA 92211
(760) 360-0665
(760) 360-0521 fax

December 15, 2023

Mr. Mark Howard
La Paloma Homes
P.O. Box 10179
Palm Desert, CA 92255

Subject: TTM 38041
Rancho Mirage, California
LCI Report No.: LP18149

References: Geotechnical Report for APNs 685-030-006 & 685-080-031, prepared by ***LandMark Consultants, Inc.,*** dated November 9, 2018.

Preliminary Grading Plan for TTM 38041, prepared by Fomotor Engineering, preparation date October 3, 2023.

Dear Mr. Howard:

As requested, ***LandMark Consultants, Inc.,*** is providing an update letter for the referenced geotechnical report for APNs 685-030-006 & 685-080-010 and 031 located on the south-east corner of Victory Lane and Via Josefina, Rancho Cucamonga, California. The initial field investigation was conducted in September 2016.

Our site visit on December 11, 2023, found that the site conditions were similar as those encountered during the initial site investigation conducted in October 2018. Based on our present field observations and the proposed single-family residential project, it is our opinion that the findings, recommendations, and conclusions in the referenced geotechnical investigation report are still applicable, except for the seismic parameters and site preparation.

Faulting

The project site is located in the seismically active Coachella Valley of southern California with numerous mapped faults of the San Andreas Fault System traversing the region. We have performed a computer-aided search of known faults or seismic zones that lie within a 43-mile (69 kilometer) radius of the project site (Table 1).

Review of the current Alquist-Priolo Earthquake Fault Zone maps (CGS, 2000a) indicates that the nearest mapped Earthquake Fault Zone is the San Andreas – San Bernardino (south) fault located approximately 3.3 mile north-east of the project site.

General Ground Motion Analysis

The project site is considered likely to be subjected to moderate to strong ground motion from earthquakes in the region. Ground motions are dependent primarily on the earthquake magnitude and distance to the seismogenic (rupture) zone. Acceleration magnitudes also are dependent upon attenuation by rock and soil deposits, direction of rupture and type of fault; therefore, ground motions may vary considerably in the same general area.

2022 CBC General Ground Motion Parameters: The California Building Code (CBC) requires that a site-specific ground motion hazard analysis be performed in accordance with ASCE 7-16 Section 11.4.8 (ASCE, 2016) for structures on Site Class D with S_1 greater than or equal to 0.2 and Site Class E sites with S_s greater than or equal to 1.0 (CBC, 2022). **This project site has been classified as Site Class D and has an S1 value of 0.76, which would require a site-specific ground motion hazard analysis**. However, ASCE 7-16 Section 11.4.8 Supplement 3 provides exceptions which permit the use of conservative values of design parameters for certain conditions for Site Class D and E sites in lieu of a site-specific hazard analysis. The exceptions are:

- Site Class D sites: A ground motion hazard analysis is not required where the value of the parameter S_{MI} determined by Equation 11.4-2 is increased by 50% for all applications of S_{MI} in ASCE 7-16. The resulting value of the parameter S_{DI} determined by ASCE 7-16 Equation 11.4-4 shall be used for all applications of S_{DI} in ASCE 7-16.

- Site Class E sites: A ground motion hazard analysis is not required:
  a. Where the equivalent lateral force procedure is used for design and the value of CS is determined by ASCE 7-16 Equation 12.8-2 for all values of T, or
  b. Where (i) the value of Sai is determined by ASCE 7-16 Equation 15.7-10 for all values of Ti and (ii) the value of the parameter is replaced with 1.5 in ASCE 7-16 Equation 15.7-10 and ASCE 7-16 Equation 15.7-11.

Based on our understanding of the proposed development, the seismic design parameters presented in Table 2 were calculated assuming that one of the exceptions listed above applies to the proposed structures at this site. **However, the structural engineer should verify that one of the exceptions**

is applicable to the proposed structures. If none of the exceptions apply, our office should be consulted to perform a site-specific ground motion hazard analysis.

The 2022 CBC general ground motion parameters are based on the Risk-Targeted Maximum Considered Earthquake (MCE_R). The Structural Engineers Association of California (SEAOC) and Office of Statewide Health Planning and Development (OSHPD) Seismic Design Maps Web Application (SEAOC, 2020) was used to obtain the site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters. Design spectral response acceleration parameters are defined as the earthquake ground motions that are two-thirds (2/3) of the corresponding MCE_R ground motions. The Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration adjusted for soil site class effects (PGA_M) value to be used for liquefaction and seismic settlement analysis in accordance with 2022 CBC Section 1803A.5.12 ($PGA_M = F_{PGA}*PGA$) is estimated at 0.87g for the project site. ***Design earthquake ground motion parameters are provided in Table 2.***

Site Preparation

Clearing and Grubbing: Any surface improvements, debris or vegetation including grass, brush, and weeds, on the site at the time of construction should be removed from the construction area. Root balls should be completely excavated. Organic stripping should be hauled from the site and not used as fill. *Any trash, construction debris, concrete slabs, old pavement, landfill, and buried obstructions such as old foundations, swimming pool and utility lines exposed during rough grading should be traced to the limits of the foreign material by the grading contractor and removed under our supervision. Any excavations resulting from site clearing should be dish-shaped to the lowest depth of disturbance and backfilled under the observation of the geotechnical engineer's representative.*

Building Pad Preparation: The existing surface soil within the proposed house pad areas should be removed to 18 inches below the lowest foundation grades or 36 inches below the existing grade (whichever deeper), extending five feet beyond all exterior wall/column lines (including adjacent concrete areas). The exposed sub-grade should be scarified to a depth of 8 inches, uniformly moisture conditioned to at least 2% over optimum moisture content and re-compacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods.

Auxiliary Structures Foundation Preparation: Auxiliary structures such as free standing or retaining walls should have footings extended to a minimum of 18 inches below grade. The existing soil beneath the structure foundation prepared in the manner described for the house pad except the preparation needed only to extend 18 inches below and beyond the footing.

Sidewalk and Concrete Hardscape Areas: In areas other than the building pad which are to receive concrete slabs, the ground surface should be over-excavated to a depth of 8 to 12 inches, uniformly moisture conditioned to at least 2% over optimum moisture, and re-compacted to at least 90% of ASTM D1557 maximum density.

Street Subgrade Preparation: The native soils in street areas should be removed and recompacted to 12 inches below the design subgrade elevation. Engineered fill in street areas should be uniformly moisture conditioned to at least 2% over optimum moisture, placed in layers not more than 6 to 8 inches in thickness and mechanically compacted to a minimum of 90% of the ASTM D1557 maximum dry density.

The native granular soil is suitable for use as compacted fill and utility trench backfill. The native soil should be placed in maximum 8-inch lifts (loose), uniformly moisture conditioned to at least 2% of optimum moisture content and re-compacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods.

Imported fill soil (if needed) should be like onsite soil or non-expansive, granular soil meeting the USCS classifications of SM, SP-SM, or SW-SM with a maximum rock size of 3 inches. The geotechnical engineer should approve imported fill soil sources before hauling material to the site. Imported granular fill should be placed in lifts no greater than 8 inches in loose thickness, uniformly moisture conditioned to at least 2% over optimum moisture content and re-compacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods.

Closure

We have prepared this report for your exclusive use in accordance with the generally accepted geotechnical engineering practice as it existed within the site area at the time of our study. No warranty is expressed or implied. It should be noted that the submitted plans were not reviewed for conformance with other clients', governmental or consultant requirements.

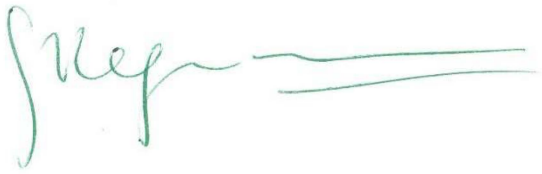
We recommend that ***Landmark Consultants, Inc.*** be retained to provide tests and observations services during construction. *The geotechnical engineering firm providing such tests and observations shall become the geotechnical engineer of record and assume responsibility for the project.*

Landmark Consultants, Inc. *recommendations for this site are, to a high degree, dependent upon appropriate quality control of subgrade preparation, fill placement, and foundation construction. Accordingly, the findings and professional opinions in this report are contingent upon the opportunity for* ***Landmark Consultants, Inc.*** *to observe grading operations and foundation excavations for the proposed construction.*

If parties other than ***Landmark Consultants, Inc.*** *are engaged to provide observation and testing services during construction, such parties must be notified that they will be required to assume complete responsibility as the geotechnical engineer of record for the geotechnical phase of the project by concurring with the recommendations in this report and/or by providing alternative recommendations.*

Additional information concerning the scope and cost of these services can be obtained from our office. We appreciate the opportunity to be of service. Should you have any questions, please call our office at (760)360-0665.

Sincerely Yours,
LandMark Consultants, Inc.



Greg M. Chandra, P.E., M.ASCE
Principal Engineer

Attachment: Geotechnical Report for APNs 685-030-006 & 685-080-031, prepared by Landmark Consultants, Inc., dated September 9, 2018.

Table 1
Summary of Characteristics of Closest Known Active Faults

Fault Name	Approximate Distance (miles)	Approximate Distance (km)	Maximum Moment Magnitude (Mw)	Fault Length (km)	Slip Rate (mm/yr)
San Andreas - San Bernardino (South)	3.3	5.4	7.4	103 ± 10	30 ± 7
Garnet Hill *	4.7	7.5			
San Andreas - San Bernardino (North)	5.6	8.9	7.5	103 ± 10	24 ± 6
San Andreas - Coachella	9.5	15.2	7.2	96 ± 10	25 ± 5
Indio Hills *	9.6	15.4			
Blue Cut *	11.3	18.0			
Eureka Peak	12.0	19.3	6.4	19 ± 2	0.6 ± 0.4
Burnt Mtn.	17.9	28.7	6.5	21 ± 2	0.6 ± 0.4
Morongo *	19.8	31.7			
San Jacinto - Anza	21.3	34.1	7.2	91 ± 9	12 ± 6
Pinto Mtn.	21.5	34.4	7.2	74 ± 7	2.5 ± 2
San Jacinto - Coyote Creek	24.4	39.0	6.8	41 ± 4	4 ± 2
Landers	25.3	40.5	7.3	83 ± 8	0.6 ± 0.4
San Jacinto - San Jacinto Valley	31.0	49.6	6.9	43 ± 4	12 ± 6
Pisgah Mtn. - Mesquite Lake	31.7	50.8	7.3	89 ± 9	0.6 ± 0.4
Johnson Valley (northern)	34.7	55.5	6.7	35 ± 4	0.6 ± 0.4
S. Emerson - Copper Mtn.	34.8	55.8	7	54 ± 5	0.6 ± 0.4
North Frontal Fault Zone - Eastern	35.9	57.4	6.7	27 ± 3	0.5 ± 0.3
Lenwood - Lockhart - Old Woman Springs	40.6	65.0	7.5	145 ± 15	0.6 ± 0.4
Calico-Hidalgo	41.2	65.9	7.3	95 ± 10	0.6 ± 0.4
Hot Springs *	41.5	66.3			
San Jacinto - Borrego	43.0	68.8	6.6	29 ± 3	4 ± 2

* Note: Faults not included in CGS database.

Table 2
2022 California Building Code (CBC) and ASCE 7-16 Seismic Parameters

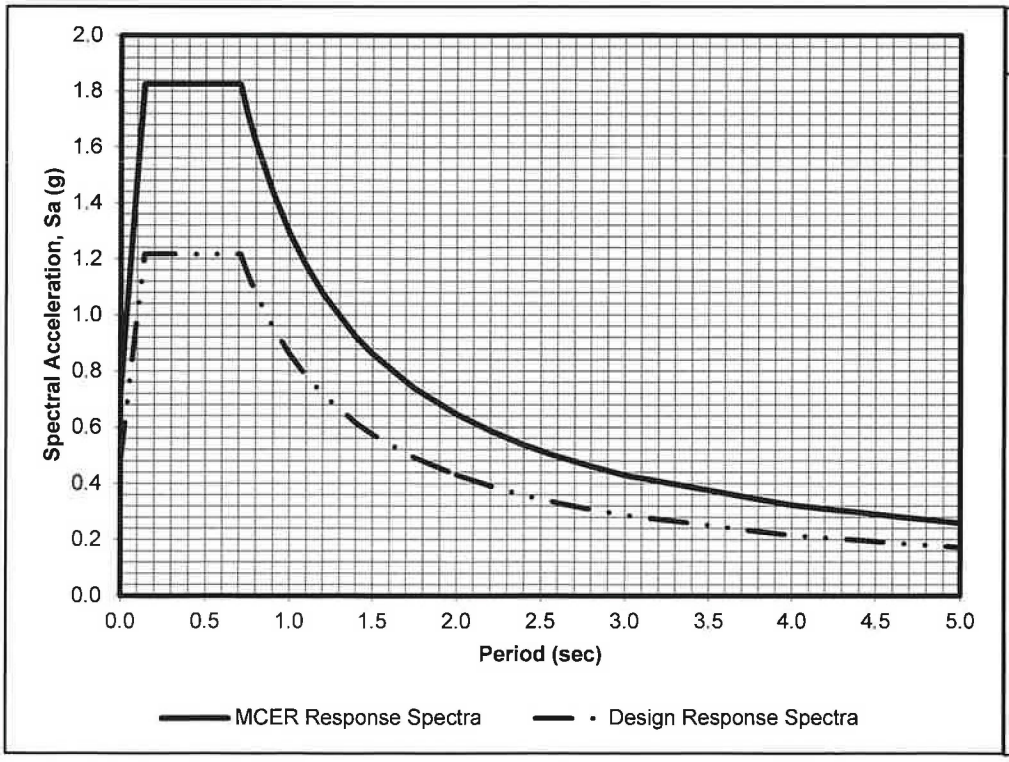
			ASCE 7-16 Reference
Soil Site Class:	D		Table 20.3-1
Latitude:	33.7981	N	
Longitude:	-116.3979	W	
Risk Category:	II		
Seismic Design Category:	E		

Maximum Considered Earthquake (MCE) Ground Motion

Mapped MCE_G Short Period Spectral Response	S_s	1.826 g	ASCE Figure 22-1	
Mapped MCE_R 1 second Spectral Response	S_1	0.760 g	ASCE Figure 22-2	
Short Period (0.2 s) Site Coefficient	F_a	1.00	ASCE Table 11.4-1	
Long Period (1.0 s) Site Coefficient	F_v	1.70	ASCE Table 11.4-2	
MCE_G Spectral Response Acceleration Parameter (0.2 s)	S_{MS}	1.826 g	= Fa * S_s	ASCE Equation 11.4-1
MCE_G Spectral Response Acceleration Parameter (1.0 s)	S_{M1}	1.292 g	= Fv * S_1	ASCE Equation 11.4-2

Design Earthquake Ground Motion

Design Spectral Response Acceleration Parameter (0.2 s)	S_{DS}	1.217 g	= 2/3*S_{MS}	ASCE Equation 11.4-3
Design Spectral Response Acceleration Parameter (1.0 s)	S_{D1}	0.861 g	= 2/3*S_{M1}	ASCE Equation 11.4-4
Risk Coefficient at Short Periods (less than 0.2 s)	C_{RS}	0.892		ASCE Figure 22-17
Risk Coefficient at Long Periods (greater than 1.0 s)	C_{R1}	0.878		ASCE Figure 22-18
	T_L	8.00 sec		ASCE Figure 22-12
	T_O	0.14 sec	=0.2*S_{D1}/S_{DS}	
	T_S	0.71 sec	=S_{D1}/S_{DS}	
Peak Ground Acceleration	PGA_M	0.87 g		ASCE Equation 11.8-1



Period T (sec)	Sa (g)	MCE_R Sa (g)
0.00	0.49	0.73
0.14	1.22	1.83
0.71	1.22	1.83
0.75	1.15	1.72
0.80	1.08	1.62
0.90	0.96	1.44
1.00	0.86	1.29
1.10	0.78	1.17
1.20	0.72	1.08
1.20	0.72	1.08
1.40	0.62	0.92
1.50	0.57	0.86
1.75	0.49	0.74
2.00	0.43	0.65
2.20	0.39	0.59
2.40	0.36	0.54
2.60	0.33	0.50
2.80	0.31	0.46
3.00	0.29	0.43
4.00	0.22	0.32
5.00	0.17	0.26

APPENDIX A

LANDMARK
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November 9, 2018

Mr. Mark Howard
La Paloma Homes, Inc.
P.O. Box 10179
Palm Desert, CA 92245

Geotechnical Report
APNs 685-030-006 & 685-080-031
Rancho Mirage, California
LCI Report No.: LP18149

Dear Mr. Howard:

As per your request, ***LandMark Consultants, Inc.*** is providing the following geotechnical report for the proposed single-family residential project located at the southeast corner of Victory Lane and Via Josefina in the city of Rancho Mirage, California. The proposed development will consist of fifteen (15) new single-family residential homes, each with a garage and concrete driveway. Each residential home will be a one story, wood or metal frame structure with shallow reinforced concrete foundations and slab-on-grade concrete floors.

Purpose of Work

The purpose of this study was to investigate the upper 12 feet of subsurface soil at selected locations within the site for evaluation of physical/engineering properties. From the analysis of the field and laboratory data, professional opinions were developed and are provided in this report regarding geotechnical conditions at this site and the effect on design and construction.

Field Exploration

Subsurface exploration was performed on August 30, 2018 using a backhoe to excavate five (5) exploratory test pits to an approximate depth of 10 to 12 feet below the existing ground surface. The test pits locations are shown on the Site and Exploration Plan (Plate A-2). Bulk samples were obtained at selected depths in the test pits. The test pits were located by taped or paced measurements and should be considered approximate.

Our senior engineer maintained logs of the test pits during exploration. The logs were edited in final form after a review of retrieved samples and the field and laboratory data. The test pit logs are presented on Plates B-1 thru B-5 in Appendix B. Soils encountered have been classified according to the Unified Soil Classification System. A key to the test pit logs is presented on Plate B-6. The stratification lines shown on the subsurface logs represent the approximate boundaries between the various strata. However, the transition from one stratum to another may be gradual over some range of depth.

After logging and sampling the soil, the exploratory test pits were backfilled with the excavated material. The backfill was loosely placed and was not compacted to the requirements specified for engineered fill.

Laboratory Testing

Laboratory tests were conducted on selected bulk soil samples to aid in classification and evaluation of selected properties of the site soils. The tests were conducted in general conformance to the procedures of the American Society for Testing and Materials (ASTM) or other standardized methods as referenced below. The laboratory testing program consisted of the following tests:

- Grain Size Analysis (ASTM D422) – used for soil classification
- Moisture-Density Relationship (ASTM D1557) – used for soil compaction determinations
- Chemical Analyses (soluble sulfates & chlorides, pH, and resistivity) (Caltrans Methods) – used for concrete mix evaluations and corrosion protection requirements

The laboratory test results are presented on the subsurface logs and on Plates C-1 through C-4 in Appendix C. Engineering parameters of soil strength, compressibility, and relative density utilized for developing design criteria provided within this report were extrapolated from data obtained from the field and laboratory testing program.

Site Conditions

The project site is irregular shape in plain view, elongated in the north-south direction. The site is a vacant desert land and covered in scattered native vegetation. Via Josefina, a paved two-lane residential street, abuts the west margin of the project site and Key Largo Avenue (partially developed) is located to the east. Adjacent properties are flat-lying and are approximately at the same and lower elevation with this site. Single family residential homes are located across Via Josefina to the west, a church complex to the north, and vacant desert land to the east and south.

The project site lies at an elevation of approximately 315 feet above mean sea level (AMSL) in the Coachella Valley region of the California low desert. Annual rainfall in this arid region is less than 4 inches per year with four months of average summertime temperatures above 100 °F. Winter temperatures are mild, seldom reaching freezing.

Subsurface Soils

Subsurface soils encountered during the field exploration conducted on August 30, 2018 consist of dry, medium dense sand (SP-SM) soils to a depth of 12 feet, the maximum depth of exploration. The near surface soils are non-expansive in nature. The subsurface logs (Plates B-1 thru B-5) depict the stratigraphic relationships of the various soil types.

Groundwater

Groundwater was not encountered in the borings during the time of exploration. The well information collected near the subject site (Well 338195N1163903W001), has indicated that the ground water level ranges from 194 feet to 205 feet below the ground surfaces in the last 7 years.

There is uncertainty in the accuracy of short-term water level measurements. Groundwater levels may fluctuate with precipitation, irrigation of adjacent properties, drainage, and site grading. The groundwater level noted should not be interpreted to represent an accurate or permanent condition. Based on the regional topography, groundwater flow is assumed to be generally towards the north-west within the site area. Flow directions may vary locally in the vicinity of the site.

Historic groundwater records in the vicinity of the project site indicate that groundwater has fluctuated between 100 and 215 feet below the ground surface over the last 60 years according to a report "Coachella Valley Investigation" conducted by the Department of Water Resources, published July 1964.

Geologic Setting

The project site is located in the Coachella Valley portion of the Salton Trough physiographic province. The Salton Trough is a geologic structural depression resulting from large scale regional faulting. The trough is bounded on the northeast by the San Andreas Fault and Chocolate Mountains and the southwest by the Peninsular Range and faults of the San Jacinto Fault Zone. The Salton Trough represents the northward extension of the Gulf of California, containing both marine and non-marine sediments since the Miocene Epoch. Tectonic activity that formed the trough continues at a high rate as evidenced by deformed young sedimentary deposits and high levels of seismicity. Figure 1 shows the location of the site in relation to regional faults and physiographic features.

The surrounding regional geology includes the Peninsular Ranges (Santa Rosa and San Jacinto Mountains) to the south and west, the Salton Basin to the southeast, and the Transverse Ranges (Little San Bernardino and Orocopia Mountains) to the north and east. Hundreds of feet to several thousand feet of Quaternary fluvial, lacustrine, and aeolian soil deposits underlie the Coachella Valley.

The southeastern part of the Coachella Valley lies below sea level. In the geologic past, the ancient Lake Cahuilla submerged the area. Calcareous tufa deposits may be observed along the ancient shoreline as high as elevation 45 feet above mean seal level (AMSL) along the Santa Rosa Mountains from La Quinta southward. Lacustrine (lake bed) deposits comprise the subsurface soils over much of the eastern Coachella Valley with alluvial outwash along the flanks of the valley.

Faulting

The project site is located in the seismically active Coachella Valley of southern California with numerous mapped faults of the San Andreas Fault System traversing the region. We have performed a computer-aided search of known faults or seismic zones that lie within a 43-mile (69 kilometer) radius of the project site (Table 1).

A fault map illustrating known active faults relative to the site is presented on Figure 1, *Regional Fault Map*. Figure 2 shows the project site in relation to local faults. The criterion for fault classification adopted by the California Geological Survey defines Earthquake Fault Zones along active or potentially active faults.

An active fault is one that has ruptured during Holocene time (roughly within the last 11,000 years). A fault that has ruptured during the last 1.8 million years (Quaternary time), but has not been proven by direct evidence to have not moved within Holocene time is considered to be potentially active. A fault that has not moved during Quaternary time is considered to be inactive.

Review of the current Alquist-Priolo Earthquake Fault Zone maps (CGS, 2000a) indicates that the nearest mapped Earthquake Fault Zone is the San Andreas-San Bernardino (South) fault located approximately 3.3 miles northeast of the project site.

General Ground Motion Analysis

The project site is considered likely to be subjected to moderate to strong ground motion from earthquakes in the region. Ground motions are dependent primarily on the earthquake magnitude and distance to the seismogenic (rupture) zone. Acceleration magnitudes also are dependent upon attenuation by rock and soil deposits, direction of rupture and type of fault; therefore, ground motions may vary considerably in the same general area.

CBC General Ground Motion Parameters: The 2016 CBC general ground motion parameters are based on the Risk-Targeted Maximum Considered Earthquake (MCE_R). The U.S. Geological Survey "U.S. Seismic Design Maps Web Application" (USGS, 2018) was used to obtain the site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters. ***The site soils have been classified as Site Class D (stiff soil profile).***

Design spectral response acceleration parameters are defined as the earthquake ground motions that are two-thirds (2/3) of the corresponding MCE_R ground motions. Design earthquake ground motion parameters are provided in Table 2. ***A Risk Category II was determined using Table 1604.5 and the Seismic Design Category is E since S_1 is greater than 0.75.***

The Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration (PGA_M) value was determined from the "U.S. Seismic Design Maps Web Application" (USGS, 2018) for liquefaction and seismic settlement analysis in accordance with 2016 CBC Section 1803.5.12 and CGS Note 48 ($PGA_M = F_{PGA}*PGA$). ***A PGA_M value of 0.75g has been determined for the project site.***

Seismic and Other Hazards

► **Groundshaking.** The primary seismic hazard at the project site is the potential for strong groundshaking during earthquakes along the San Andreas fault. A further discussion of groundshaking follows above.

► **Surface Rupture.** The project site does not lie within a State of California, Alquist-Priolo Earthquake Fault Zone. Surface fault rupture is considered to be unlikely at the project site because of the well-delineated fault lines through the Coachella Valley as shown on USGS and CDMG maps. However, because of the high tectonic activity and deep alluvium of the region, we cannot preclude the potential for surface rupture on undiscovered or new faults that may underlie the site.

► **Liquefaction.** Liquefaction is unlikely to be a potential hazard at the site, due to groundwater deeper than 50 feet (the maximum depth that liquefaction is known to occur).

Other Potential Geologic Hazards.

► **Landsliding.** The hazard of landsliding is unlikely due to the regional planar topography. No ancient landslides are shown on geologic maps of the region and no indications of landslides were observed during our site investigation.

► **Volcanic hazards.** The site is not located in proximity to any known volcanically active area and the risk of volcanic hazards is considered very low.

► **Tsunamis, sieches, and flooding.** The site does not lie near any large bodies of water, so the threat of tsunami, sieches, or other seismically-induced flooding is unlikely. The site is located within Other Flood Areas, Zone X (as shown on Plate A-8). The areas of 1% annual chance flood with average depth of less than 1 foot or with drainage area less than 1 square mile.

► **Expansive soil.** The near surface soils at the project site consist of silty sands/sands which are non-expansive.

Site Preparation

Clearing and Grubbing: Any surface improvements, debris or vegetation including grass, brush, and weeds, on the site at the time of construction should be removed from the construction area. Root balls should be completely excavated. Organic stripping should be hauled from the site and not used as fill. *Any trash, construction debris, and buried obstructions such as sprinkler and leach lines exposed during rough grading should be traced to the limits of the foreign material by the grading contractor and removed under our supervision.* Any excavations resulting from site clearing should be dish-shaped to the lowest depth of disturbance and backfilled under the observation of the geotechnical engineer's representative.

Building Pad Preparation: The existing surface soil within the proposed building pad should be removed to 18 inches below the lowest foundation grade or 36 inches below the original grade (whichever is deeper), extending five feet beyond all exterior wall/column lines (including adjacent concrete areas). Exposed sub-grade should be scarified to a depth of 8 inches, uniformly moisture conditioned to at least 2% over optimum moisture content and re-compacted a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods.

The native granular soil is suitable for use as compacted fill and utility trench backfill. The native soil should be placed in maximum 8 inches lifts (loose), uniformly moisture conditioned to at least 2% of optimum moisture content, and re-compacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods.

Imported fill soil (if needed) should similar to onsite soil or non-expansive, granular soil meeting the USCS classifications of SM, SP-SM, or SW-SM with a maximum rock size of 3 inches. The geotechnical engineer should approve imported fill soil sources before hauling material to the site. Imported granular fill should be placed in lifts no greater than 8 inches in loose thickness, uniformly moisture conditioned to at least 2% over optimum moisture content, and re-compacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods.

In areas other than the house pad which are to receive concrete slabs and pavements, the ground surface should be over-excavated to a depth of 18 inches, uniformly moisture conditioned to at least 2% over optimum moisture content, and re-compacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods

Soil Bearing Values and Lateral Loads

The subsurface soils consist of sand with some gravel to maximum penetrated. An allowable soil bearing pressure of 1,800 psf could be used. Passive resistance of lateral earth pressure may be calculated using an equivalent fluid pressure of 300 pcf to resist lateral loadings. The top one foot of embedment should not be considered in computing passive resistance unless the adjacent area is confined by a slab or pavement. An allowable friction coefficient of 0.45 may also be used at the base of the footings to resist lateral loading. Static earth pressure equivalent to that exerted by a fluid weighing 35 pcf for unrestrained (active) conditions and 50 pcf for restrained (at-rest) conditions.

Foundation

All exterior and interior foundations should be embedded a minimum of 18 inches deep. Continuous wall footings should have a minimum width of 12 inches. Spread footings should have a minimum width of 24 inches and should not be structurally isolated. ***Recommended concrete reinforcement and sizing for all footings should be provided by the structural engineer.***

Slabs-on-Grade

Concrete slabs and flatwork should be a minimum of 4 inches thick. The concrete floor slabs may either be monolithically placed with the foundation or dowelled after footing placement. The concrete slabs may be placed on granular subgrade that has been compacted at least 90% relative compaction (ASTM D1557). ***Slab thickness and steel reinforcement should be determined by the design engineer.***

American Concrete Institute (ACI) guidelines (ACI 302.1R-04 Chapter 3, Section 3.2.3) provide recommendations regarding the use of moisture barriers beneath concrete slabs. The concrete floor slabs should be underlain by a 10-mil polyethylene vapor retarder that works as a capillary break to reduce moisture migration into the slab section. All laps and seams should be overlapped 6-inches or as recommended by the manufacturer. The vapor retarder should be protected from puncture. The joints and penetrations should be sealed with the manufacturer's recommended adhesive, pressure-sensitive tape, or both. The vapor retarder should extend a minimum of 12 inches into the footing excavations. The vapor retarder should be covered by 4 inches of clean sand (Sand Equivalent SE>30) unless placed on 2.5 feet of granular fill, in which case, the vapor retarder may lie directly on the granular fill with 2 inches of clean sand cover.

Placing sand over the vapor retarder may increase moisture transmission through the slab, because it provides a reservoir for bleed water from the concrete to collect. The sand placed over the vapor retarder may also move and mound prior to concrete placement, resulting in an irregular slab thickness. For areas with moisture sensitive flooring materials, ACI recommends that concrete slabs be placed without a sand cover directly over the vapor retarder, provided that the concrete mix uses a low-water cement ratio and concrete curing methods are employed to compensate for release of bleed water through the top of the slab. The vapor retarder should have a minimum thickness of 15-mil (Stego-Wrap or equivalent).

Control joints should be provided in all concrete slabs-on-grade at a maximum spacing (in feet) of 2 to 3 times the slab thickness (in inches) as recommended by American Concrete Institute (ACI) guidelines. All joints should form approximately square patterns to reduce randomly oriented contraction cracks. Contraction joints in the slabs should be tooled at the time of the pour or sawcut (¼ of slab depth) within 6 to 8 hours of concrete placement. Construction (cold) joints in foundations and area flatwork should either be thickened butt-joints with dowels or a thickened keyed-joint designed to resist vertical deflection at the joint. All joints in flatwork should be sealed to prevent moisture, vermin, or foreign material intrusion. Precautions should be taken to prevent curling of slabs in this arid desert region (refer to ACI guidelines).

All independent concrete flatworks should be underlain by 12 inches of moisture conditioned and compacted soils. All flatwork should be jointed in square patterns and at irregularities in shape at a maximum spacing of 10 feet or the least width of the sidewalk.

Concrete Mixes and Corrosivity

Selected chemical analyses for corrosivity were conducted on bulk samples of the near surface soil from the project site (Plate C-3). The native soils have low levels of sulfate and chloride ion concentrations. Resistivity determinations on the soil indicate a low potential for metal loss because of electrochemical corrosion processes.

A minimum of 2,500 psi concrete of Type II Portland Cement with a maximum water/cement ratio of 0.60 (by weight) should be used for concrete placed in contact with native soil on this project (sitework including streets, sidewalks, driveways, patios, and other wall foundations). ***Landmark does not practice corrosion engineering. We recommend that a qualified corrosion engineer evaluate the corrosion potential on metal construction materials and concrete at the site.***

Permanent Slopes

Cut and Fill slopes should be constructed generally no steeper than 3(H):1(V) to permit slope maintenance with motor graders and provide erosional stability from wind or rain while unprotected without landscape cover. Slopes with a 2(H):1(V) gradient are permitted, provided it is recognized that such slopes are more prone to erosion and do not permit maintenance by motorized riding equipment and require landscape cover to retard erosion.

Soil Infiltration Rate

Soil infiltration was conducted by Sladden Engineering in November 2016 in the area of the proposed development. Infiltration testing was performed utilizing a double ring infiltrometer (ASTM D3385). The test results indicate that the stabilized soil infiltration rate for the soil is 11.08 inches per hour, and may be used for the on-site storm-water retention basin design. An oil/water separator should be installed at inlets to the stormwater retention basin to prevent sealing of the basin bottom with silt and oil residues. The field and conversion calculation worksheets are included in Appendix D.

We recommend additional testing should be performed after the completion of rough grading operations, to verify the soil infiltration rate.

Observation and Density Testing

Site preparation and fill placement should be continuously observed and tested by a representative of a qualified geotechnical engineering firm. Near full-time observation services during the excavation and scarification process is necessary to detect undesirable materials or conditions and soft areas that may be encountered in the construction area. The geotechnical firm that provides observation and testing during construction shall assume the responsibility of "***geotechnical engineer of record***" and, as such, shall perform additional tests and investigation as necessary to satisfy themselves as to the site conditions and the recommendations for site development.

We did not encounter soil conditions that would preclude implementation of the proposed project provided the recommendations contained in this report are implemented in the design and construction of this project.

We appreciate the opportunity to provide our findings and professional opinions regarding geotechnical conditions at the site. If you have any questions or comments regarding our findings, please call our office at (760) 360-0665.

Respectfully Submitted,
LandMark Consultants, Inc.

Greg M. Chandra, P.E., M.ASCE
Principal Engineer

Attachments:

Appendix A: Vicinity and Site Maps
Appendix B: Subsurface Soil Logs and Soil Key
Appendix C: Laboratory Test Results
Appendix D: Soil Infiltration Report for Tent. Tract Map 36949, prepared by Sladden Engineering, dated December 19, 2016
Appendix E: References

TABLES

Table 1
Summary of Characteristics of Closest Known Active Faults

Fault Name	Approximate Distance (miles)	Approximate Distance (km)	Maximum Moment Magnitude (Mw)	Fault Length (km)	Slip Rate (mm/yr)
San Andreas - San Bernardino (South)	3.3	5.4	7.4	103 ± 10	30 ± 7
Garnet Hill *	4.7	7.5			
San Andreas - San Bernardino (North)	5.6	8.9	7.5	103 ± 10	24 ± 6
San Andreas - Coachella	9.5	15.2	7.2	96 ± 10	25 ± 5
Indio Hills *	9.6	15.4			
Blue Cut *	11.3	18.0			
Eureka Peak	12.0	19.3	6.4	19 ± 2	0.6 ± 0.4
Burnt Mtn.	17.9	28.7	6.5	21 ± 2	0.6 ± 0.4
Morongo *	19.8	31.7			
San Jacinto - Anza	21.3	34.1	7.2	91 ± 9	12 ± 6
Pinto Mtn.	21.5	34.4	7.2	74 ± 7	2.5 ± 2
San Jacinto - Coyote Creek	24.4	39.0	6.8	41 ± 4	4 ± 2
Landers	25.3	40.5	7.3	83 ± 8	0.6 ± 0.4
San Jacinto - San Jacinto Valley	31.0	49.6	6.9	43 ± 4	12 ± 6
Pisgah Mtn. - Mesquite Lake	31.7	50.8	7.3	89 ± 9	0.6 ± 0.4
Johnson Valley (northern)	34.7	55.5	6.7	35 ± 4	0.6 ± 0.4
S. Emerson - Copper Mtn.	34.8	55.8	7	54 ± 5	0.6 ± 0.4
North Frontal Fault Zone - Eastern	35.9	57.4	6.7	27 ± 3	0.5 ± 0.3
Lenwood - Lockhart - Old Woman Springs	40.6	65.0	7.5	145 ± 15	0.6 ± 0.4
Calico-Hidalgo	41.2	65.9	7.3	95 ± 10	0.6 ± 0.4
Hot Springs *	41.5	66.3			
San Jacinto - Borrego	43.0	68.8	6.6	29 ± 3	4 ± 2

* Note: Faults not included in CGS database.

Table 2
2016 California Building Code (CBC) and ASCE 7-10 Seismic Parameters

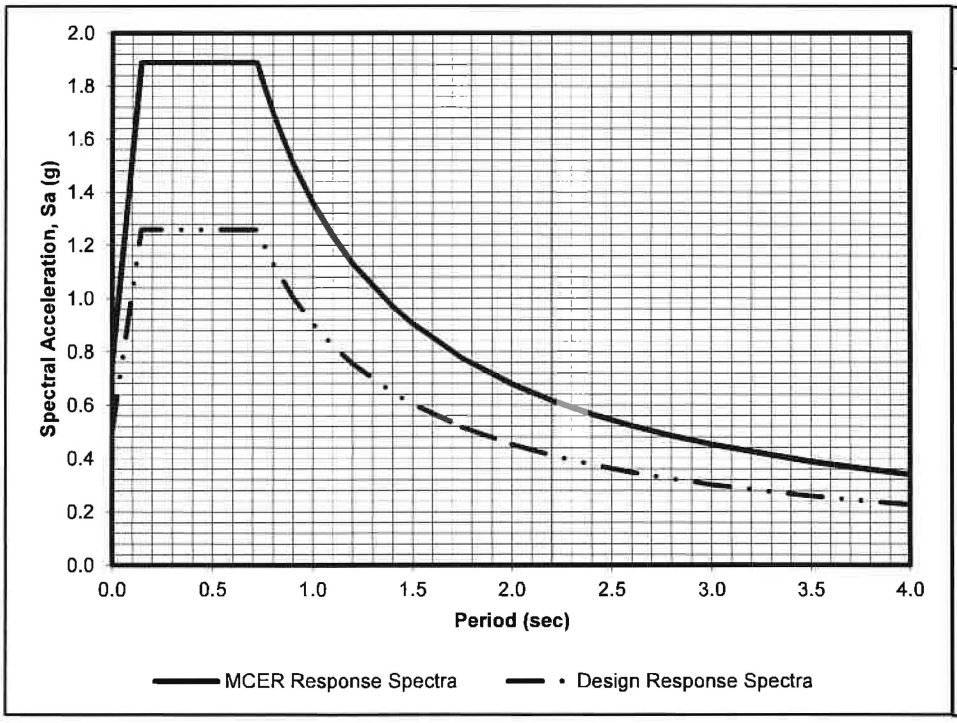
		CBC Reference
Soil Site Class:	**D**	Table 20.3-1
Latitude:	33.7981 N	
Longitude:	-116.3979 W	
Risk Category:	II	
Seismic Design Category:	E	

Maximum Considered Earthquake (MCE) Ground Motion

Mapped MCE_R Short Period Spectral Response	S_s	1.889 g	Figure 1613.3.1(1)	
Mapped MCE_R 1 second Spectral Response	S_1	0.906 g	Figure 1613.3.1(2)	
Short Period (0.2 s) Site Coefficient	F_a	1.00	Table 1613.3.3(1)	
Long Period (1.0 s) Site Coefficient	F_v	1.50	Table 1613.3.3(2)	
MCE_R Spectral Response Acceleration Parameter (0.2 s)	S_{MS}	1.889 g	$= F_a * S_s$	Equation 16-37
MCE_R Spectral Response Acceleration Parameter (1.0 s)	S_{M1}	1.359 g	$= F_v * S_1$	Equation 16-38

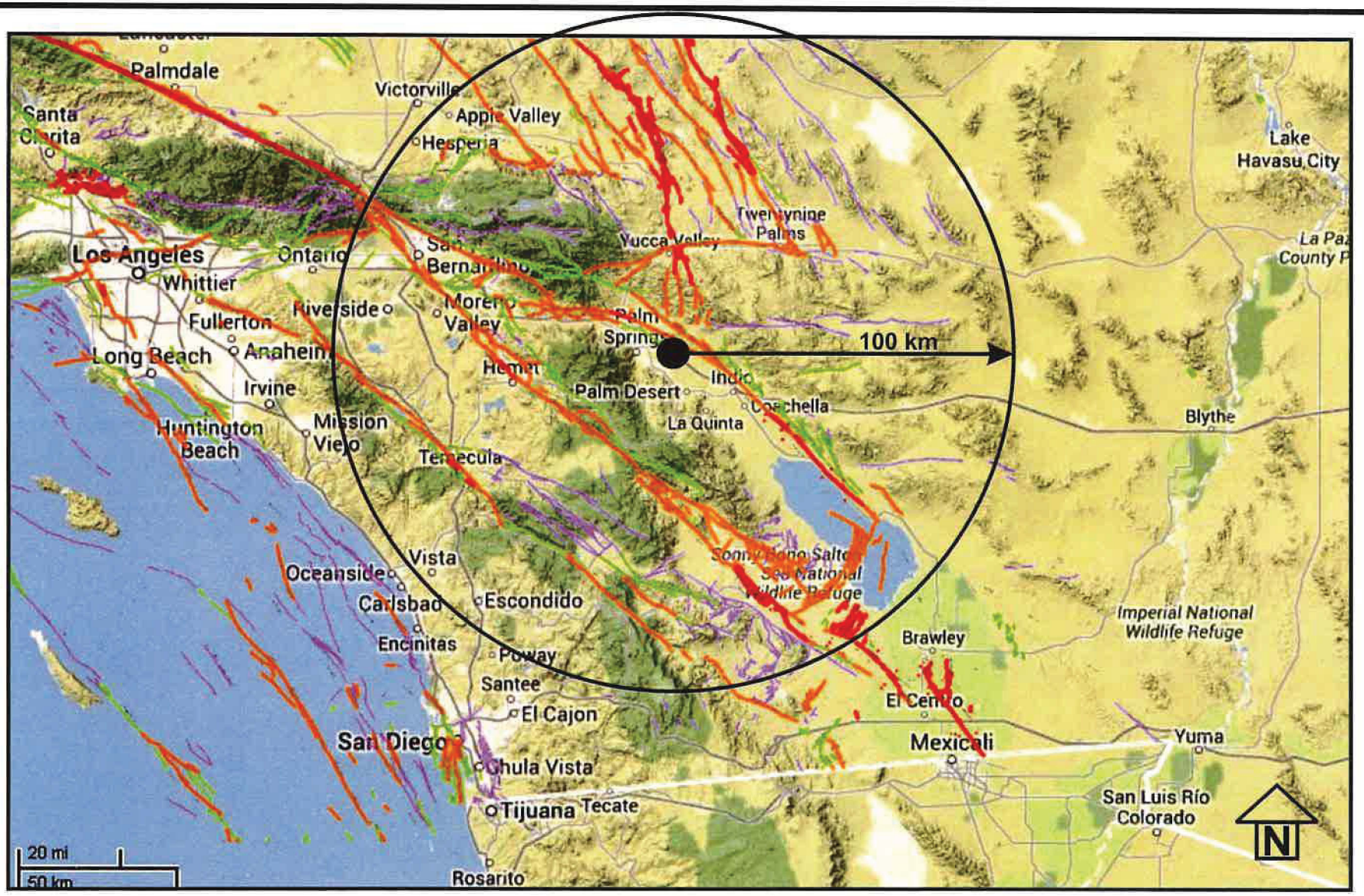
Design Earthquake Ground Motion

Design Spectral Response Acceleration Parameter (0.2 s)	S_{DS}	1.259 g	$= 2/3*S_{MS}$	Equation 16-39
Design Spectral Response Acceleration Parameter (1.0 s)	S_{D1}	0.906 g	$= 2/3*S_{M1}$	Equation 16-40
Risk Coefficient at Short Periods (less than 0.2 s)	C_{RS}	0.999		ASCE Figure 22-17
Risk Coefficient at Long Periods (greater than 1.0 s)	C_{R1}	0.954		ASCE Figure 22-18
	T_L	8.00 sec		ASCE Figure 22-12
	T_O	0.14 sec	$=0.2*S_{D1}/S_{DS}$	
	T_S	0.72 sec	$=S_{D1}/S_{DS}$	
Peak Ground Acceleration	PGA_M	0.75 g		ASCE Equation 11.8-1



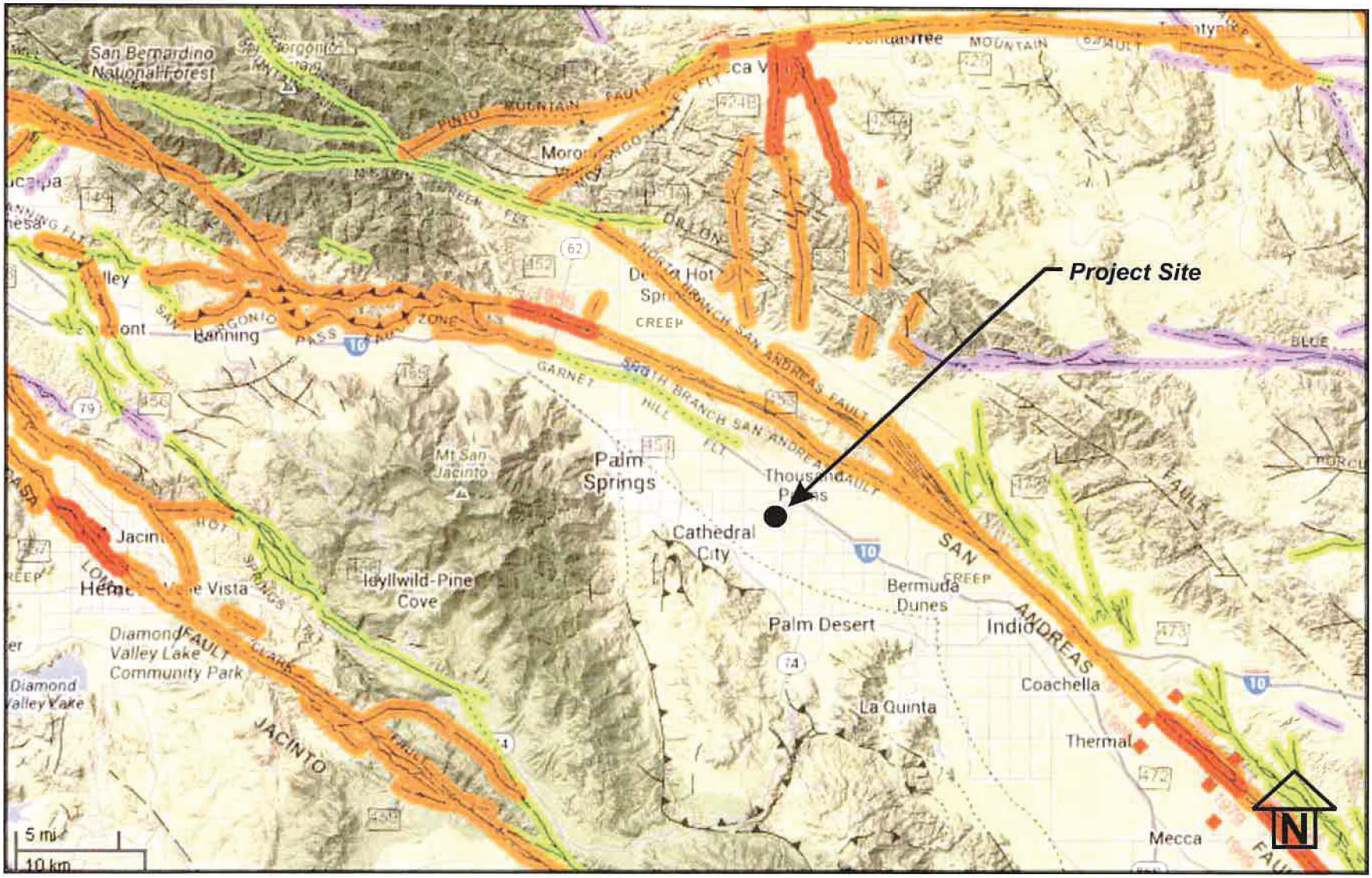
Period T (sec)	Sa (g)	MCE_R Sa (g)
0.00	0.50	0.76
0.14	1.26	1.89
0.72	1.26	1.89
0.75	1.21	1.81
0.80	1.13	1.70
0.90	1.01	1.51
1.00	0.91	1.36
1.10	0.82	1.24
1.20	0.76	1.13
1.20	0.76	1.13
1.40	0.65	0.97
1.50	0.60	0.91
1.75	0.52	0.78
2.00	0.45	0.68
2.20	0.41	0.62
2.40	0.38	0.57
2.60	0.35	0.52
2.80	0.32	0.49
3.00	0.30	0.45
3.50	0.26	0.39
4.00	0.23	0.34

FIGURES



Source: California Geological Survey 2010 Fault Activity Map of California
http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html#

LANDMARK Geo-Engineers and Geologists Project No.: LP18149	Regional Fault Map	Figure 1



Source: California Geological Survey 2010 Fault Activity Map of California
http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html#

LANDMARK Geo-Engineers and Geologists Project No.: LP18149	Map of Local Faults	Figure 2

EXPLANATION

Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred, and by dotted lines where concealed by younger rocks or by lakes or bays. Fault traces are queried where continuation or existence is uncertain. Concealed faults in the Great Valley are based on maps of selected subsurface horizons, so locations shown are approximate and may indicate structural trend only. All offshore faults based on seismic reflection profile records are shown as solid lines where well defined, dashed where inferred, queried where uncertain.

FAULT CLASSIFICATION COLOR CODE
(Indicating Recency of Movement)

Fault along which historic (last 200 years) displacement has occurred and is associated with one or more of the following:

(a) a recorded earthquake with surface rupture. (Also included are some well-defined surface breaks caused by ground shaking during earthquakes, e.g. extensive ground breakage, not on the White Wolf fault, caused by the Arvin-Tehachapi earthquake of 1952). The date of the associated earthquake is indicated. Where repeated surface ruptures on the same fault have occurred, only the date of the latest movement may be indicated, especially if earlier reports are not well documented as to location of ground breaks.

(b) fault creep slippage - slow ground displacement usually without accompanying earthquakes.

(c) displaced survey lines.

A triangle to the right or left of the date indicates termination point of observed surface displacement. Solid red triangle indicates known location of rupture termination point. Open black triangle indicates uncertain or estimated location of rupture termination point.

Date bracketed by triangles indicates local fault break.

No triangle by date indicates an intermediate point along fault break.

Fault that exhibits fault creep slippage. Hachures indicate linear extent of fault creep. Annotation (creep with leader) indicates representative locations where fault creep has been observed and recorded.

Square on fault indicates where fault creep slippage has occured that has been triggered by an earthquake on some other fault. Date of causative earthquake indicated. Squares to right and left of date indicate terminal points between which triggered creep slippage has occurred (creep either continuous or intermittent between these end points).

Holocene fault displacement (during past 11,700 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: offset stream courses, linear scarps, shutter ridges, and triangular faceted spurs. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting.

Late Quaternary fault displacement (during past 700,000 years). Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.

Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement sometime during the past 1.6 million years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age. Unnumbered Quaternary faults were based on Fault Map of California, 1975. See Bulletin 201, Appendix D for source data.

Pre-Quaternary fault (older that 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissnce nature, or was not done with the object of dating fault displacements. Faults in this category are not necessarily inactive.

ADDITIONAL FAULT SYMBOLS

Bar and ball on downthrown side (relative or apparent).

Arrows along fault indicate relative or apparent direction of lateral movement.

Arrow on fault indicates direction of dip.

Low angle fault (barbs on upper plate). Fault surface generally dips less than 45° but locally may have been subsequently steepened. On offshore faults, barbs simply indicate a reverse fault regardless of steepness of dip.

OTHER SYMBOLS

Numbers refer to annotations listed in the appendices of the accompanying report. Annotations include fault name, age of fault displacement, and pertinent references including Earthquake Fault Zone maps where a fault has been zoned by the Alquist-Priolo Earthquake Fault Zoning Act. This Act requires the State Geologist to delineate zones to encompass faults with Holocene displacement.

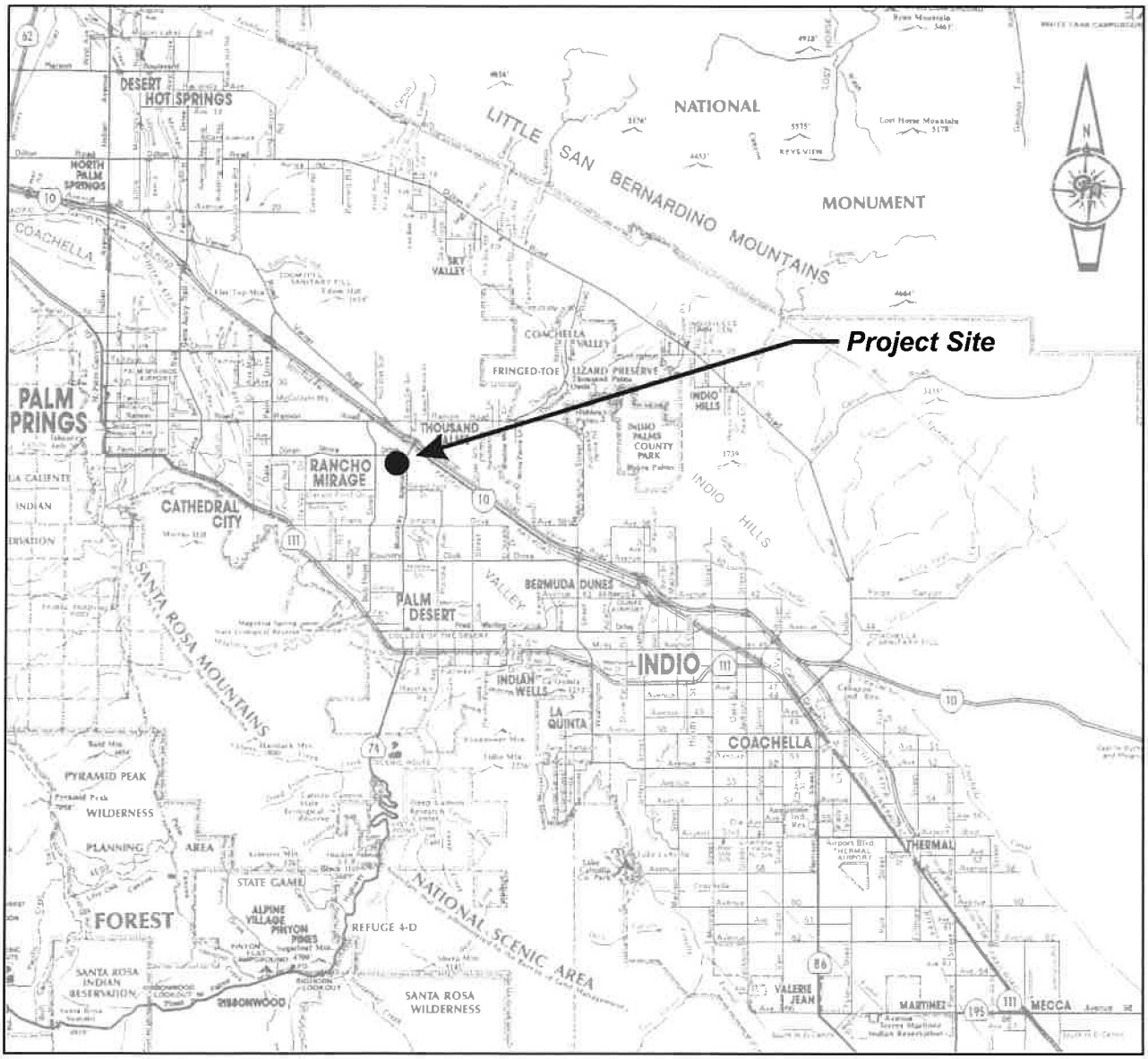
Structural discontinuity (offshore) separating differing Neogene structural domains. May indicate discontinuities between basement rocks.

Brawley Seismic Zone, a linear zone of seismicity locally up to 10 km wide associated with the releasing step between the Imperial and San Andreas faults.

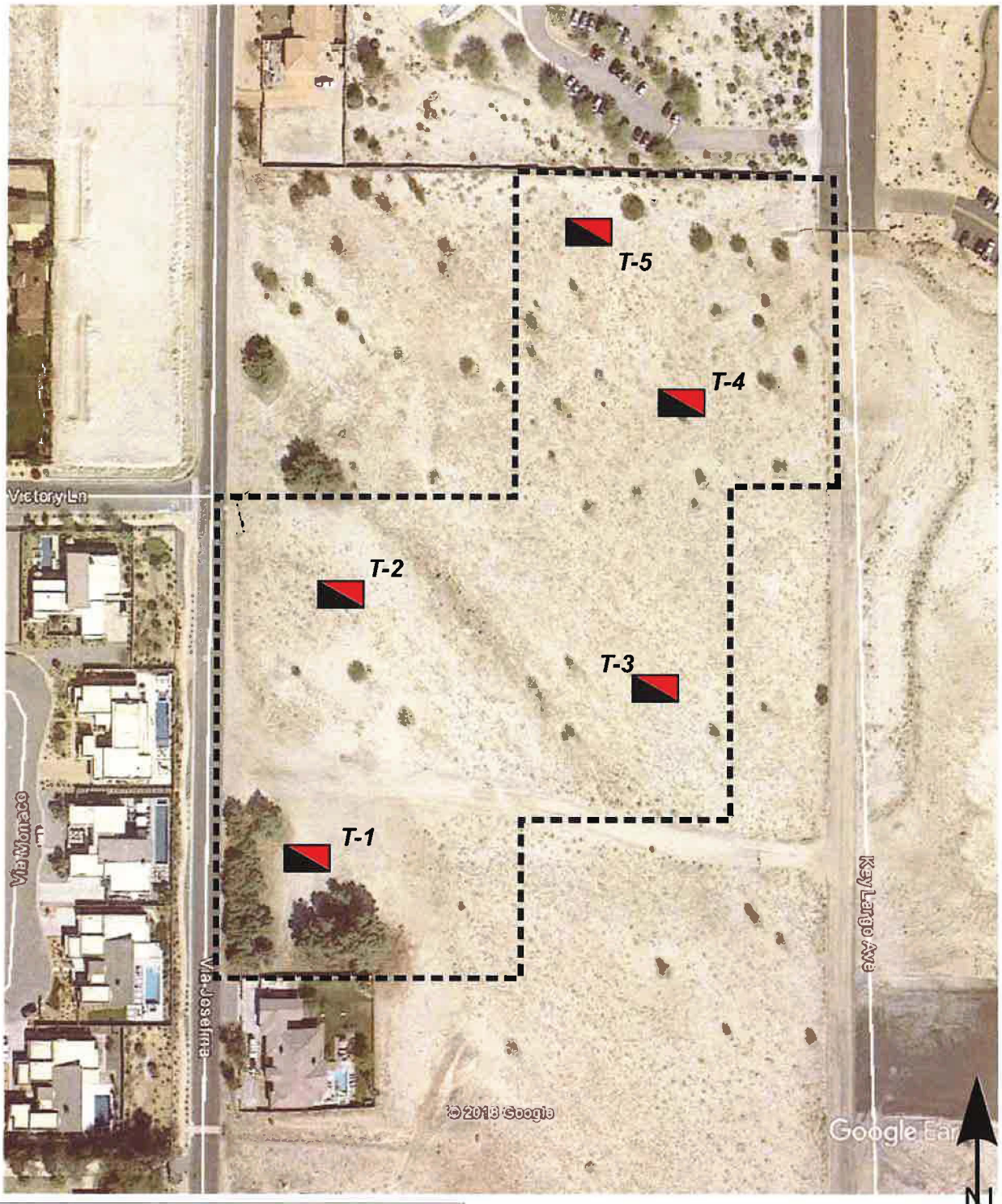
Geologic Time Scale			Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION	
						ON LAND	OFFSHORE
Quaternary	Late Quaternary	Holocene	200			Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
						Displacement during Holocene time	Fault offsets surface sediments of Holocene age
		Pleistocene	11,700			Faults showing evidence of displacement during late Quaternary time	Fault cuts strata of Late Pleistocene age
	Early Quaternary		700,000			Undifferentiated Quaternary faults (most faults in this category show evidence of displacement during the past 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age)	Fault cuts strata of Quaternary age
Pre-Quaternary			1,600,000			Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age
			4.5 billion (Age of Earth)				

* Quaternary now recognized as extending to 2.6 Ma (Walker and Geissman, 2009). Quaternary faults in this map were established using the previous 1.6 Ma criterion

APPENDIX A



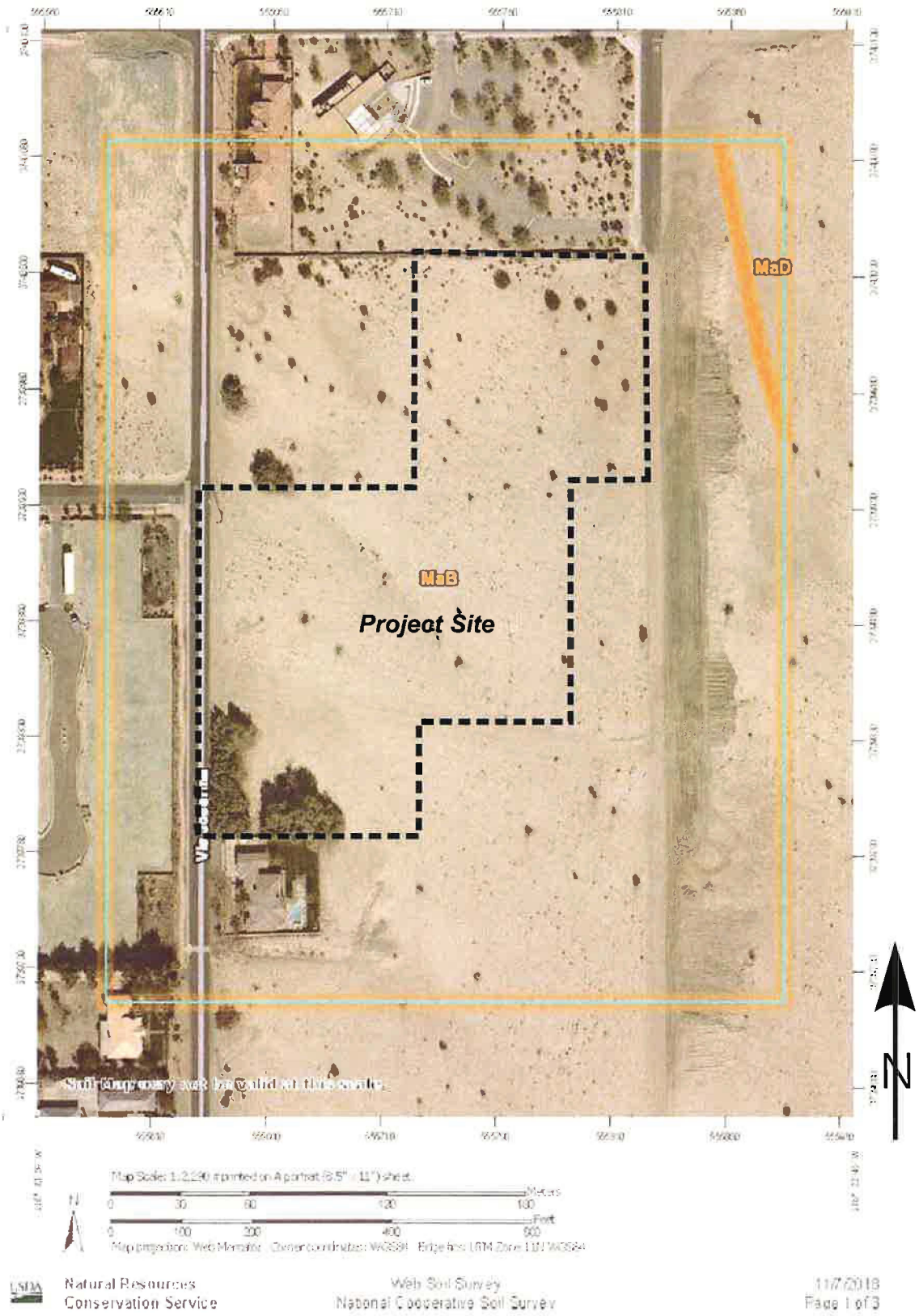
LANDMARK Geo-Engineers and Geologists **Project No.: LP18149**	**Vicinity Map**	**Plate A-1**



Legend

Approximate Test Pit Location

LANDMARK Geo-Engineers and Geologists **Project No.: LP18149**	**Site and Exploration Plan**	**Plate A-2**



Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

11/7/2018
Page 1 of 3

LANDMARK Geo-Engineers and Geologists Project No.: LP18149	USDA Soil Conservation Soil Service Map	Plate A-3

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Riverside County, Coachella Valley Area, California
Survey Area Data: Version 10, Sep 13, 2018

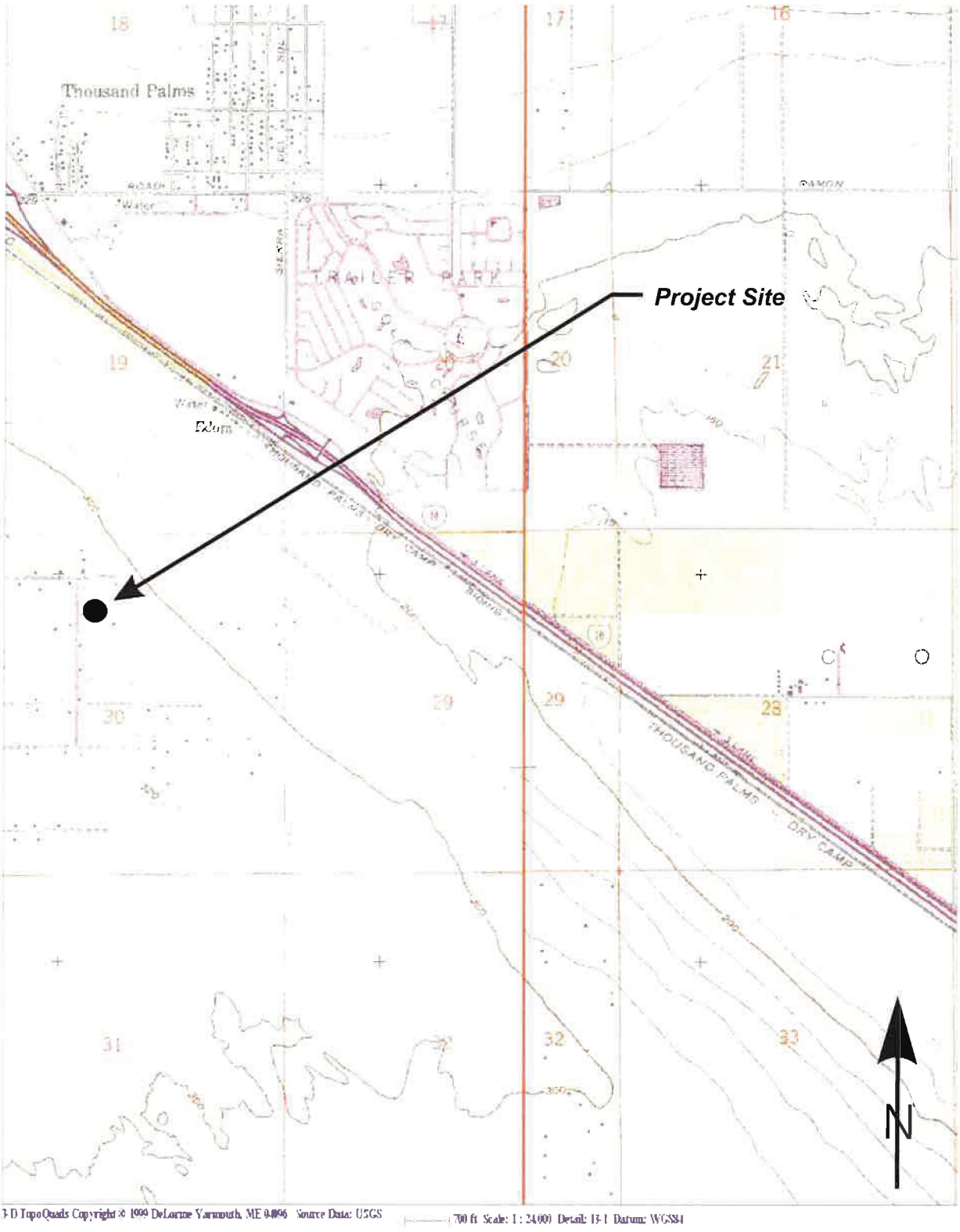
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 22, 2015—Feb 10, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

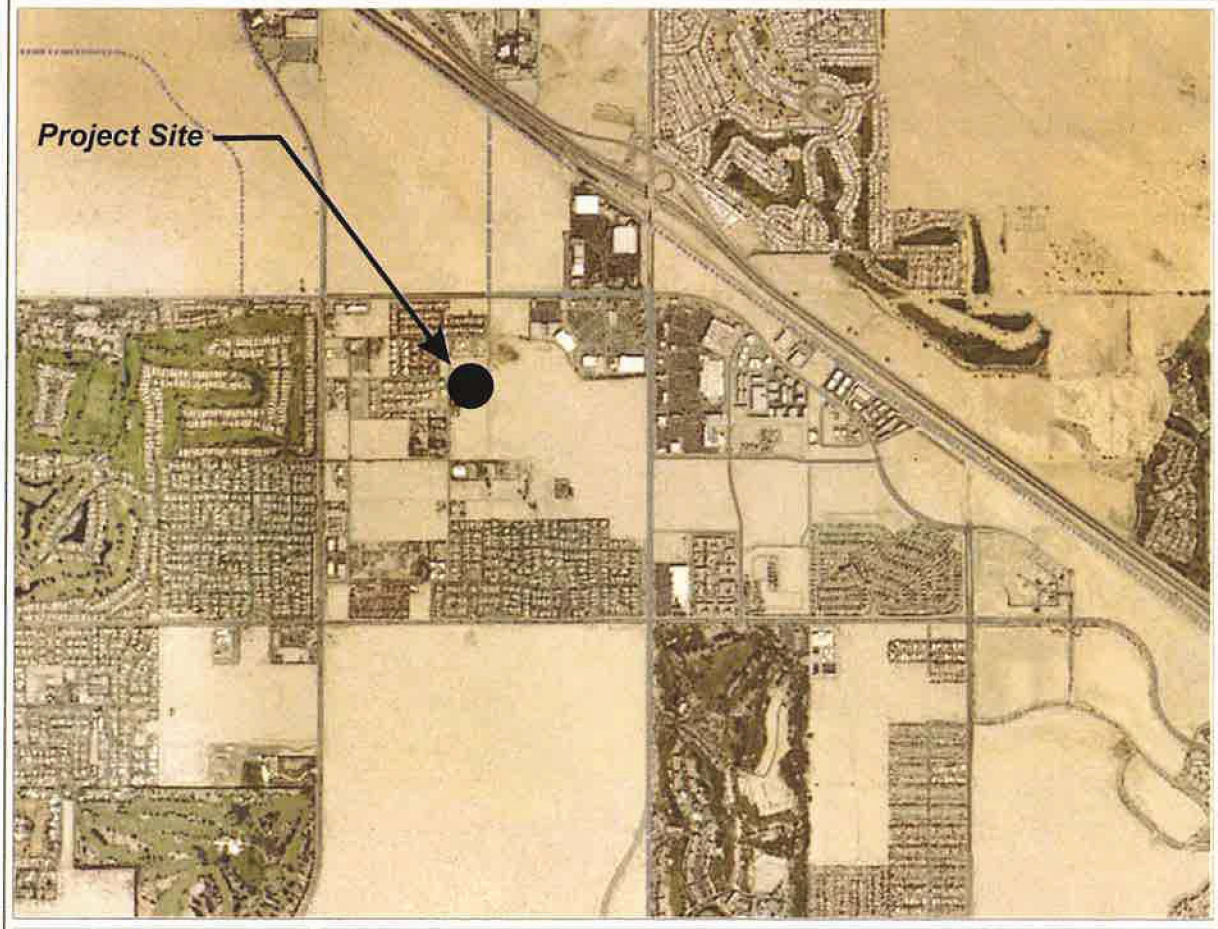
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MaB	Myoma fine sand, 0 to 5 percent slopes	26.7	98.2%
MaD	Myoma fine sand, 5 to 15 percent slopes	0.5	1.8%
Totals for Area of Interest		**27.2**	**100.0%**



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 700 ft Scale: 1 : 24,000 Detail: 13-1 Datum: WGS84

LANDMARK Geo-Engineers and Geologists Project No.: LP18149	Topographic Map	Plate A-4

Fault Map



Legend

Faults

Fault Zones

Notes

0 3,009 6,019 Feet

"IMPORTANT" Maps and data are to be used for reference purposes only. Map features are approximate and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

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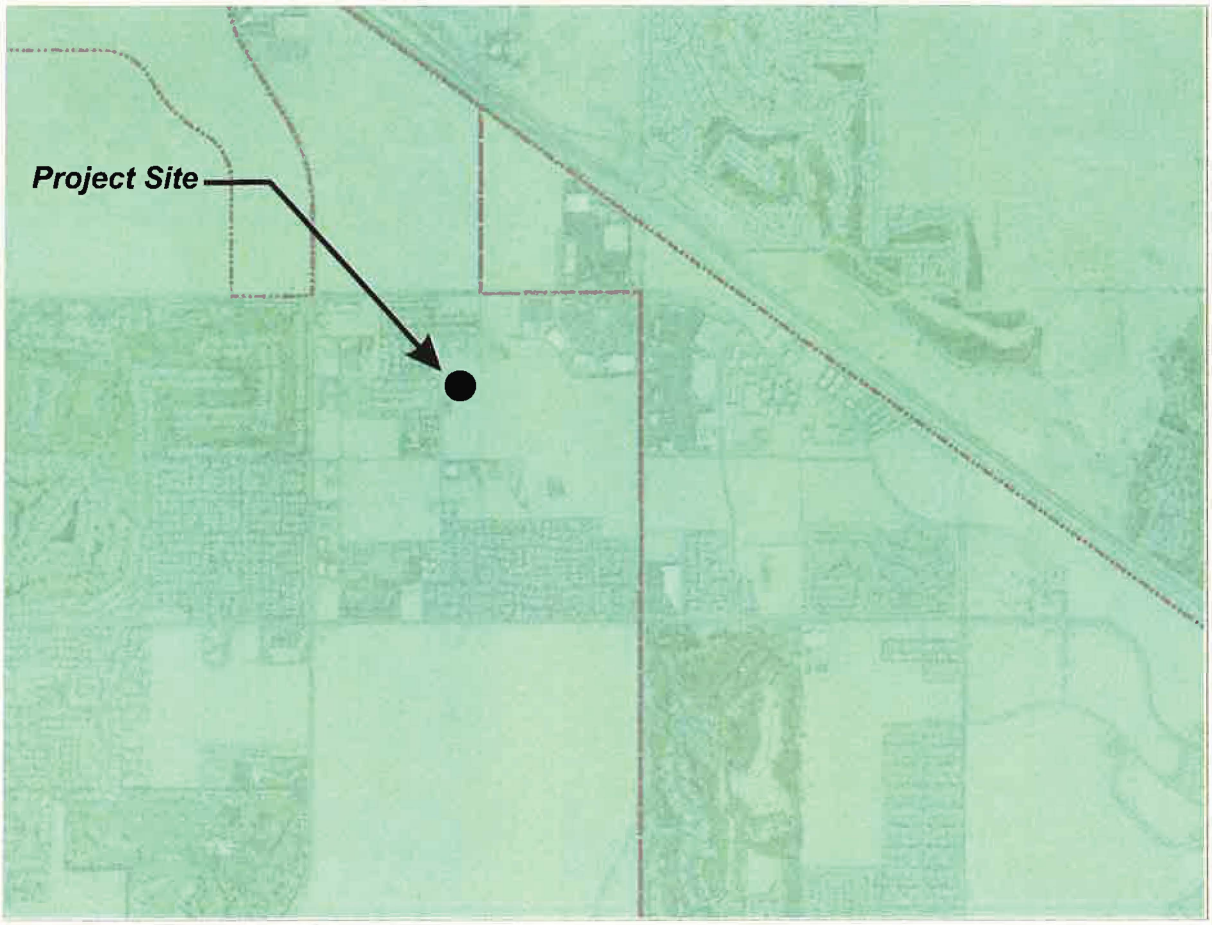
LANDMARK
Geo-Engineers and Geologists

Project No.: LP18149

Riverside County
Geographic Information System (GIS)
Fault Map

Plate
A-5

Subsidence Map



Legend

Subsidence

Notes

0 3,009 6,019 Feet

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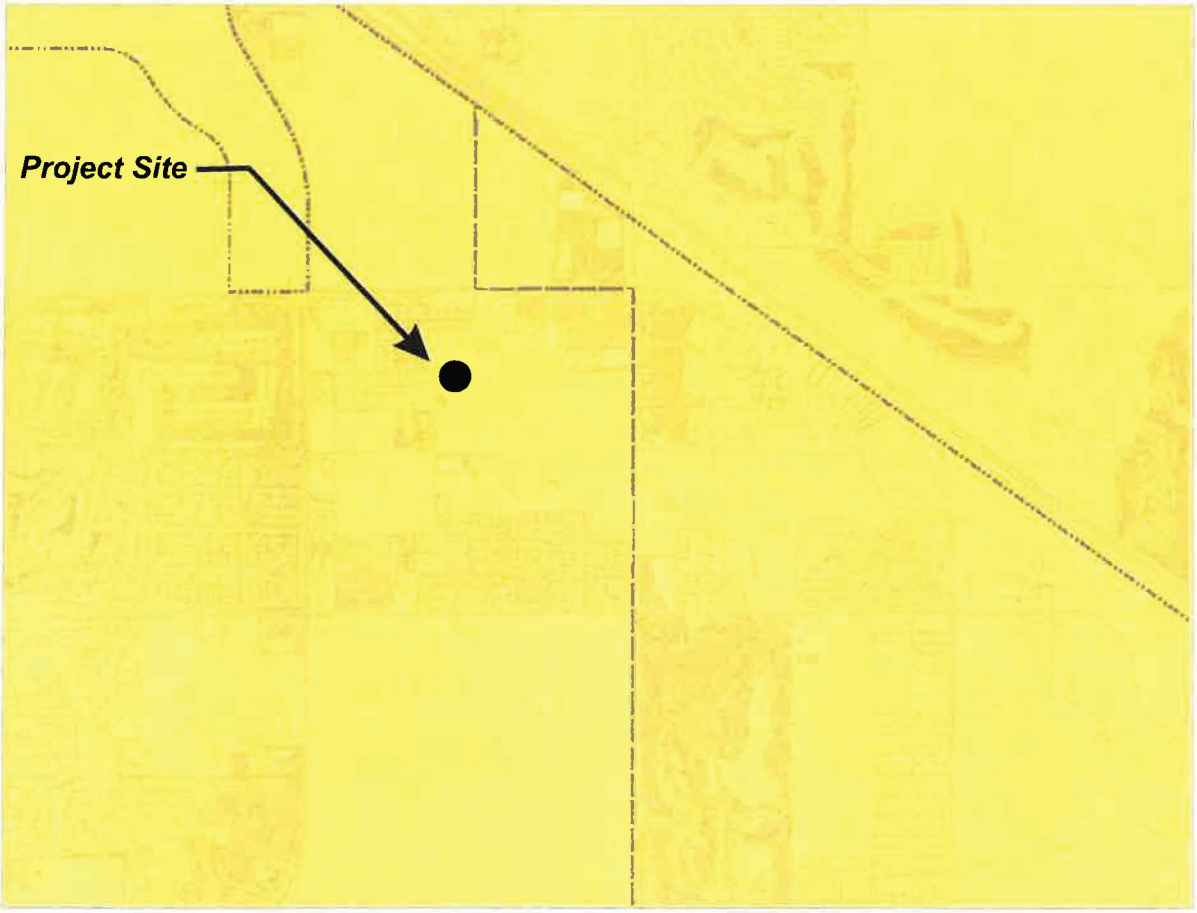
LANDMARK Geo-Engineers and Geologists **Project No.: LP18149**	**Riverside County Geographic Information System (GIS) Subsidence**	**Plate A-6**

Liquefaction Map



Legend

Liquefaction

Notes

RCIT

0 3,009 6,019 Feet

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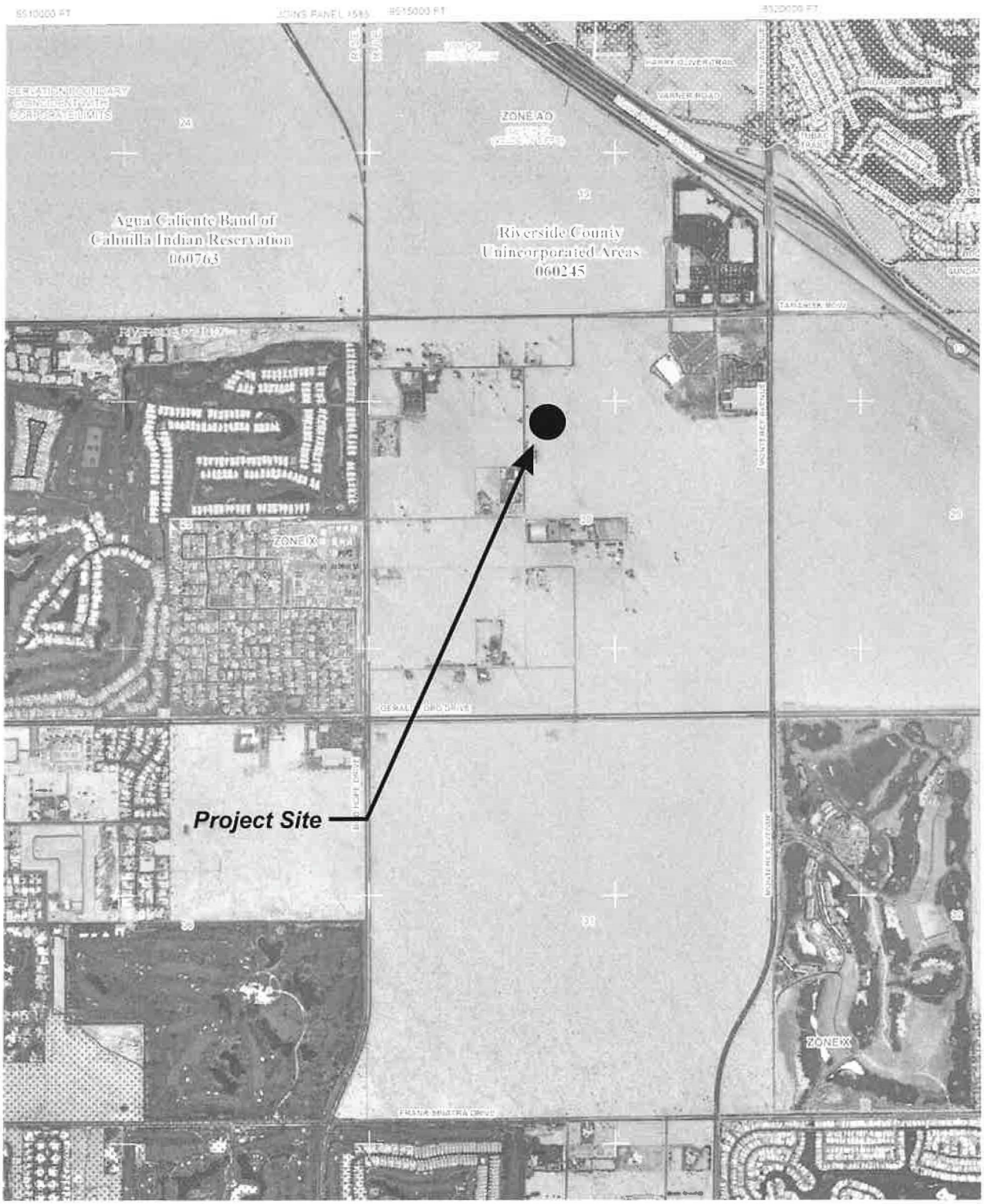
Riverside County GIS

LANDMARK Geo-Engineers and Geologists **Project No.: LP18149**	**Riverside County Geographic Information System (GIS) Liquefaction Zones**	**Plate A-7**



LANDMARK Geo-Engineers and Geologists Project No.: LP18149	FEMA Flood Zones	Plate A-8

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4276000mN	1000-meter Universal Transverse Mercator grid values, zone 11N
600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone VI (FIPSZONE 0406), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
●M1.5	River Mile

APPENDIX B

LOG OF TEST PIT NO. T-1

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
0					SAND (SP-SM): Olive gray, dry, medium dense, fine grained	102.5	1.1	Passing #200 = 5.8%
5						97.1	1.5	
10					Total Depth = 10.0' Moisture and density values by Nuclear Densometer (ASTM 6938) Backfilled with excavated soil			
15								
20								
25								
30								

DATE EXCAVATED: 08/30/18 TOTAL DEPTH: 10.0 Feet DEPTH TO WATER: N/A

LOGGED BY: A. Arthen TYPE OF BIT: Backhoe DIAMETER: N/A

SURFACE ELEVATION: HAMMER WT.: N/A DROP: N/A

PROJECT NO. LP18149

LANDMARK Geo-Engineers and Geologists

PLATE B-1

LOG OF TEST PIT NO. T-2

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
0					SAND (SP-SM): Olive gray, dry, medium dense, fine grained	103.2	2.3	
5						99.6	1.4	
10					Total Depth = 10.0' Moisture and density values by Nuclear Densometer (ASTM 6938) Backfilled with excavated soil			
15								
20								
25								
30								

DATE EXCAVATED: 08/30/18 TOTAL DEPTH: 10.0 Feet DEPTH TO WATER: N/A

LOGGED BY: A. Arthen TYPE OF BIT: Backhoe DIAMETER: N/A

SURFACE ELEVATION: HAMMER WT.: N/A DROP: N/A

PROJECT NO. LP18149

LANDMARK Geo-Engineers and Geologists

PLATE B-2

LOG OF TEST PIT NO. T-3

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
0	X				SAND (SP-SM): Olive gray, dry, medium dense, fine grained	103.3	1.1	
5						101.1	2.0	
10					Total Depth = 10.0' Moisture and density values by Nuclear Densometer (ASTM 6938) Backfilled with excavated soil			
15								
20								
25								
30								

DATE EXCAVATED: 08/30/18 TOTAL DEPTH: 10.0 Feet DEPTH TO WATER: N/A

LOGGED BY: A. Arthen TYPE OF BIT: Backhoe DIAMETER: N/A

SURFACE ELEVATION: _____ HAMMER WT.: N/A DROP: N/A

PROJECT NO. LP18149

LANDMARK
Geo-Engineers and Geologists

PLATE B-3

LOG OF TEST PIT NO. T-4

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
0					SAND (SP-SM): Olive gray, dry, medium dense, fine grained	102.8	1.3	
						99.9	1.9	
5								
10								
15					Total Depth = 12.0' Moisture and density values by Nuclear Densometer (ASTM 6938) Backfilled with excavated soil			
20								
25								
30								

DATE EXCAVATED: 08/30/18 TOTAL DEPTH: 12.0 Feet DEPTH TO WATER: N/A

LOGGED BY: A. Arthen TYPE OF BIT: Backhoe DIAMETER: N/A

SURFACE ELEVATION: HAMMER WT.: N/A DROP: N/A

PROJECT NO. LP18149

LANDMARK Geo-Engineers and Geologists

PLATE B-4

LOG OF TEST PIT NO. T-5

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
0					SAND (SP-SM): Olive gray, dry, medium dense, fine grained	102.0	1.5	Passing #200 = 5.2%
						100.8	2.7	
5								
10					Total Depth = 10.0' Moisture and density values by Nuclear Densometer (ASTM 6938) Backfilled with excavated soil			
15								
20								
25								
30								

DATE EXCAVATED: 08/30/18 TOTAL DEPTH: 10.0 Feet DEPTH TO WATER: N/A

LOGGED BY: A. Arthen TYPE OF BIT: Backhoe DIAMETER: N/A

SURFACE ELEVATION: HAMMER WT.: N/A DROP: N/A

PROJECT NO. LP18149

LANDMARK Geo-Engineers and Geologists

PLATE B-5

DEFINITION OF TERMS

PRIMARY DIVISIONS			SYMBOLS		SECONDARY DIVISIONS
Coarse grained soils More than half of material is larger that No. 200 sieve	**Gravels** More than half of coarse fraction is larger than No. 4 sieve	Clean gravels (less than 5% fines)		**GW**	Well graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly graded gravels, or gravel-sand mixtures, little or no fines
		Gravel with fines		**GM**	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
				GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	Sands More than half of coarse fraction is smaller than No. 4 sieve	Clean sands (less than 5% fines)		**SW**	Well graded sands, gravelly sands, little or no fines
				SP	Poorly graded sands or gravelly sands, little or no fines
		Sands with fines		**SM**	Silty sands, sand-silt mixtures, non-plastic fines
				SC	Clayey sands, sand-clay mixtures, plastic fines
Fine grained soils More than half of material is smaller than No. 200 sieve	**Silts and clays** Liquid limit is less than 50%			**ML**	Inorganic silts, clayey silts with slight plasticity
				CL	Inorganic clays of low to medium plasticity, gravely, sandy, or lean clays
				OL	Organic silts and organic clays of low plasticity
	Silts and clays Liquid limit is more than 50%			**MH**	Inorganic silts, micaceous or diatomaceous 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

GRAIN SIZES

Silts and Clays	Sand			Gravel		Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Coarse		
200	40	10	4	3/4"	3"	12"	

US Standard Series Sieve — Clear Square Openings

Sands, Gravels, etc.	Blows/ft. *
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

Clays & Plastic Silts	Strength **	Blows/ft. *
Very Soft	0-0.25	0-2
Soft	0.25-0.5	2-4
Firm	0.5-1.0	4-8
Stiff	1.0-2.0	8-16
Very Stiff	2.0-4.0	16-32
Hard	Over 4.0	Over 32

* Number of blows of 140 lb. hammer falling 30 inches to drive a 2 inch O.D. (1 3/8 in. I.D.) split spoon (ASTM D1586).

** Unconfined compressive strength in tons/s.f. as determined by laboratory testing or approximated by the Standard Penetration Test (ASTM D1586), Pocket Penetrometer, Torvane, or visual observation.

Type of Samples:

Ring Sample — Standard Penetration Test — Shelby Tube — Bulk (Bag) Sample

Drilling Notes:

1. Sampling and Blow Counts
   - Ring Sampler - Number of blows per foot of a 140 lb. hammer falling 30 inches.
   - Standard Penetration Test - Number of blows per foot.
   - Shelby Tube - Three (3) inch nominal diameter tube hydraulically pushed.
2. P. P. = Pocket Penetrometer (tons/s.f.).
3. NR = No recovery.
4. GWT = Ground Water Table observed @ specified time.

LANDMARK
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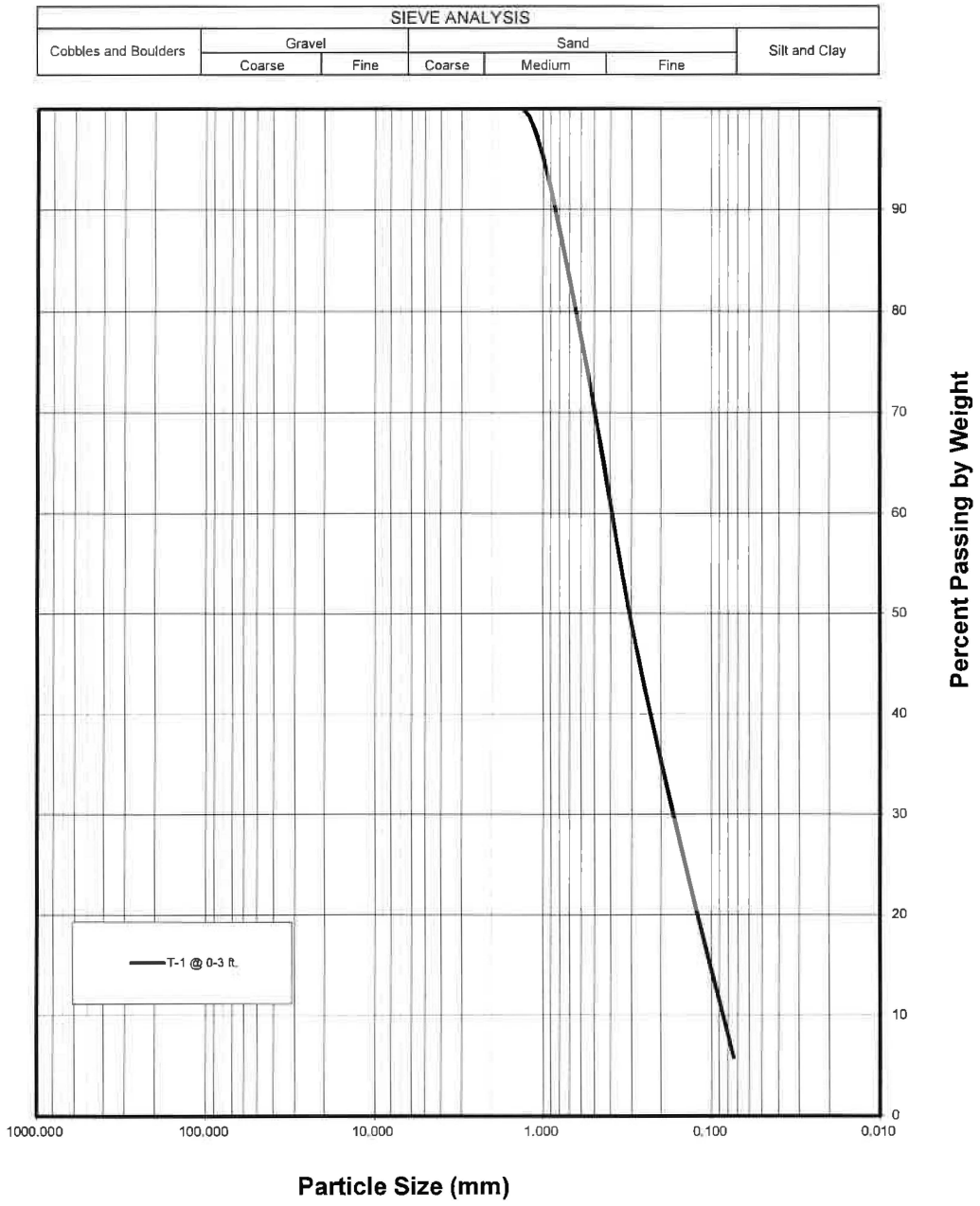
Project No. LP18149

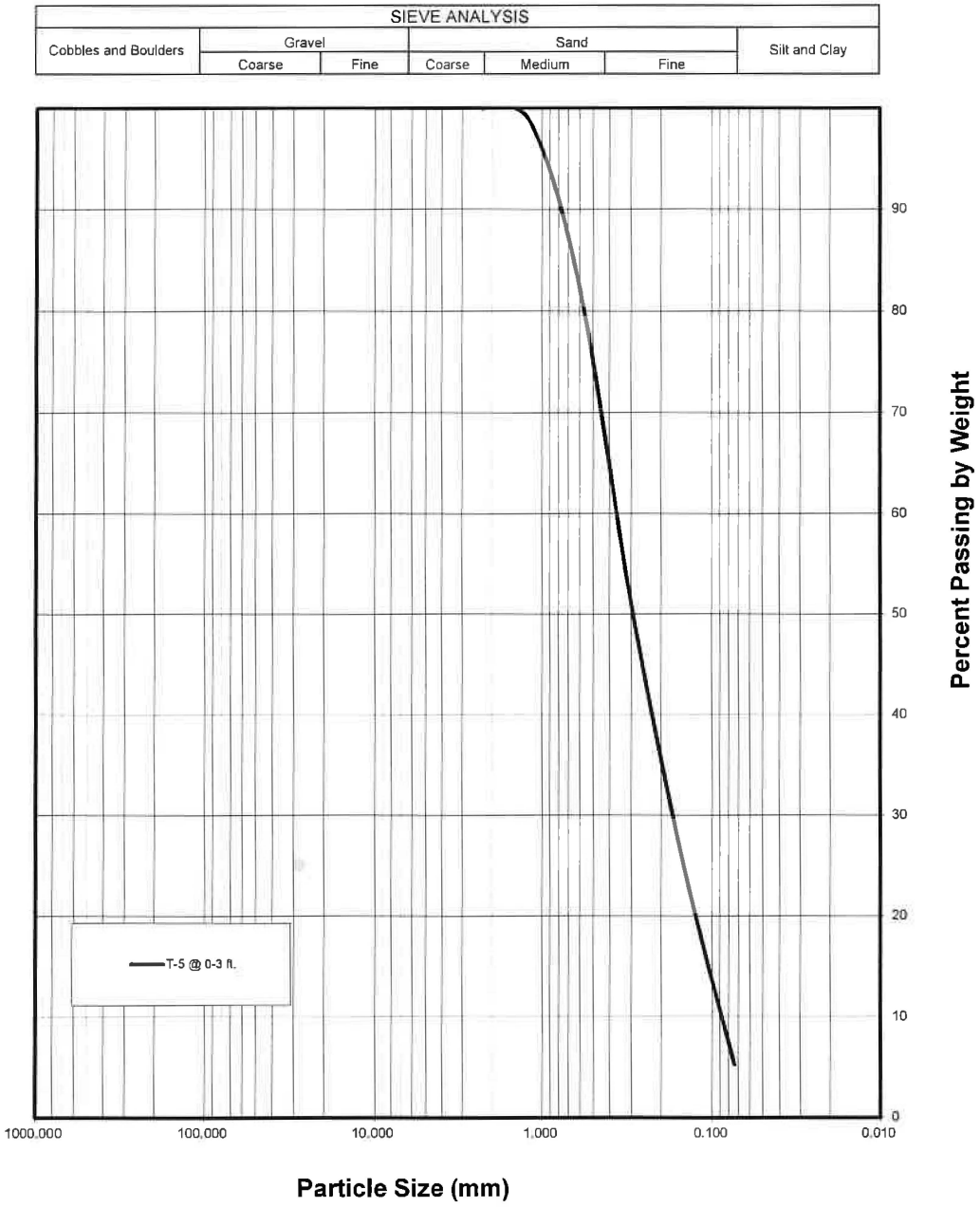
Key to Logs

Plate B-6

APPENDIX C



LANDMARK Geo-Engineers and Geologists Project No.: LP18149	Grain Size Analysis	Plate C-1



LANDMARK Geo-Engineers and Geologists Project No.: LP18149	Grain Size Analysis	Plate C-2

LANDMARK CONSULTANTS, INC.

CLIENT: La Paloma Homes
PROJECT: APNs 685-030-006 & -080-031 -- Rancho Mirage, CA
JOB No.: LP18149
DATE: 10/30/18

CHEMICAL ANALYSIS

Boring:	T-1	**Caltrans**
Sample Depth, ft:	0-3	**Method**
pH:	9.0	**643**
Electrical Conductivity (mmhos):	--	**424**
Resistivity (ohm-cm):	25,000	**643**
Chloride (Cl), ppm:	80	**422**
Sulfate (SO4), ppm:	22	**417**

General Guidelines for Soil Corrosivity

Material Affected	Chemical Agent	Amount in Soil (ppm)	Degree of Corrosivity
Concrete	Soluble Sulfates	0 - 1,000	Low
		1,000 - 2,000	Moderate
		2,000 - 20,000	Severe
		> 20,000	Very Severe
Normal Grade Steel	Soluble Chlorides	0 - 200	Low
		200 - 700	Moderate
		700 - 1,500	Severe
		> 1,500	Very Severe
Normal Grade Steel	Resistivity	1 - 1,000	Very Severe
		1,000 - 2,000	Severe
		2,000 - 10,000	Moderate
		> 10,000	Low

LANDMARK
Geo-Engineers and Geologists

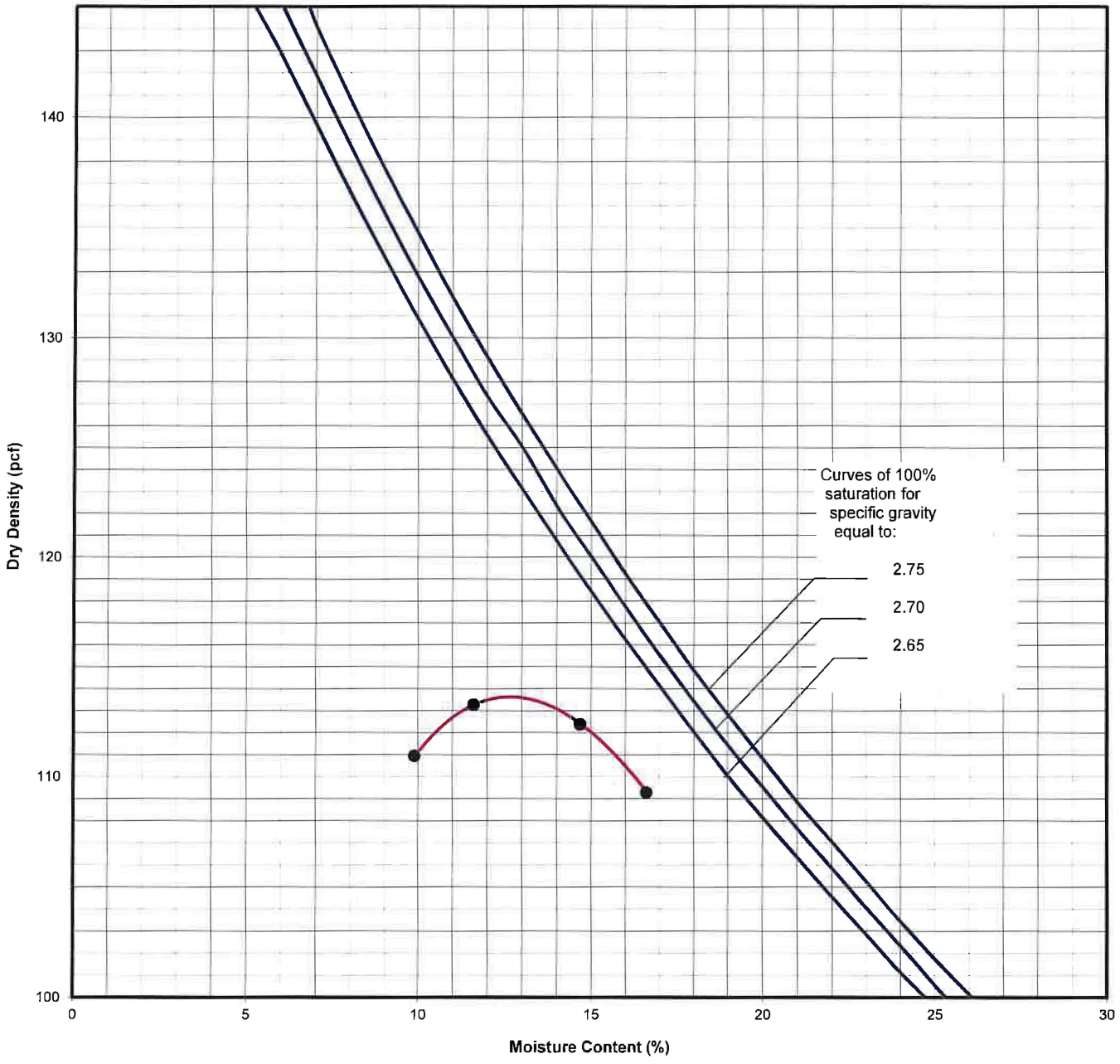
Project No.: LP18149

Selected Chemical Test Results

Plate C-3

Client: La Paloma Homes
Project: APN 685-030-006 & 685-080-031
Project No.: LP18149
Date: 9/18/2018
Lab. No.: N/A

Soil Description: Olive-Gray Silty Sand (SM)
Sample Location: T-1 @ 0-3 ft.
Test Method: ASTM D-1557 A
Maximum Dry Density (pcf): 113.6
Optimum Moisture Content (%): 12.6



LANDMARK
Geo-Engineers and Geologists

Project No.: LP18149

Moisture Density Relationship

Plate C-4

APPENDIX D

Sladden Engineering

45090 Golf Center Parkway, Suite F, Indio, CA. 92201 (760) 863-0713 Fax (760) 863-0847
6782 Stanton Avenue, Suite C, Buena Park, CA. 90621 (714) 523-0952 Fax (714) 523-1369
450 Egan Avenue, Beaumont, CA. 92223 (951) 845-7743 Fax (951) 845-8863
800 E. Florida Avenue, Hemet, CA. 92543 (951) 766-8777 Fax (951) 766-8778

December 19, 2016

Project No. 544-16293
16-12-514

La Paloma Homes, Inc.
42280 Beacon Hill
Palm Desert, California 92211

Project: Proposed Residential Development
Tentative Tract Map No. 36949
SEC Victory Lane and Via Josefina
Rancho Mirage, California

Subject: Percolation & Infiltration Testing for On-Site Storm Water Retention

Ref: Geotechnical Investigation report prepared by Sladden Engineering dated December 19, 2016; Project No. 544-16293, Report No. 16-12-506.

As requested, we have performed percolation and infiltration testing on the subject site to evaluate the infiltration potential of the near surface soil for the proposed residential development located at the southeast corner of Victory Lane and Via Josefina in the City of Rancho Mirage. The infiltration rates determined should be useful in the assessment of on-site storm water retention needs. The approximate locations of the tests are indicated on the attached Test Location Photograph (Figure 1).

Percolation testing was performed on November 18, 2016 within one (1) shallow test bore excavated on the site in conjunction with the referenced geotechnical investigation. Testing was performed at a depth of approximately 5.0 feet below existing grade. Testing was performed by placing water within the test bore and recording the drop in the water surface with time. Testing was performed in general accordance with the *United States Bureau of Reclamation (BOR) Procedure 7300-89 (1999)*. Test results are summarized in the following table.

PERCOLATION TEST RESULTS

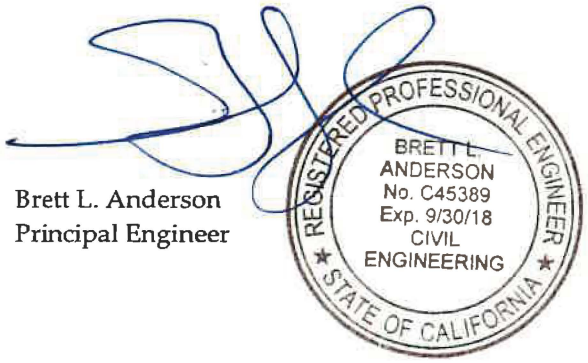
Test Location No.	Depth (ft)	Percolation Rate (in/hour)	Infiltration Rate Porchet's Method (in/hr)
P-1	5.0	33.5	11.08

Infiltration testing was performed on November 18, 2016 utilizing a double ring infiltrometer. Testing was performed in general accordance with the *Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer* (ASTM D-3385). **Testing indicated an infiltration rate of 8.8 inches per hour (in/hr) for Test Location No. P-2.**

The rates determined represent ultimate rates and an appropriate safety factor should be incorporated into the design to account for long-term saturation and potential "silting" of the surface soil. The safety factor should be determined with consideration to other factors considered in the storm water retention system design (specifically storm water volume estimates) and the safety factors associated with the related design components.

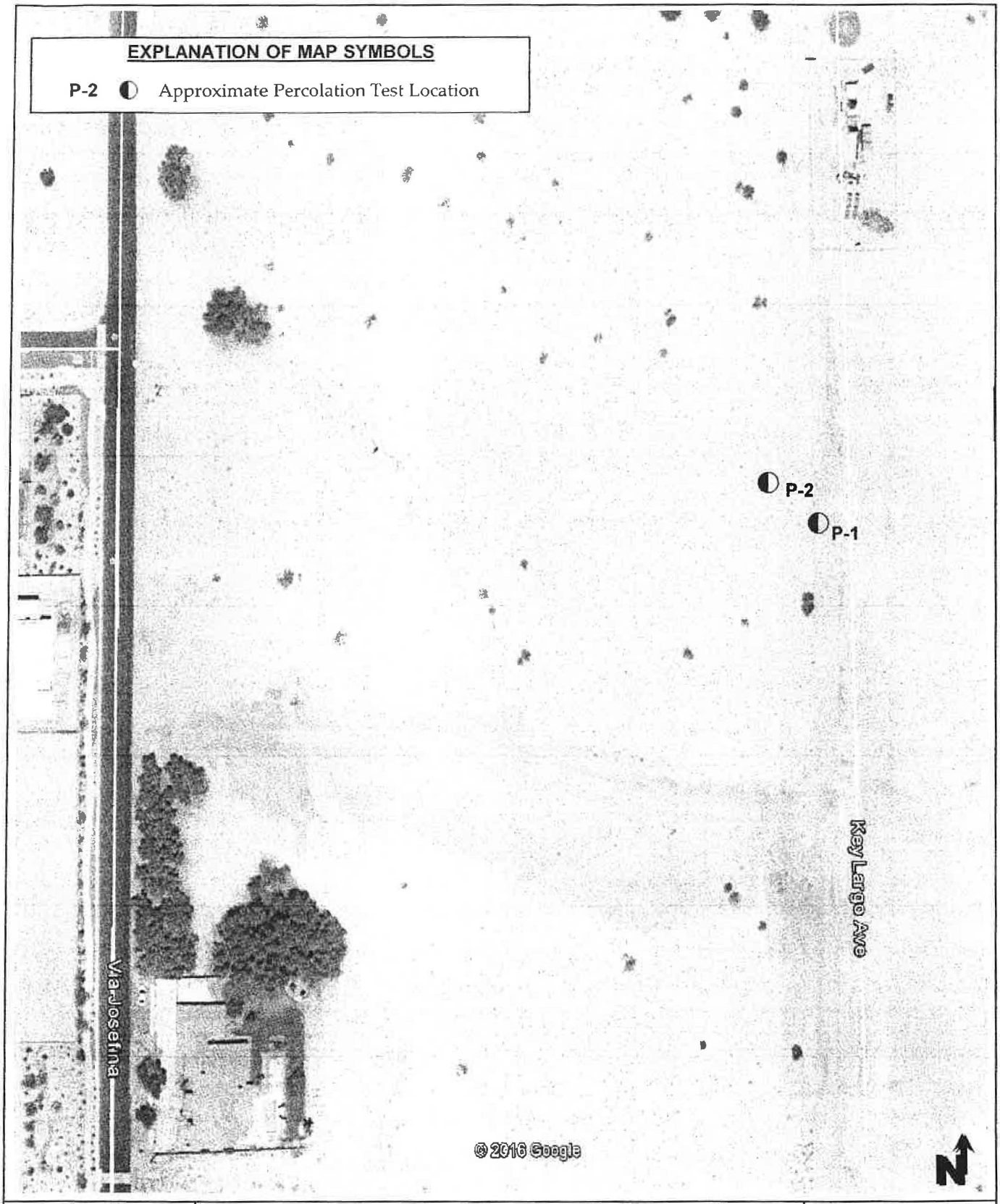
If you have any questions regarding this memo, please contact the undersigned.

Respectfully submitted,
SLADDEN ENGINEERING



Brett L. Anderson
Principal Engineer

Copies: 4 / Addressee



Sladden Engineering	TEST LOCATION PHOTOGRAPH		FIGURE 1
	Project Number:	544-16293	
	Report Number:	16-12-514	
	Date:	December 19, 2016	

STORM WATER PERCOLATION DATA SHEET

Project: Victory Lane & Via Josefina
Test Hole: P-1
Depth of Test Hole: 5.0 Feet
Check for Sandy Soil Criteria Tested by: Matt T.
Actual Percolation Tested by: Matt T.

Job No: 544-16293
Date Excavated: 11-18-16
Soil Classification: SP-SM
Date: 11-18-16
Date: 11-18-16

Reading Number	Time of Reading	Time Interval Minutes	Total Depth of Hole (ft)	Initial Water Level (in)	Final Water Level (in)	Difference Water Level (in)
A	9:00 9:25	25	5.0	10.0	0.0	10.0
B	9:25 9:50	25	5.0	10.0	0.0	10.0
1.	9:50 10:05	15	5.0	9.5	0.0	9.5
2.	10:05 10:20	15	5.0	8.0	0.0	8.0
3.	10:20 10:35	15	5.0	8.5	0.0	8.5
4.	10:35 10:50	15	5.0	8.0	0.0	8.0
5.	10:50 11:05	15	5.0	8.0	0.0	8.0
6.	11:05 11:20	15	5.0	9.0	0.0	9.0
7.						
8.						
9.						
10.						
11.						
12.						

PERCOLATION RATE CONVERSION (PORCHET METHOD), RIVERSIDE COUNTY

$$I_{t=} \quad \frac{\Delta H\ 60\ R}{\Delta t(r+2H_{avg})}$$

Δt (minutes)

D_f (Final Depth to water)

r (hole radius in inches)

D_0 (Initial Depth to water)

D_t (Total Depth of test hole)

H_0 (initial height of water at selected time interval)

$$H_0 = D_t - D_0$$

H_f (final height of water at the selected time interval)

$$H_f = D_t - D_f$$

ΔH (change in head over the time interval)

$$\Delta H = H_0 - H_f$$

H_{avg} (average head height over the time interval)

$$H_{avg} = (H_0 + H_f)/2$$

Test Hole: **P-1**

Δt =	15
D_f =	60
r =	4.00
D_0 =	51
D_t =	60.00
H_0 =	9
H_f =	0
ΔH =	9.00
H_{avg} =	4.50

I_t= 11.08 **in/hr**

DOUBLE RING PERCOLATION RATE CALCULATIONS

Job No. 544-16296

Test Hole P-2

INNER RING

Interval Number	Initial Water(cm)	Final Water(cm)	Con. Factor (cm to in)	Water (in)	Area Mar. (in2)	Volume (in3)	Area IR (in2)	Time (min)	Time (hr)	Vir (in/hr)
1	47.0	0.0	0.39	18.5	8.9	165.5	113.1	10	0.17	8.8
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										

AVERAGE RATE* = 8.8 (in/hr)

APPENDIX E

REFERENCES

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Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/28/2023
Case Description: RNCH 004

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential Homes	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	100	10
Compactor (ground)	No	20		83.2	100	10
Concrete Mixer Truck	No	40		78.8	100	10
Concrete Pump Truck	No	20		81.4	100	10
Dump Truck	No	40		76.5	100	10
Excavator	No	40		80.7	100	10
Grader	No	40	85		100	10
Front End Loader	No	40		79.1	100	10
Roller	No	20		80	100	10
Paver	No	50		77.2	100	10
Tractor	No	40	84		100	10
Flat Bed Truck	No	40		74.3	100	10

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Backhoe		61.5	60.6	85	75	85	60	80	55	None	None	None	0.6	None	5.6
Compactor (ground)		67.2	63.2	85	75	85	60	80	55	None	None	None	3.2	None	8.2
Concrete Mixer Truck		62.8	61.8	85	75	85	60	80	55	None	None	None	1.8	None	6.8
Concrete Pump Truck		65.4	61.4	85	75	85	60	80	55	None	None	None	1.4	None	6.4
Dump Truck		60.4	59.5	85	75	85	60	80	55	None	None	None	None	None	4.4
Excavator		64.7	63.7	85	75	85	60	80	55	None	None	None	3.7	None	8.7
Grader		69	68	85	75	85	60	80	55	None	None	None	8	None	13
Front End Loader		63.1	62.1	85	75	85	60	80	55	None	None	None	2.1	None	7.1
Roller		64	60	85	75	85	60	80	55	None	None	None	None	None	5
Paver		61.2	61.2	85	75	85	60	80	55	None	None	None	1.2	None	6.2
Tractor		68	67	85	75	85	60	80	55	None	None	None	7	None	12
Flat Bed Truck		58.2	57.3	85	75	85	60	80	55	None	None	None	None	None	2.3
	Total	69	74	85	75	85	60	80	55	None	None	None	14	None	19

*Calculated Lmax is the Loudest value.

CITY OF RANCHO MIRAGE

November 22, 2023

Agua Caliente Band of Cahuilla Indians
Attn: Patricia Garcia, Director of Historic Preservation
5401 Dinah Shore Drive
Palm Springs, CA 92264

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Director of Historic Preservation,

The Native American Heritage Commission (NAHC) has identified your organization as having or potentially having traditional lands or cultural places located within the boundaries of the City of Rancho Mirage. In addition, the City of Rancho Mirage has been notified that your agency requests AB52 notification when an environmental action pursuant to the California Environmental Quality Act (CEQA) is being processed. In compliance with California Government Code Section 65352.3, this letter is to inform you of the proposed 17 lot subdivision project and to initiate the AB 52 & SB 18 consultation process. Below you will find a description of the proposed project.

The project will be located on a 8.41-acre project site located at the east side of Via Josefina at the terminus of Victory Drive (APNs: 685-080-031 685-080-010, & 685-030-006). The project proposes to subdivide the 8.41 acre project site into a 17 residential lots gated community with lots ranging in size from 12,510 square feet to 22,323 square feet. Private streets are proposed in addition to a retention basin and perimeter landscaping within the common areas of the development. Access to the site will be via a gated entry along Via Josefina. A General Plan Zoning Map Amendment is also proposed to modify the land use designation of APN: 685-080-031 for approximately 1.5 acres from Very Low Density Residential (R-L-2) to Medium Density Residential (R-M).

California Government Code provides that tribal organizations must request consultation within 90 days of receiving notice of a project. However, in the interest of expediting review and meeting other state-mandated deadlines, we ask that you respond in writing to this correspondence at your earliest convenience.

The City of Rancho Mirage is committed to a productive AB 52 & SB 18 consultation process and positive working relationships with the Tribal government. Should you have questions regarding this letter, please contact me at 760-328-2266 or via e-mail at bent@ranchomirageca.gov.

Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Augustine Band of Cahuilla Mission Indians
Attn: Amanda Vance, Chairperson
84001 Avenue 54
Coachella, CA 92236

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Chairperson,

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Cabazon Band of Mission Indians
Attn: Doug Welmas, Chairperson
84245 Indio Springs Parkway
Indio, CA 92203

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Cahuilla Band of Indians
Attn: Anthony Madrigal, Tribal Historic Preservation Officer
52701 CA Highway 371
Anza, CA 92539

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Tribal Historic Preservation Officer,

The Native American Heritage Commission (NAHC) has identified your organization as having or potentially having traditional lands or cultural places located within the boundaries of the City of Rancho Mirage. In addition, the City of Rancho Mirage has been notified that your agency requests AB52 notification when an environmental action pursuant to the California Environmental Quality Act (CEQA) is being processed. In compliance with California Government Code Section 65352.3, this letter is to inform you of the proposed 17 lot subdivision project and to initiate the AB 52 & SB 18 consultation process. Below you will find a description of the proposed project.

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Cahuilla Band of Indians
Attn: Daniel Salgado, Chairperson
52701 CA Highway 371
Anza, CA 92536

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Chairperson,

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Cahuilla Band of Indians
Attn: BobbyRay Esparza, Cultural Director
52701 CA Highway 371
Anza, CA 92539

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Cultural Director,

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Campo Band of Diegueno Mission Indians
Attn: Ralph Goff, Chairperson
36130 Church Road, Suite 1
Campo, CA 91306

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Chairperson,

The Native American Heritage Commission (NAHC) has identified your organization as having or potentially having traditional lands or cultural places located within the boundaries of the City of Rancho Mirage. In addition, the City of Rancho Mirage has been notified that your agency requests AB52 notification when an environmental action pursuant to the California Environmental Quality Act (CEQA) is being processed. In compliance with California Government Code Section 65352.3, this letter is to inform you of the proposed 17 lot subdivision project and to initiate the AB 52 & SB 18 consultation process. Below you will find a description of the proposed project.

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The City of Rancho Mirage is committed to a productive AB 52 & SB18 consultation process and positive working relationships with the Tribal government. Should you have questions regarding this letter, please contact me at 760-328-2266 or via e-mail at bent@ranchomirageca.gov.

Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Ewiiaapaayp Band of Kumeyaay Indians
Attn: Michael Garcia, Vice Chairperson
4054 Willows Road
Alpine, CA 91301

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Vice Chairperson,

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Ewiiaapaayp Band of Kumeyaay Indians
Attn: Robert Pinto, Chairperson
4054 Willows Road
Alpine, CA 91301

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

La Posta Band of Diegueno Mission Indians
Attn: Gwendolyn Parada, Chairperson
8 Crestwood Road
Boulevard, CA 91305

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

La Posta Band of Diegueno Mission Indians
Attn: Javaughn Miller, Tribal Administrator
8 Crestwood Road
Boulevard, CA 91305

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Tribal Administrator,

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Los Coyotes Band of Cahuilla and Cupeno Indians
Attn: Ray Chapparosa, Chairperson
P.O. Box 189
Warner Springs, CA 92086-0189

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Manzanita Band of Kumeyaay Nation
Attn: Angela Elliott Santos, Chairperson
P.O. Box 1302
Boulevard, CA 91305

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Chairperson,

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Mesa Grand Band of Diegueno Mission Indians
P.O Box 270
Santa Ysabel, CA 92070

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Mesa Grand Band of Diegueno Mission Indians,

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Morongo Band of Mission Indians
Attn: Robert Martin, Chairperson
12700 Pumarra Road
Banning, CA 92220

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Morongo Band of Mission Indians
Attn: Ann Brierty, THPO
12700 Pumarra Road
Banning, CA 92220

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Tribal Historic Preservation Officer,

The Native American Heritage Commission (NAHC) has identified your organization as having or potentially having traditional lands or cultural places located within the boundaries of the City of Rancho Mirage. In addition, the City of Rancho Mirage has been notified that your agency requests AB52 notification when an environmental action pursuant to the California Environmental Quality Act (CEQA) is being processed. In compliance with California Government Code Section 65352.3, this letter is to inform you of the proposed 17 lot subdivision project and to initiate the AB 52 & SB 18 consultation process. Below you will find a description of the proposed project.

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Quechan Tribe of the Fort Yuma
Attn: Manfred Scott, Acting Chairman
P.O. Box 1899
Yuma, CA 85366

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Acting Chairman,

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Quechan Tribe of the Fort Yuma Reservation
Attn: Jill McCormick, Historic Preservation Officer
P.O. Box 1899
Yuma, AZ 85366

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Quechan Tribe of the Fort Yuma Reservation
Attn: Jordan Joaquin, President
P.O. Box 1899
Yuma, AZ 85366

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear President,

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Ramona Band of Cahuilla
Attn: Joseph Hamilton, Chairperson
P.O. Box 391670
Anza, CA 92539

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Santa Rosa Band of Cahuilla Indians
Attn: Lovina Redner, Tribal Chair
P.O. Box 391820
Anza, CA 92539

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Tribal Chair,

The Native American Heritage Commission (NAHC) has identified your organization as having or potentially having traditional lands or cultural places located within the boundaries of the City of Rancho Mirage. In addition, the City of Rancho Mirage has been notified that your agency requests AB52 notification when an environmental action pursuant to the California Environmental Quality Act (CEQA) is being processed. In compliance with California Government Code Section 65352.3, this letter is to inform you of the proposed 17 lot subdivision project and to initiate the AB 52 & SB 18 consultation process. Below you will find a description of the proposed project.

The project will be located on a 8.41-acre project site located at the east side of Via Josefina at the terminus of Victory Drive (APNs: 685-080-031 685-080-010, & 685-030-006). The project proposes to subdivide the 8.41 acre project site into a 17 residential lots gated community with lots ranging in size from 12,510 square feet to 22,323 square feet. Private streets are proposed in addition to a retention basin and perimeter landscaping within the common areas of the development. Access to the site will be via a gated entry along Via Josefina. A General Plan Zoning Map Amendment is also proposed to modify the land use designation of APN: 685-080-031 for approximately 1.5 acres from Very Low Density Residential (R-L-2) to Medium Density Residential (R-M).

California Government Code provides that tribal organizations must request consultation within 90 days of receiving notice of a project. However, in the interest of expediting review and meeting other state-mandated deadlines, we ask that you respond in writing to this correspondence at your earliest convenience.

The City of Rancho Mirage is committed to a productive AB 52 & SB18 consultation process and positive working relationships with the Tribal government. Should you have questions regarding this letter, please contact me at 760-328-2266 or via e-mail at bent@ranchomirageca.gov.

Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Soboba Band of Luiseno Indians
Attn: Jessica Valdez, Cultural Resource Specialist
P.O. Box 487
San Jacinto, CA 92581

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Cultural Resource Specialist,

The Native American Heritage Commission (NAHC) has identified your organization as having or potentially having traditional lands or cultural places located within the boundaries of the City of Rancho Mirage. In addition, the City of Rancho Mirage has been notified that your agency requests AB52 notification when an environmental action pursuant to the California Environmental Quality Act (CEQA) is being processed. In compliance with California Government Code Section 65352.3, this letter is to inform you of the proposed 17 lot subdivision project and to initiate the AB 52 & SB 18 consultation process. Below you will find a description of the proposed project.

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Soboba Band of Luiseno Indians
Attn: Joseph Ontiveros, Tribal Historic Preservation Officer
P.O. Box 478
San Jacinto, CA 92581

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Tribal Historic Preservation Officer,

The Native American Heritage Commission (NAHC) has identified your organization as having or potentially having traditional lands or cultural places located within the boundaries of the City of Rancho Mirage. In addition, the City of Rancho Mirage has been notified that your agency requests AB52 notification when an environmental action pursuant to the California Environmental Quality Act (CEQA) is being processed. In compliance with California Government Code Section 65352.3, this letter is to inform you of the proposed 17 lot subdivision project and to initiate the AB 52 & SB 18 consultation process. Below you will find a description of the proposed project.

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

CITY OF RANCHO MIRAGE

November 22, 2023

Torres-Martinez Desert Cahuilla Indians
Attn: Thomas Tortez, Chairperson
P.O. Box 1160
Thermal, CA 92274

RE: AB 52 & SB 18 Consultation: 17 Lot Via Josefina Subdivision – Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003

Dear Chairperson,

The Native American Heritage Commission (NAHC) has identified your organization as having or potentially having traditional lands or cultural places located within the boundaries of the City of Rancho Mirage. In addition, the City of Rancho Mirage has been notified that your agency requests AB52 notification when an environmental action pursuant to the California Environmental Quality Act (CEQA) is being processed. In compliance with California Government Code Section 65352.3, this letter is to inform you of the proposed 17 lot subdivision project and to initiate the AB 52 & SB 18 consultation process. Below you will find a description of the proposed project.

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Sincerely,

Ben Torres

Ben Torres
Planning Manager

AUGUSTINE BAND OF CAHUILLA INDIANS
84-481 Avenue 54, Coachella CA 92236
Telephone: (760) 398-4722
Fax (760) 369-7161
Tribal Chairperson: Amanda Vance
Tribal Vice-Chairperson: Victoria Martin
Tribal Secretary: Geramy Martin

Date: 11/29/2023

Dear: Ben Torres
Planning Manager

SUBJECT: AB 52 &SB 18 Consultation: 17 Lot Via Josefina Subdivision- Environmental Assessment Case No. EA23-0010, General Plan Zoning Map Amendment Case No. GPZMA23-0004, and Tentative Tract Map Case No. TTM23-0003.

Thank you for the opportunity to offer input concerning the development of the above-identified project. We appreciate your sensitivity to the cultural resources that may be impacted by your project and the importance of these cultural resources to the Native American peoples that have occupied the land surrounding the area of your project for thousands of years. Unfortunately, increased development and lack of sensitivity to cultural resources have resulted in many significant cultural resources being destroyed or substantially altered and impacted. Your invitation to consult on this project is greatly appreciated.

At this time, we are unaware of specific cultural resources that may be affected by the proposed project, however, in the event, you should discover any cultural resources during the development of this project please contact our office immediately for further evaluation.

Very truly yours,

Geramy Martin

Geramy Martin, Tribal Secretary
Augustine Band of Cahuilla Indians