APPENDIX G

HYDROLOGICAL AND WATER QUALITY EVALUATION

SCAG REAP Project 2-B

Hydrological and Water Quality Evaluation

prepared for

Kimley-Horn

prepared by

Rincon Consultants, Inc.

September 6, 2023

RINCON CONSULTANTS, INC.
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September 6, 2023
Project No: 21-12086

Jessie Fan, ENV SP
Kimley-Horn
Horn 660 South Figueroa Street, Suite 2050
Los Angeles, California 90017
Via email: Jessie.Fan@kimley-horn.com

Subject: Hydrological and Water Quality Technical Study for the Southern California Association of Governments (SCAG) Regional Early Action Planning (REAP) Project 2-B-Palmdale Housing Project, Los Angeles County, California

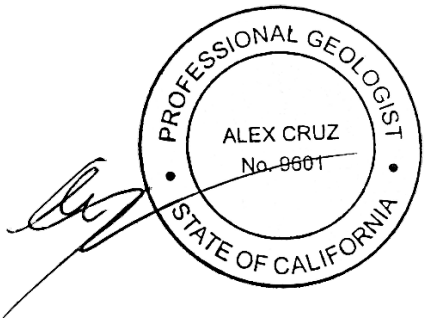
Dear Ms. Fan:

Rincon Consultants Inc. (Rincon) has prepared this Hydrology and Water Quality Evaluation (Evaluation) for the Southern California Association of Governments (SCAG) Regional Early Action Planning (REAP) 2-B Housing Project (Project) in Palmdale, California. The Evaluation was performed in accordance with the Proposal to Prepare Technical Studies for the SCAG REAP Project 2-B, dated January 29, 2022.

The purpose of the Evaluation was to evaluate the Project's potential impacts to local hydrology and water quality as required under the California Environmental Quality Act, in support of Kimley-Horn's preparation of an Initial Study for the project. At this time, Rincon is unaware of geotechnical, groundwater, percolation, hydrology and hydraulics, or drainage studies for the Project. If available, such documents are typically reviewed during the preparation of this Evaluation; therefore, site-specific water-related information is currently limited.

Thank you for selecting Rincon for this project. If you have any questions, or if we can be of any future assistance, please contact us.

Sincerely,
Rincon Consultants, Inc.



This document has been digitally signed and sealed by Alex Cruz, PG on 9/6/2023.

Alex Cruz, PG
Senior Environmental Geologist

Kiernan Brtalik, MESM, CPSWQ, QSD/P
Director Watershed Sciences

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Figures

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1 Introduction and Background

Rincon Consultants Inc. (Rincon) has prepared this Hydrology and Water Quality Evaluation (Evaluation) for the Southern California Association of Governments (SCAG) Regional Early Action Planning (REAP) 2-B Housing Project (Project) in Palmdale, California (City; The proposed Project site and surrounding areas to the west, north, and east are designated Residential Neighborhood (RN2), in the City of Palmdale General Plan. Areas directly to the south are designated Single Family Residential 3 (SFR3). The RN2 land use designation is intended for a range of housing types, including small-lot single-family residential, townhouses, condominiums, and apartments with on-site recreation and open space. Figure 1). The Evaluation was performed in accordance with the Proposal to Prepare Technical Studies for the SCAG REAP Project 2-B, dated January 29, 2022.

The purpose of this Evaluation is to identify potential environmental conditions related to hydrology and water quality that may result from, or affect the development of, the Project, and to provide a qualitative assessment of the impacts thereof. Hydrological impacts pertain to the supply, distribution and circulation of surface and groundwater (including over floodplains), and water quality to the characteristics of that water. The hydrological and water quality impacts were evaluated specifically with respect to the current version of Appendix G of the California Environmental Quality Act (CEQA) Guidelines. This Evaluation is intended to support the Initial Study (IS) that is being prepared for the Project by Kimley-Horn in accordance with CEQA Guidelines.

1.1 Methodology

To identify and assess hydrologic and water quality impacts, Rincon reviewed previous investigative studies and publicly available information, including maps, online databases, articles, reports, and published research papers. Information sources used in this Evaluation include, but are not limited to, the following:

- U.S. Geological Survey (USGS) topographic maps
- California Department of Water Resources (DWR) online maps
- Regional Water Quality Plan
- Natural Resources Conservation Services soils maps
- Federal Emergency Management Agency (FEMA) flood maps

At this time, Rincon is unaware of geotechnical, groundwater, percolation, hydrology and hydraulics, or drainage studies for the Project. If available, such documents are typically reviewed during the preparation of this Evaluation; therefore, site-specific water-related information is currently limited.

All sources are documented in Section 8, with internet links included where available. The sources were interpreted and reviewed by a Professional Geologist; professional stamps and signatures are included in Section 7.

1.2 Project Description

The following sections describe the Project's site, development plans, and zoning.

Project site

The proposed Project site is in the city of Palmdale, approximately 35 miles north of downtown Los Angeles, in the high desert area of northeast Los Angeles County (County; The proposed Project site and surrounding areas to the west, north, and east are designated Residential Neighborhood (RN2), in the City of Palmdale General Plan. Areas directly to the south are designated Single Family Residential 3 (SFR3). The RN2 land use designation is intended for a range of housing types, including small-lot single-family residential, townhouses, condominiums, and apartments with on-site recreation and open space. Figure 1).

The approximately 14.32 acre proposed Project site consists of five parcels, numbered Parcels 1 through 5, that will be consolidated from 45 smaller parcels located between 25th Street East, East Avenue R 8, 29th Street East, and East Avenue R12 in south Palmdale (Figure 2).

Regional access to the proposed Project site is provided via State Route 14 (SR 14), which runs north-south approximately 2.8 miles west of the proposed Project site. Local access to the proposed Project site is provided via SR 138, East Avenue S, and 25th Street East. The proposed Project site encompasses portions of Section 6 of Township 5N, Range 11W, Section 1 of Township 5N, Range 12W, and Sections 31 and 32 of Township 6N, Range 11W on the Palmdale, California USGS 7.5-minute topographic quadrangle.

The proposed Project site is vacant and undeveloped. Single-family residential uses are adjacent to the Project site along the east and can be found across East Avenue R12 to the south. To the north and west of the Project site lie areas of undeveloped land.

Development Plans

The Project proposes to develop a community of mixed housing types serving a range of income levels. The proposed Project includes 330 dwelling units composed of 152 affordable walkup apartments, 84 market rate apartments, 60 townhomes, and 34 cottages.

The proposed Project would include 4.5 acres of landscaped and open space areas, representing approximately 31 percent of the overall Project area. An additional 0.7 acre of landscaped areas would be developed within the public right-of-way in the form of planting strips and other landscaping. Parcel 5 would be developed as a two-acre public park. Parcels 1 through 3 would feature pocket parks and Parcel 2 would include play areas, connecting the street to the interior of each parcel development.

Project construction is anticipated to occur in multiple phases based on the parcel. As there is no known Project Proponent at this time, the phasing and construction schedule is speculative. Based on projects of similar size and phasing, assumptions were made to present a feasible construction schedule based on the parcels. Construction of Parcel 1 would last approximately 12 months, beginning as early as October 2025 and ending as early as September 2026. Construction of Parcel 2 would last approximately 14 months, beginning as early as August 2026 and ending as early as September 2027. Construction of Parcel 3 would last approximately 13 months, beginning as early as January 2024 and ending as early as January 2025. Construction of Parcel 4 would last approximately 11 months, beginning as early as December 2024 and ending as early as October

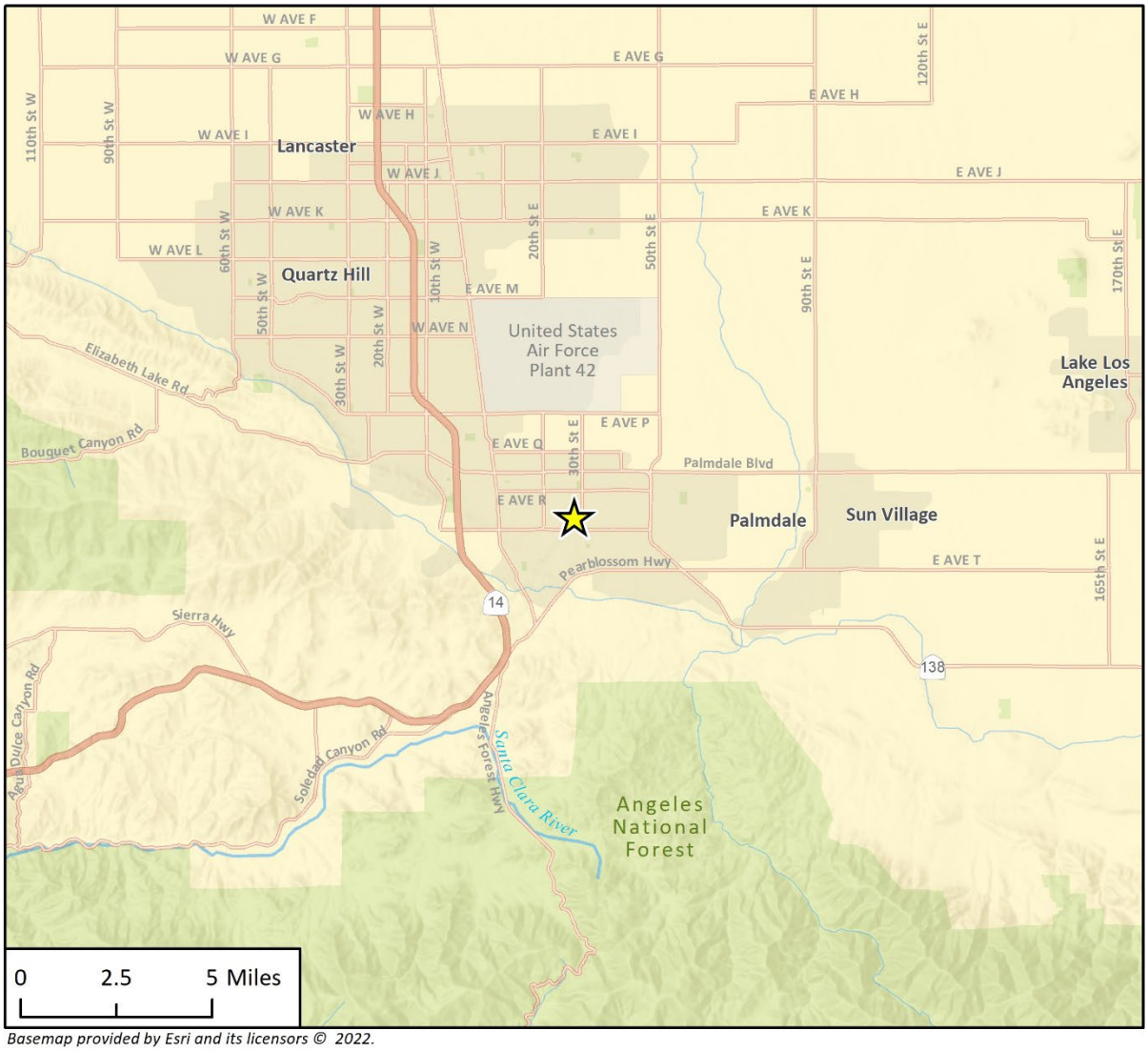
2025. Construction of Parcel 5 would last approximately 11 months, beginning as early as September 2027 and ending as early as July 2028. For the purposes of this environmental analysis, the opening year is assumed to be 2028.

Zoning

The proposed Project site and surrounding areas to the west, north, and east are designated Residential Neighborhood (RN2), in the City of Palmdale General Plan.[1] Areas directly to the south are designated Single Family Residential 3 (SFR3). The RN2 land use designation is intended for a range of housing types, including small-lot single-family residential, townhouses, condominiums, and apartments with on-site recreation and open space.

[1] City of Palmdale, Palmdale 2045, Land Use Element, September 2022.

Figure 1 Regional Location



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Project Location

N

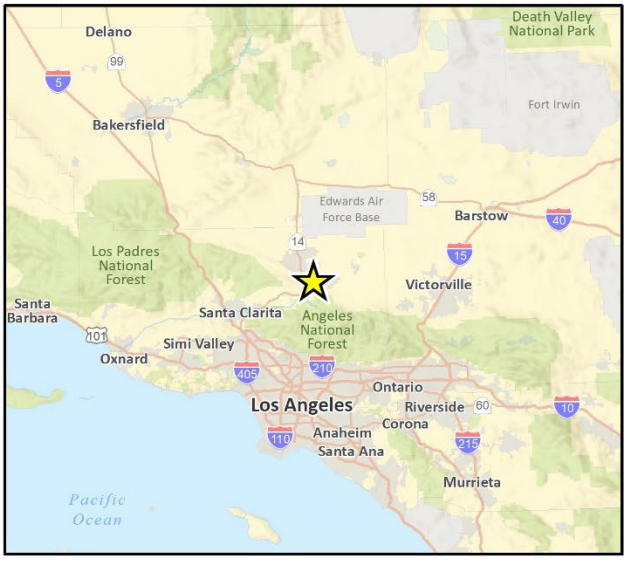
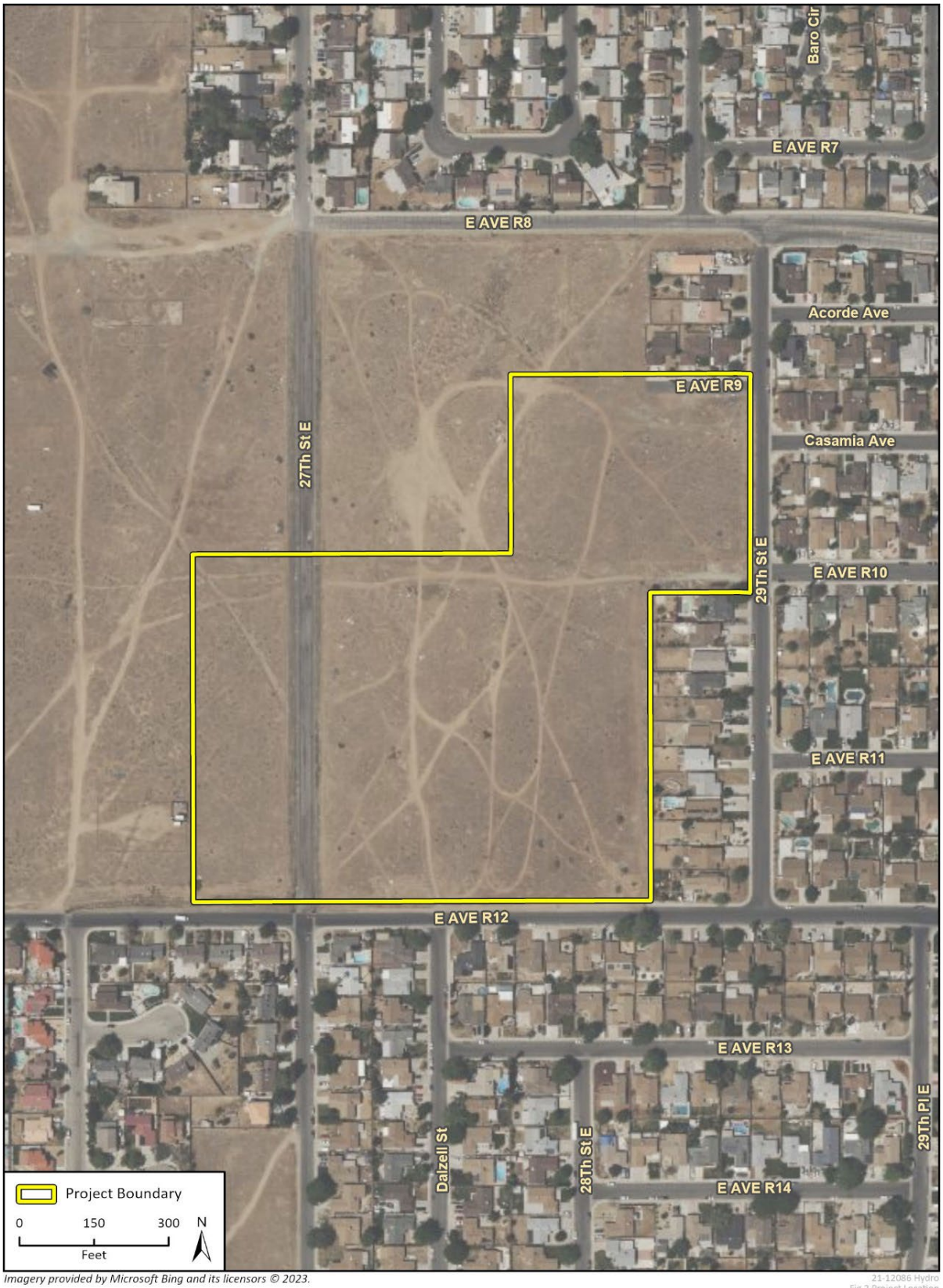


Figure 2 Project Area



2 Regulatory Setting

The Project is subject to federal and State regulatory requirements that are intended to characterize and reduce risks posed to water quality and supply, to projects by hydrological hazards (such as floods and tsunamis). Mandatory compliance with current State and local construction, engineering, and building standards, which are based on the best available science and technology, provide additional protection against conditions that could affect water quality. Adherence to these requirements is confirmed and approved by regulatory entities at various stages of a project's planning and implementation phases.

Generally, these regulatory requirements and industry standards are promulgated by various federal, State, and local sources, including the Clean Water Act (CWA); the California Water Code; the Porter-Cologne Act; the California Anti-Degradation Policy; National Pollutant Discharge Elimination System (NPDES) Permits; the California Water Quality Control Board Low Impact Development (LID) Policy; the City's General Plan (known as Envision Palmdale 2045); and the City of Palmdale Municipal Code (PMC).

2.1 Federal Regulations

A brief description of federal regulations that were evaluated for relevance to the Project is included below:

- **Clean Water Act.** The Federal Water Pollution Control Act (commonly known as the Clean Water Act), was originally passed by the United States Congress in 1972, and was subsequently amended in 1977, 1987, 1990, 1998, and 1999 in ways that materially impacted construction projects. The CWA is the primary federal law regulating water quality in the United States and established the basic structure for regulating discharges of pollutants into jurisdictional waters of the United States (WOTUS). It forms the basis for several state and local laws throughout the country. The CWA gives the United States Environmental Protection Agency (USEPA) the authority to implement federal pollution control programs, such as setting water quality standards for contaminants in surface water, establishing wastewater and effluent discharge limits for various industry contaminants in surface water, establishing wastewater and effluent discharge limits for various industry categories, and imposing requirements for controlling nonpoint-source pollution. At the federal level, the CWA is administered by the USEPA and United States Army Corps of Engineers (USACE). At the state and regional levels in California, the CWA is administered and enforced by the California State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs). The Project is located within the jurisdiction of the Lahontan Regional Water Quality Control Board (LRWQCB).

  Provisions of the CWA which were evaluated for relevance to the current Project are discussed below:

  - **Section 303(d), List of Impaired Water Bodies and Total Maximum Daily Loads.** Section 303(d) of the CWA requires states, territories, and tribes to identify water bodies that do not meet the water quality objectives (WQOs) for their designated beneficial uses. Each state must submit an updated biennial list of water quality impaired water bodies, called the 303(d) list, to the U.S. EPA. The 303(d) list also identifies the pollutant(s) or stressor(s)

causing water quality impairment and establishes a priority for developing a control plan to address the impairment.

Impaired water bodies are identified via a collaborative process between the State and Regional Water Boards. If a water body is designated as "impaired," then the need for a Total Maximum Daily Load (TMDL) is evaluated and may be established for the affected water body. A TMDL establishes the maximum daily amount of a pollutant allowed in an identified water body and is used as a planning tool in addressing water quality impairments and improving water quality.

Two water bodies in the region are included on the 303(d) list: Little Rock Creek Reservoir and Lake Palmdale (SWQCB 2022b). Neither are receiving waters for stormwater runoff from the Project site.

- **Section 402 and the National Pollutant Discharge Elimination System.** As established in Section 402 in 1972, the CWA prohibits direct discharge of pollutants into WOTUS except in accordance with the NPDES Program. In 1987, an additional amendment established a framework for regulating municipal and industrial stormwater discharges under the NPDES Program. In 1990, a further amendment established stormwater permit application requirements for discharges of stormwater to WOTUS from construction projects with footprints greater than 5 acres, and from large Municipal Separate Storm Sewer Systems (MS4s). An MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) owned by a public body that is designed or used for collecting and conveying storm water. Additional requirements were set forth in 1998 for construction projects with footprints between 1 and 5 acres.

  The NPDES Program is intended to protect human health and the environment by establishing enforceable effluent limits on, and the monitoring of, discharges from regulated MS4s, certain industrial activities, and construction sites that are one or more acres in area and discharge to WOTUS. NPDES permittees are required to implement Best Management Practices (BMPs), and are regulated by the maximum extent practicable (MEP) or the Best Available Technology (BAT)/Best Control Technology (BCT) implementation of BMPs.

See Section 2.2 for additional information on State Regulations related to Section 402 and the NPDES program. Sections 401 and 404 of the CWA do not apply to the project, because are no WOTUS on the Project site subject to the CWA.

- **National Flood Insurance Act/Flood Disaster Protection Act.** The National Flood Insurance Act of 1968 made flood insurance available for the first time. The Flood Disaster Protection Act of 1973 made the purchase of flood insurance mandatory for the protection of property located in Special Flood Hazard Areas. These laws are relevant because they led to mapping of regulatory floodplains and to local management of floodplain areas according to guidelines that include prohibiting or restricting development in flood hazard zones.

  The Project is within an area that has been assessed with respect to Special Flood Hazard Areas (see Section 3.2).

2.2 State Regulations

A brief description State regulations that were evaluated for relevance to the Project is included below:

- **Porter-Cologne Water Quality Control Act.** The Porter-Cologne Water Quality Control Act (codified in 1969 as the California Water Code Division 7, Section 13000 et seq), is the fundamental water quality control law for California, and complies with the CWA. It established and designated the SWRCB as the prime statewide water quality planning agency and gives the nine State RWQCBs authority to regulate water quality.

  The SWRCB implements the CWA, and is responsible for preparing statewide water quality plans, while the RWQCBs are responsible for developing Regional Water Quality Plans, or Basin Plans (see Section 2.3 below).
- **CWA Section 402 and NPDES.**
  - **Construction General Permit.** In California, the NPDES program is administered by the SWRCB through the nine RWQCBs. The SWRCB has adopted an NPDES Construction General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Order 2022-0057-DWQ, which will become effective on September 1, 2023. Compliance with the Construction General Permit is required for projects which discharges to WOTUS and would result in more than one acre of ground disturbance, including through clearing, grading, grubbing, excavating, stockpiling, and removing or replacing existing facilities. The Construction General Permit requires the landowner and/or contractor to electronically file permit registration documents through the SWRCB's Stormwater Multiple Application and Report Tracking System (SMARTS) prior to commencing construction and pay a fee annually throughout the duration of construction. The permit registration documents include a notice of intent (NOI), risk assessment, site map, stormwater pollution prevention plan (SWPPP), and signed certification statement. The Construction General Permit specifies minimum BMP requirements for stormwater control based on the risk level of the site. The SWPPP must include measures to ensure the following:
    - All pollutants and their sources are controlled
    - Non-stormwater discharges are identified and eliminated, controlled, or treated
    - Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges
    - BMPs are installed to reduce or eliminate pollutants post-construction are completed and maintained

    If a project site is not hydrologically connected to water of the United States, then the requirements of the Construction General Permit do not apply to the project. The discharger may claim "No Discharge" by submitting both a Notice of Non-Applicability and a No Discharge Technical Report through SMARTS to demonstrate that the project site will not discharge to WOTUS.

    The Project site does not include and does not discharge to a WOTUS, as the City's MS4 receiving waters, Amargosa and Anaverde Creeks, are not WOTUS. Therefore, it is likely that the Project will be eligible for a No Discharge status and will therefore be exempt from the requirements of the Construction General Permit (LRWQCB 2005).

- **Phase II Separate Storm Sewer System Permit.** As discussed above, regulated MS4s must comply with a Phase I permits (for MS4s serving a population of 100,000 or more), or Phase II permits (small MS4s serving a population less than 100,000). MS4s are classified as "small, medium, or large." The SWRCB automatically designated the Palmdale MS4 as a "Small MS4" because it is located in an urbanized area defined by the Bureau of Census (City of Palmdale 2003). However, the Lahontan RWQCB does not regulate stormwater discharge in the City and the City's MS4 is not covered by a Phase I or Phase II permit because stormwater runoff from the City does not discharge to WOTUS (LRWQCB 2005). Instead, stormwater is regulated through the City's Stormwater Management Plan (SWMP) and municipal codes, which include construction and post-construction stormwater runoff control measures.

- **Sustainable Groundwater Management Act.** In September 2014, the state passed legislation requiring that California's critical groundwater resources be sustainably managed by local agencies. The Sustainable Groundwater Management Act (SGMA, Water Code Section 10720 et seq.) gives local agencies the power to sustainably manage groundwater. The Antelope Valley Groundwater Basin is considered a very low-priority basin and is currently exempt from the requirements of SGMA because it is within the Mojave Basin Area (MBA), which is an adjudicated area (City of Palmdale 2023). Adjudicated areas are exempt from SGMA because an Adjudication Judgement serves the same purpose of SGMA (to achieve and maintain sustainable groundwater conditions).

2.3 Local Regulations

A brief description local regulations that were evaluated for relevance to the Project is included below:

- **Water Quality Control Plan for the Lahontan Region (Basin Plan).** Palmdale is within the jurisdiction of the LRWQCB, and is subject to the Region's Water Quality Plan, also known as the Basin Plan (LRWQCB 2021). The Basin Plan forms the basis for the region's regulatory program. The Basin Plan establishes WQO for surface and groundwater and prohibits certain types of discharges in particular areas.
- **Antelope Valley Integrated Regional Water Management Plan (AVIRWMP).** Palmdale lies within the area considered in the AVIRWMP, which is a collaborative effort to manage and coordinate all aspects of water resources in the region by establishing specific objectives and planning targets. Objectives and planning targets pertain to water supply, water quality, flooding, environmental resource, and land use management.
- **MBA Adjudication Judgement.** The MBA Adjudication Judgement identifies all parties to the Judgement, and the rights of each party to underlying groundwater. The Judgement assigns Base Annual Production (BAP) rights to each party, which is the total amount of water each party is allocated, while the Antelope Valley Watermaster assigns a variable Free Production Allowance (FPA) each year, with the FPA being the portion of the BAP that each party is allowed to pump for the respective year. Any use of local groundwater on a proposed project would be subject to approval of the Watermaster. If water for a project is purchased from a local purveyor (in this case Palmdale's Public Works Department [PWD]), it would be the responsibility of the purveyor to ensure sufficient water is available from its annual FPA to support the project.

- **City of Palmdale Municipal Codes.** The City has promulgated various requirements and regulations in, and adopted several Los Angeles County Codes such as, the Palmdale Municipal Code (PMC). Municipal Codes that are applicable to the Project include:
  - Title 8 – Health and Safety
    - Section 8.04.200. The City has adopted the Los Angeles County Code Chapter 70, Excavation and Grading, as a portion of the Palmdale Building Code. This Provision requires that:
      - A Grading Permit be obtained prior to any grading. The Grading Permit application must include, but not limited to, a detailed plan of all drainage devices, estimated stormwater runoff of the area served by any drains, and stormwater provisions (Section 7005.2).
      - Grading Permit applications submitted for work to be performed between October 1 and April 15 of the following calendar year provide a Storm Water Management Plan (Section 7010).
      - The permittee implement all mitigation measures required by City's MS4 Permit (Section 7013.6).[2]
      - The permittee minimize the impacts of storm water and construction-related pollutants through the implementation of BMPs (Sections 7013.8.1 through 7013.8.4).
      - Certain drainage structures and devices be implemented (Sections 7018.1 through 7018.8).
      - Certain erosion control measures be implemented (7019.1 through 7019.7).
    - Section 8.04.240. The City has adopted Appendix J of the 2022 California Building Code as the Grading and Excavation Provisions. This provision requires that:
      - The permittee maintain the site to minimize stormwater impacts and construction related pollutants due to grading through the use of list BMPs (J104.10.8).
  - Title 13 – Sanitary Sewers and Industrial Waste
    - Provision 13.02.080 and 13.11.480. Prohibits the discharge of stormwater to a public sewer.
      - Title 14 – Environmental Management Provision 14.05.080. Requires project applicants to complete a soil management report in order to reduce stormwater runoff. This requires a project applicant to submit soil samples to a laboratory for analysis and recommendations. Soil would be tested for pH, total soluble salts, sodium, percent organic matter, and other physical or chemical properties.
      - Provision 14-05.090. Regulates efficient water use through Landscape Design Plans, which include proposed details such as plant material, water features, and soil preparation.
      - Provision 14.05.100. Contains irrigation design criteria, specifications, and requirements.

[2] The City is not currently regulated by an MS4 Permit; therefore, this provision of the City's Municipal Code is not currently applicable to projects within the City. The Lahontan RWQCB does not regulate stormwater discharge in the City and the City's MS4 is not covered by a Phase I or Phase II MS4 permit because stormwater runoff from the City does not discharge to WOTUS.

        - Provision 14.05.110. Regulates grading design plans including recommendations for preventing excessive erosion and stormwater runoff.
        - Provision 14.05.200. Regulates stormwater management practices to minimize stormwater runoff and increase infiltration which recharges groundwater and improves water quality.
    - Title 15 – Building and Construction
        - Chapter 15.28. Minimizes public and private losses due to flood conditions in specific areas by legally enforceable regulations applied uniformly throughout the community to all publicly and privately owned land within flood prone mudslide (i.e., mudflow) or flood related erosion areas. This chapter of the PMC contains the basis for obtaining a development permit in flood prone areas and construction standards intended to minimize impacts of flooding.

- **City of Palmdale Department of Public Works Standards.** The Engineering division of the City of Palmdale's PWD has established several standards, requirements, and procedures that govern new developments within its jurisdiction. When a plan is required, the PWD reviews and approves the plan prior to construction, and may perform spot checks during construction to ensure that PWD standards are met. These include, but are not limited to:
    - Grading Plans – Establishes minimum acceptable standards for the design and preparation of grading plans with respect to the PMC.
    - Geotechnical Reports – Establishes a multi-step process for evaluating the geotechnical feasibility and design of projects. The Geotechnical Report will describe the current soil characteristics and geologic hazards and discuss the grading plans in relation to those conditions.
    - Street Improvement Plans – Establishes minimum requirements for all plans for public improvements. Includes storm drain hydraulics calculations and maps illustrating storm drain improvements.
    - Hydrology and Hydraulic Studies – Requires a study of the site's current and proposed development drainage, hydrology, and hydraulic characteristics in accordance with the City of Palmdale's Design Standards, Section 5 – Drainage Studies and Improvement Plans (Palmdale 2023). Section 5 requires that developments consisting of five or more acres mitigate on-site stormwater runoff, and that nuisance flows be mitigated for all projects regardless of size. The requirements accord with the County of Los Angeles Department of Public Works requirements.

- **City of Palmdale Storm Water Management Plan.** The City of Palmdale Public Works Department prepared the SWMP to establish protocols and regulations to protect water quality.
- **Envision Palmdale 2045.** California requires that counties and cities adopt General Plan policies that form a framework for community development, and that address the issues facing the city for the next 15 – 20 years. Envision Palmdale 2045 is the City of Palmdale's General Plan, and it provides direction and resources pertinent to the protection of surface and groundwater. The General Plan contains several policies that are applicable to the Project, including, but not limited to:
    - Goal CON-5. Protect the quality and quantity of local water resources.
        - CON-5.1 Ground water recharge. Ensure that ground water supplies are recharged and protect natural recharge areas such as the Little Rock and Big Rock Washes,

and Amargosa and Anaverde Creeks from pollutants or other materials, which might degrade groundwater supplies.

- Goal CON-6. Minimize the impacts of urban development on groundwater supplies.
  - CON-6.1 Encourage natural recharge. Restrict building coverage and total impervious area in the vicinity of natural recharge areas.
  - CON-6.2 Reduce landscaping irrigation needs. Require the use of water conserving native or drought resistant plants and drip irrigation systems where feasible.
  - CON-6.3 Reduce street runoff. Design streets to incorporate vegetation, soil, and engineered systems to slow, filter, and cleanse stormwater runoff.
  - CON-6.4 New construction water conservation. Require water conserving appliances and plumbing fixtures in all new construction.
- Goal CON-7. Maintain and further the City's commitment to long-term water management within the Antelope Valley by planning for the conservation and managed use of water resources, including groundwater, imported water, and reclaimed water.
  - CON-7.1 Reclaimed water irrigation. Assess and implement, when and where feasible, reclaimed water for landscape irrigation.
  - CON-7.6 Water recycling. Encourage residents and businesses to recycle water where feasible, and where water recycling does not result in health and safety concerns.
- Goal PSFI-3: Ensure that all development in Palmdale is served by adequate water distribution and sewage facilities.
  - Policy PSFI-3.13 Low Impact Development. Require new development to minimize storm water runoff and pollutant exposure by incorporating low impact development (LID) measures and appropriate best management practices (BMPs) consistent with the National Pollution Discharge Elimination System (NPDES).

- **Palmdale Water District's 2020 Urban Water Management Plan (UWMP).** California mandates that all urban water suppliers within the state prepare a UWMP, which is a planning tool to generally guide the actions of water suppliers. The 2020 UWMP addresses water quality, sustainability, and groundwater management within PWD's service area.

3 Existing Conditions

3.1 Physical Setting

The Project site straddles the Transverse Ranges and Mojave Desert California Geomorphic Provinces (CGS 2002a). The Transverse Ranges are characterized by east-west trending mountains and valleys, and the eastern extent of the province is the San Andreas Fault. The Mojave Desert is a set of interior mountain ranges isolated by extensive desert plains. The San Gabriel Mountains bound the Mojave Desert province to the south in the vicinity of the Project site.

The Project site lies within an area primarily containing the Rosamond loam soil class, which is a well-drained alluvial fan deposit (UCD 2023). The Project site lies at an elevation of approximately 2,670 feet above mean sea level (ft amsl; USGS 2021) and is generally flat with a gradual downslope towards the north.

3.2 Environmental Setting

Watershed

The Project site lies within the Antelope Valley Region (Region), which is a closed topographic basin with no ocean outlet (AVIRWMP 2013). The Region is made up of approximately 2,400 square miles, and predominantly lies within Los Angeles and Kern Counties, with a lesser, easterly portion extending into San Bernardino County. The Region is roughly triangular in shape, bounded to the west and south by the San Gabriel Mountains, to the north by the Tehachapi Mountains, and to the east by a north-south trending range of hills and buttes that approximately coincide with the San Bernardino County line.

The Region is subdivided into localities, and the Project site is within the Lake Palmdale Watershed (Watershed; USEPA 2023), which is within the larger Antelope Valley Watershed. The Watershed has hydrologic unit code (HUC) 180902061501 and is approximately 32,000 acres in extent (Caltrans 2023). The Watershed extends from the Palmdale Regional Airport to the north, to the Santa Clara River to the south, and from approximately Tierra Subida Avenue to the west to Little Rock Wash in the east (Figure 3).

Figure 3 Watershed and Surface Water Bodies

Imagery provided by Microsoft Bing and its licensors © 2023.
Watershed data provided by USGS 2022.

21-12086 Hydro
Fig 3 Watershed and Surface Water Bodies

Surface Water

Most rainfall in the basin either evaporates, infiltrates to groundwater, or flows to one of three natural dry lakes: Rosamond, Rogers, or Buckhorn Lake. All three lakes are located on Edward's Airforce Base (EAFB). Because of the impermeable clay hardpan that covers the lakes' beds, water that reaches the lakes is either utilized by vegetation or is lost to evaporation.

Surface water storage in the Region is primarily comprised of the two manmade lakes, Little Rock Creek Reservoir and Lake Palmdale (Figure 3). Runoff from the local San Gabriel mountains in the southerly extent of the Region flows north into Little Rock Creek Reservoir and is transferred to Lake Palmdale via an open channel (General Plan 2022). Little Rock Creek Reservoir has a capacity of approximately 3,500-acre feet per year (AFY), and Lake Palmdale of approximately 4,250 AFY. Lake Palmdale is located approximately 2 miles southwest of the Project site. Lake Palmdale stores runoff and State Water Project (SWP) imported water until the water is conveyed to the Palmdale Water District's (PWD) treatment plant.

Ephemeral streams transport surface water across the Antelope Valley Region's watersheds. Most streams originate to the south in the San Gabriel Mountains and flow north; of these streams Amargosa Creek is of the most significant (AVIRWMP 2013). Anaverde Creek and Little Rock Wash are two additional seasonal streams within the City. Anaverde Creek combines with Amargosa Creek near the center of the City before flowing into Piute Ponds (General Plan 2022; Figure 3). Both Amargosa and Anaverde Creeks are equipped with flood control facilities, including retention basins. Except during the most significant rainfall events, water swiftly percolates through the alluvial fan deposits that make up the stream beds or that exist at the base of the mountains and recharges the groundwater basin.

As of this writing, Rincon understands that neither drainage report nor a hydrology and hydraulics study is available but assumes that stormwater runoff from the Project site currently either percolates through the soil column or is captured by the City's MS4. Ultimately, the City's stormwater effluent outfall is to Amargosa or Anaverde Creeks, and ultimately to Piute Ponds. There are no 303(d) list impaired water bodies in the immediate vicinity of the Project, or downstream of Amargosa or Anaverde Creeks.

The beneficial uses of these surface water bodies has been determined by the LRWQCB. The beneficial uses are the basis for establishing WQOs, and are presented for each of the surface water bodies discussed above on Table 1 below:

Table 1 Surface Water Beneficial Uses

Water Body	Beneficial Uses
Amargosa Creek (above LACSD Discharge)	MUN, AGR, GWR, FRESH, REC-2, COMM, WARM, COLD, WILD
Amargosa Creek (below LACSD Discharge)	AGR, GWR, FRESH, REC-2, WARM, WILD
Piute Ponds	AGR, GWR, FRESH, REC-2, WARM, WILD, BIOL, MIGR
Lake Palmdale	MUN, AGR, GWR, REC-1, REC-2, COMM, COLD, WILD
Little Rock Creek Reservoir	MUN, AGR, IND, GWR, REC-1, REC-2, COMM, COLD, WILD

Source: LRWQCB 2021

LACSD – Los Angeles County Sanitary District
AGR – Agricultural supply
MUN – Municipal supply
BIOL – Preservation of Biological Habitats of Special Significance
COLD – Cold freshwater habitat
COMM – Commercial and sportfishing
FRESH – Freshwater replenishment
GWR – Groundwater recharge
MIGR – Migration of aquatic organisms
REC-1 – Water contact recreation
REC-2 – Noncontact water recreation
WARM – Warm freshwater habitat
WILD – Wildlife habitat

Groundwater

The Project site is within the Antelope Valley Groundwater Basin (Basin 6-044) as defined by the DWR Bulletin 118, and within the Lancaster sub-basin as defined by the AVIRWMP. The Lancaster sub-basin is the largest and most economically important in the Region, and due to the various groundwater uses, groundwater levels vary locally (DWR 2004). As discussed in Section 2, the Project site is also within the adjudicated MBA, and is subject to the terms of the associated Adjudication Judgement.

The Region has two primary aquifers: an upper unconfined aquifer that historically has had artisan flows due to perched saturated zones, and a lower aquifer that is isolated by clayey zones (RWMG 2013). Due to the arid climate, groundwater is the primary source of the Region's water supply. The total storage capacity for the Region's groundwater basin is estimated at 68-to-70-million-acre feet (DWR 2004). Groundwater levels have historically fluctuated, but overall trends correlate directly to changes in land use. Groundwater extraction has generally exceeded recharge in the Region, and this over-drafted condition has caused some water levels to decrease by more than 200 feet in some areas, although others in the rural western extent of the Region have seen increased water levels (RWMG 2013). By 2035, the projected water demand of 216,00 AFY will outstrip supply by approximately 60,000 AFY.

Rincon understands that the depth to groundwater at the Project site has not been specifically evaluated; however, a USGS monitoring well[3], located approximately 2,600 feet to the north, which has periodic groundwater depth data, reported a groundwater depth of 227.47 feet below ground surface on March 14, 2022; screened interval information for this well was not available (DWR 2023a).

Water Quality

With respect to the region's surface water, water quality for Little Rock Creek Reservoir and Lake Palmdale is considered to be of good quality (RWMG 2013), although both are listed on the 303(d) list. Lake Palmdale is listed due to the pesticide dieldrin, and TMDLs are expected to be completed in 2031. Little Rock Creek Reservoir is listed due to manganese, mercury, and polychlorinated

[3] USGS Location Name: 006N011W31A001S; Well ID 343419118044401

biphenyl (PCBs), and TMDLs are expected to be completed in 2028 (SWRCB 2022). Both Lake Palmdale and Little Rock Creek are upgradient of the Project site, and are not receiving waters for stormwater runoff from the Project site.

Groundwater quality in the Region is considered very good within the Upper Aquifer but degrades towards the northerly portion of the dry lakes area (RWMG 2013). Groundwater is characterized by varying proportions of calcium bicarbonate and sodium bicarbonate concentrations, and high fluoride, boron, nitrates, chromium, and antimony are issues at some locations (DWR 2004). Arsenic has also been detected in the Region's groundwater above the MCL and is closely monitored.

Rincon understands that water quality at the Project site has not been evaluated, although there is no evidence of surface water bodies, and are no groundwater monitoring wells, at the Project site. Groundwater production wells are not planned for the Project.

Floodplain

The Project site lies within an area designated as "Flood Zone X." At the Project site, Flood Zone X has both areas that have a 0.2 percent annual chance of flooding, and areas with "minimal" flood risks (FEMA 2023); these areas are not within a Special Flood Hazard Area (Figure 4). Additionally, the Project is not within flood areas as evaluated by the DWR, USACE, or regional/special studies (DWR 2023b).

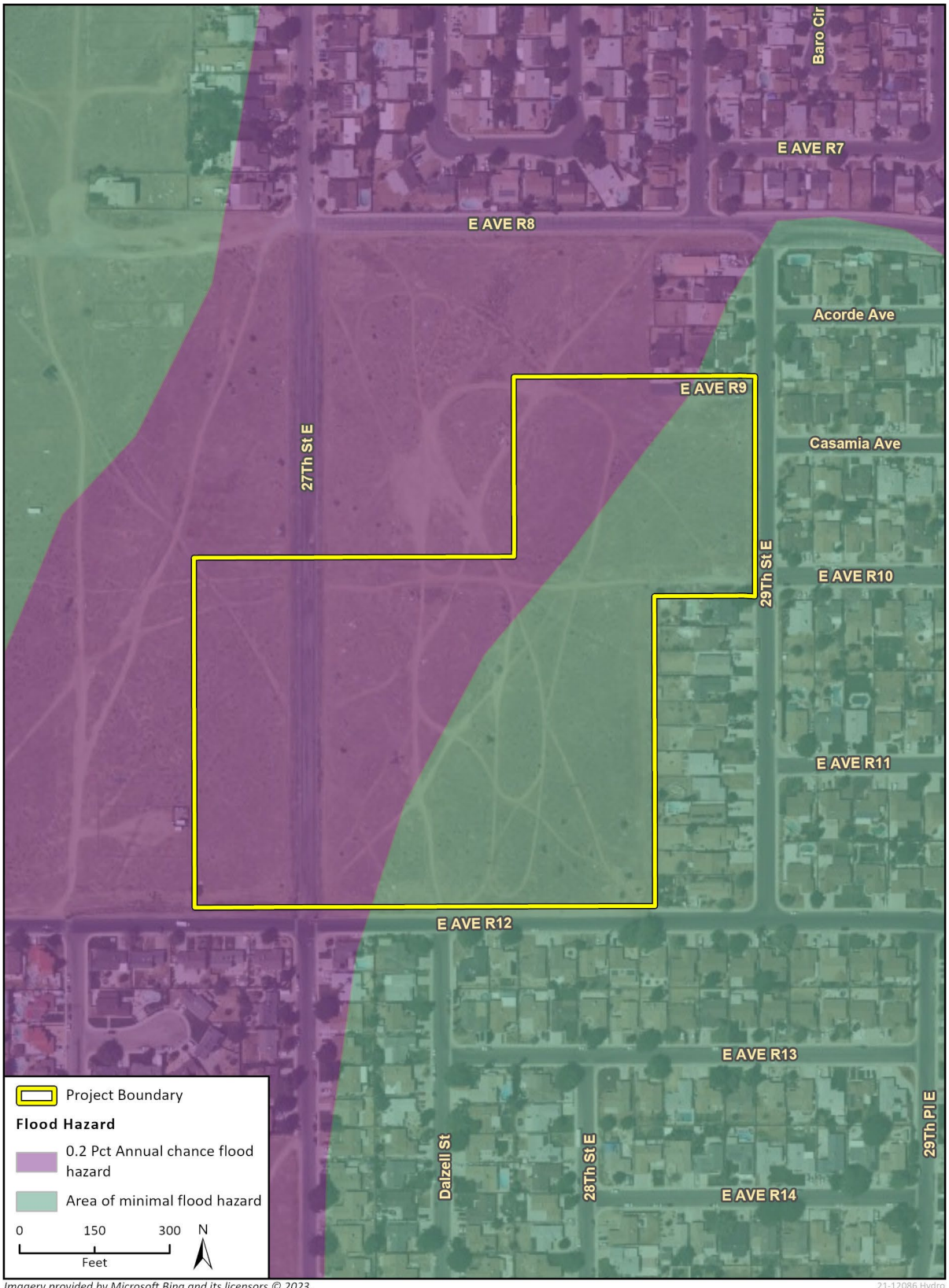
A dam failure associated with either Lake Palmdale or Little Creek Reservoir could affect the City. The Project site is within the inundation zone for a dam failure from Lake Palmdale[4], but not from Little Rock Creek Reservoir (DSOD 2022). Inundation zones show areas that would be beneath at least one foot of water in the event of a dam failure. The Lake Palmdale dam is classified as having a "high" hazard potential, and Little Rock Creek Reservoir as having an "extremely high" hazard potential; hazard potentials are based on a FEMA-recommended scale that considers potential economic, environmental, and human losses resulting from a hypothetical dan failure.

The Project is not located in a designated Tsunami Inundation Area (CDOC 2023) and is therefore not at risk of being impacted by a tsunami.

A seismic event could cause a seiche to occur at Lake Palmdale, which could potentially overtop the dam. However, the design report for the dam considers a reflection of the wave on return unlikely (Palmdale 1993). Also, wave volume above the dam would not be substantial and would not result in damaging floods. Overpour on the downstream side of the dam would not cause any damage by erosion as the existing rockfill was designed to withstand it (Palmdale 1993). Therefore, the Project site is not at risk of inundation due to a seiche.

[4] Lake Palmdale is referenced on the DSOD Web Publisher by its historical name of "Harold Reservoir."

Figure 4 FEMA Flood Areas



Imagery provided by Microsoft Bing and its licensors © 2023.
Flood Hazard data provided by FEMA 2021.

21-12086 Hydro
Fig 4 Flood Zones

4 Evaluation Results

This section describes the potential environmental impacts of the Project relevant to hydrology and water quality. The impact analysis is based on an assessment of baseline, including watershed and surface waters, topography, groundwater, flood hazards, and water quality, as described in Section 3. This analysis identifies potential impacts based on the predicted interaction between the affected environment and construction, operation, and maintenance activities related to the Project. This section describes impacts in terms of location, context, duration, and intensity, and recommends mitigation measures, when necessary, to avoid or minimize impacts.

In accordance with Appendix G of the CEQA Guidelines, an impact related to hydrology and water quality would be significant if the proposed project would:

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    i. Result in a 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 off site;
    iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
    iv. Impede or redirect flood flows
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan

“Potentially significant impacts,” as defined by the CEQA Guidelines, would generally result in the loss or degradation of public health and safety or conflict with local, State, or federal agency regulations.

The evaluation of hydrology and water quality impacts assumes that the construction and development of the Project would adhere to all applicable federal, State, and local regulations, and conform to the current required State and local construction, engineering, and geotechnical building standards, as appropriate.

4.1 Potential Project Impacts

Potential project impacts are discussed below.

4.1.1 Impact Analysis

Impacts are discussed below with respect to construction-related or operational impacts, as applicable. Construction-related impacts will be generally short-term (months), whereas operational impacts, which are associated with the post-construction residential land use, is long-term.

a.	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality

Construction-Related Impacts

Construction of the Project will necessitate grading and preparation of the existing ground surface, and the subsequent construction of the proposed homes and associated infrastructure. These activities have the potential to expose, and loosen, sediment, which could mix with stormwater runoff and migrate offsite in the absence of proper controls. Additionally, various construction-related materials and chemicals, such as concrete, cement, asphalt, fuels, oils, grease, solvents, and paints could be inadvertently released or improperly disposed such that they could percolate[5] to groundwater or enter the MS4.

Because stormwater runoff from the project site does not discharge to a WOTUS, the Project would likely be eligible for a No Discharge status and exempt from the requirements of the Construction General Permit. To demonstrate that the Project site would not discharge to WOTUS, the project applicant must submit a Notice of Non-Applicability and No Discharge Technical Report to the SWRCB. However, Project design will be required to comply with the PMC and the City's SWMP that are designed to protect water quality. The PMC requires implementation of BMPs that are intended to control and minimize construction-related water quality impacts. Chapter 8.04, Section 8.04.240 of the PMC requires BMPs to be included in the grading plans to reduce erosion and stormwater runoff. Additionally, the SWMP includes a list of BMPs that should be implemented on construction sites. With implementation of the requirements of the PMC and SWMP, water quality impacts from construction activities would be **less than significant.**

Operational Impacts

The Project is a housing development, and operations that have the potential to affect water quality include landscape irrigation, leaching of nutrients from fertilizer, application of pesticides, releases of oil and grease from vehicles or pathogens from pet waste, and the dumping of trash and debris. Increased rates of stormwater runoff due to an increase in impermeable surfaces can facilitate the rapid migration of these pollutants offsite, and potentially to nearby water bodies or to groundwater via percolation.

PWD Standards include requirements to calculate stormwater hydraulics, take proper precautions to reduce stormwater runoff and limit peak flows to 85% of predeveloped values to reduce impacts to water quality. Chapter 14.05, Sections 14.05.080, 14.05.110, and 14.05.200 of the PMC require BMPs to be included in soil management report, grading design plans, and landscape design plans to reduce erosion and stormwater runoff. The SWMP requires implementation of operational BMPs to reduce pollutants in stormwater runoff.

The Project will be required to comply with PWD Standards, the PMC, and the SWMP including the preparation of a Street Improvement Plan, a Hydrology and Hydraulics Study, a Landscape Design

[5] Rincon is not aware of site-specific percolation test data; however, the Rosamond loam soil class is considered to be well drained.

Plan, and a Soil Management Report (see Section 2.3). These documents will be required to describe and document the stormwater BMPs that would be incorporated into the project design. With implementation of the requirements of the PWD, PMC, and SWMP, water quality impacts during operation would be **less than significant.**

b.	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin

Construction-Related Impacts

Due to the regional and local depth of groundwater (greater than 200 feet below ground surface) and typical grading and foundation excavation depths, groundwater dewatering is not anticipated during construction of the Project; therefore, groundwater will not be directly affected by construction activities.

Water will be used during construction for such activities as dust suppression, concrete mixing, cleaning, etc. At this time, Rincon is not aware of the specific method by which water will be provided to the site for construction, but it is likely that it will be supplied by the PWD via a metered fire hydrant connection. Most of PWD water is supplied by either the SWP or Little Rock Reservoir; 40% of PWD water is additionally supplied by groundwater pumping.

Based on the relative short-term and minimal construction-related water needs, and the diversified sources of the PWD's water supplies, construction-related water use would not substantially lower groundwater levels in the Antelope Valley Groundwater Basin. Therefore, groundwater impacts from construction activities would be **less than significant.**

Operational Impacts

The Project is within the service area of the PWD, and metered connections to the PWD's utility infrastructure will supply drinking water to the Project. As of this writing, Rincon has not been provided with estimates of the completed Project's water use.

As discussed in Section 2.3, the Project is within the adjudicated MBA, and water purveyors, including the PWD, are subject to the annual FPA as determined by the Watermaster. Any groundwater from the adjudicated MBA that is provided by PWD for the Project would come from PWD's annual FPA, subject to the management and oversight of the Watermaster. Therefore, water demands associated with the Project would not adversely affect groundwater supply.

It should also be noted that since the Project includes less than 500 new residential units, it would not require a Water Supply Assessment under the California Water Code as amended by Senate Bill 610. The completed Project could potentially interfere with groundwater recharge through the creation of new impervious surfaces. For new developments such as this, the amount of new impervious surfaces would be reduced and managed through LID goals and policies presented in the General Plan. Additionally, the PMC Title 14 Chapter 14.05, establishes provisions for water management practices and stormwater best management practices to minimize run off and maximize infiltration to recharge groundwater. Pursuant to PMC Section 14.05.200, all planted landscapes are required to have friable soil in order to maximize water retention and infiltration. In accordance with PMC Section 14.05.090, Landscape Design Plans must be submitted to the City and must include plants approved by the City in order to ensure the use of low-water plants.

Additionally, irrigation design plans must follow requirement under PMC Section 14.05.100 in order to practice efficient water use.

Therefore, compliance with the PMC Title 14 Chapter 14.05 sections 14.05.200, 14.05.090, and 14.05.100 would reduce the use of groundwater and maximize infiltration and recharge. Therefore, with compliance with the PMC, groundwater impacts from operational activities would be **less than significant.**

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 a 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 off site;
iii.	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
iv.	Impede or redirect flood flows

As of this writing, Rincon understands that documentation regarding the site's current or future drainage characteristics are not available, which limits a site-specific impact evaluation.

Construction-Related Impacts

The Project is not located in a Special Flood Hazard Area (100-year floodplain) (see Section 3.2); therefore, flood flows would not be impeded or redirected.

Rincon assumes that the Project will likely result in alterations to drainage patterns through structural changes to ground surface permeability, and changes in topography from grading and excavation. Construction of the project could result in soil erosion due to earth-moving activities such as excavation and trenching for foundations and utilities, soil compaction and moving, cut and fill activities, and grading. If not managed properly, disturbed soils would be susceptible to high rates of erosion from wind and rain, resulting in sediment transport and siltation of local streams via stormwater runoff from construction sites.

Based on a desktop review of topographical, aerial, and geologic maps, there does not appear to be evidence of streams or rivers through the Project site; therefore, drainage patterns would not be affected with respect to fluvial features.

Compliance with Chapter 8.04, Section 8.04.240 of the PMC and the City's SWMP (discussed in threshold a, above) will require implementation of BMPs to manage and minimize stormwater runoff from the site during construction. With adhering to the SWMP and the PMC compliance requirements, impacts related to alterations in drainage patterns during construction would be **less than significant.**

Operational Impacts

The Project is not located in a Special Flood Hazard Area (100-year floodplain) (see Section 3.2); therefore, flood flows would not be impeded or redirected. There is no evidence of streams or rivers

through the Project site; therefore, drainage patterns would not be affected with respect to fluvial features.

The completed Project will increase the impervious area and potentially increase stormwater runoff. However, adherence to PWD Standards, and to the requirements of PMC Chapter 14.05 and the City's SWMP would require BMPs be incorporated into the project design to reduce stormwater runoff discharged from the project site.

Specifically, Section 5 of the PWD Standards requires that a Hydrology and Hydraulics Study be completed to show post-construction drainage characteristics and requires that drainage facilities be designed so that the peak runoff from 25- and 10-year storms will be contained to the street right-of-way. Section 14-05.090 requires a Landscape Design Plan to show how the Project's landscaping features will maximize infiltration, thus minimizing erosion and off-site siltation, and Section 14.05.110 requites the on-site infiltration capacity for the Project be maximized, and offsite runoff be minimized. The SWMP also requires implementation of operational BMPs to reduce stormwater runoff flows.

In compliance with PWD Standards, a Street Improvement Plan will be required that include storm drain hydraulic calculations to evaluate the adequacy of existing stormwater infrastructure, and the need for new infrastructure. PMC Section 14.05.110 requires project sites to be designed in a way that minimizes soil erosion and stormwater runoff and offsite siltation and requires project applicants to submit a detailed grading design plan to the City for approval. This includes requirements that all irrigation and normal rainfall remains within property lines and does not drain onto nonpermeable hardscapes, minimizing disruption of natural drainage patterns and undisturbed soil, and avoiding soil compaction in landscape areas. With compliance with PWD requirements, the PMC, and SWMP, impacts from alterations in drainage patterns during operation would be **less than significant.**

d.	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

As discussed in Section 3.2, the Project is not at risk from a tsunami or seiche, and is not located within a Special Flood Hazard Area. The site may be at risk of inundation in the event of a catastrophic failure at Lake Palmdale, but this event is highly unlikely; in the event that inundation does occur, limited amounts of hazardous materials that are typical of residential projects would be released. Therefore, project impacts related to release of pollutants from innudation would be **less than significant.**

e.	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

As discussed in Section 2, the Antelope Valley Basin is exempt from the requirements of SGMA because the MBA is adjudicated, and the Judgement serves the same purpose as a groundwater management plan. Since the Project will be served by the PWD, who is in turn allocated a sustainable allotment of groundwater, the Project will not conflict with the Judgement. Therefore, the Project would not conflict with a sustainable groundwater management plan.

The Basin Plan identifies beneficial uses for surface water and groundwater and establishes water quality objectives to attain those beneficial uses, together known as water quality standards. The Project would not degrade water quality in a manner that would interfere with the beneficial uses of

local surface water as established by the Basin Plan. As discussed earlier in threshold a, the Project would also not violate water quality standards or degrade surface water quality because BMPs would be implemented during construction and operation to reduce pollutants in stormwater runoff. Therefore, the Project would be consistent with the LRWQCB Basin Plan. Therefore, project impacts related to conflict with a water quality control plan would be **less than significant.**

5 Conclusions and Recommendations

Noting that site-specific water-related information is currently limited, based on this Hydrology and Water Quality Evaluation, Rincon concludes that compliance with existing federal, State, and local regulations and General Plan goals would reduce impacts to hydrology and water quality to a less than significant level without the need for mitigation measures. Although it is unlikely that site-specific information would modify this conclusion, Rincon may prepare an addendum to this Evaluation if and when the site-specific information becomes available.

6 Limitations

Rincon prepared this Evaluation in a manner that is consistent with the level of care and skill ordinarily exercised by other members of the environmental profession. The conclusions, opinions, and recommendations presented herein are based on a limited number of observations and data; conditions could vary between or beyond the data evaluated. Rincon makes no other representation, guarantee or warranty, express or implied, regarding the services, communication (oral or written), Report, opinions, or instruments of service provided.

Rincon's Evaluation is preliminary in nature and performed solely from a review of available public information. No interviews were conducted, regulatory agency personnel contacted or consulted, site reconnaissance performed, samples obtained, and no form of site or laboratory testing completed.

Although risk can never be eliminated, more detailed and extensive studies will yield more information, which may help understand and manage the level of risk involved. Since detailed study and analysis involves greater expense, clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies could be performed to reduce these uncertainties and are recommended. The Limitations of this Report apply to any electronic data submitted to the client that is associated with this desktop review.

7 List of Preparers

This Report was prepared in accordance with generally accepted practices and procedures, under the direction of the following registered environmental professionals with Rincon Consultants, Inc.

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Date

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8 References

California Department of Conservation (CDOC). 2023. Tsunami Inundation Map. Accessed on August 8, 2023, from https://www.conservation.ca.gov/cgs/tsunami/maps/los-angeles

California Department of Transportation. 2023. Water Quality Planning Tool. Accessed on August 4, 2023. http://svctenvims.dot.ca.gov/wqpt/wqpt.aspxCalifornia Department of Water Resources (DWR). 2004. Bulletin 118 – Antelope Valley Groundwater Basin. February 27, 2004. Accessed on October 18, 2022, from https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/6_044_AntelopeValley.pdf

_____. 2023a. Sustainable Groundwater Management Act (SGMA) Data Viewer. Accessed on August 2, 2023, from https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#gwlevels

_____. 2023b. Best Available Map online viewer. Accessed on August 8, 2023, from https://gis.bam.water.ca.gov/bam/

2023. SGMA Basin Prioritization Dashboard. Accessed on August 8, 2023, from https://gis.water.ca.gov/app/bp-dashboard/final/

California Geological Survey (CGS). 2002. Note 36 - California Geomorphic Provinces. Accessed on October 18, 2022, from https://www.conservation.ca.gov/cgs/Documents/Publications/CGS-Notes/CGS-Note-36.pdf

Division of Safety of Dams (DSOD). 2022. Dam Breach Inundation Map Web Publisher. Accessed on August 4, 2023, from https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2

Federal Emergency Management Agency (FEMA). 2023. Flood Insurance Rate Map (FIRM) Number 06037C0700F. Accessed on August 4, 2023, https://msc.fema.gov/portal/search?AddressQuery=palmdale%2C%20ca

Lahontan Regional Water Quality Control Board (LRWQCB). 2021. Water Quality Control Plan for the Lahontan Region, North and South Basins. September 22, 2021. Accessed on August 3, 2023, from: https://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/references.html

_____. Disposition of Your Application and Storm Water Management Plan (SWMP) for Phase II Stormwater General NPDES Permit, State Water Resources control Board Order No 2003-0005-DWQ. Accessed on August 3, 2023 from https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/comments_rev_phase_ii_ms4permit/gary_hildebrand.pdf

Lesar Development Associates (Lesar). 2022. Draft Conceptual Layout Scenarios. September 2, 2022.

Palmdale Water District (PWD). 2017. 2017 Watershed Sanitary Survey and Source Water Assessment Update. December 18, 2017. Accessed on October 26 2022, from https://www.palmdalewater.org/wp-content/uploads/2021/10/2017_PWD_SanitarySurveyUpdate.pdf

_____. 2021. 2020 Urban Water Management Plan. June 25, 2021. Accessed on October 26 2022, from https://www.palmdalewater.org/wp-content/uploads/2021/10/PWD_Final_2020_UWMP.pdf

Palmdale, City of. 1993. General Plan. Adopted January 25, 1993. Accessed on September 22, 2022, from https://cityofpalmdale.org/279/General-Plan

_____. 2003. Stormwater Management Plan (SWMP). Revised August 21, 2003. Accessed on October 10, 2022, from https://www.waterboards.ca.gov/water_issues/programs/stormwater/swmp/palmdale_swmp.pdf

_____. 2022. Palmdale 2045 General Plan. Accessed on August 3, 2023, from https://www.palmdale2045.org/

_____. 2023. Engineering Design Standards. Accessed on August 3, 2023, from https://www.cityofpalmdaleca.gov/DocumentCenter/View/418/Section-5-Drainage-Studies-and-Improvement-Plans-PDF

Regional Water Management Group (RWMG). 2013. Antelope Valley Integrated Regional Water Management Plan. 2013 Update. Accessed on October 17, 2022, from https://pw.lacounty.gov/wwd/avirwmp/docs/finalplan/AVIRWMP_Full%20Document.pdf

State Water Resources Control Boards (SWQCB). 2013. Phase II Small Municipal Separate Storm Sewer System (MS4) Permit – Attachment A. February 5, 2013. Accessed on March 20, 2023, from https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/phase_ii_municipal/att_a_tradsmallms4list.pdf

_____. 2022. California 2020-2022 Integrated Report (303[d] List/305[b] Report). Accessed on October 11, 2022, from https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html

United States Environmental Protection Agency (USEPA). 2023. How's My Waterway Interactive Webmap. Accessed on August 4, 2023, from https://mywaterway.epa.gov/community/180902061501/monitoring

University of California Davis (UCD). 2023. SoilWeb. Accessed on August 4, 2023, from https://casoilresource.lawr.ucdavis.edu/gmap/

United States Geologic Survey (USGS). 2021. 7.5-Minute Topographic Map of the Palmdale Quadrangle. 2021. Accessed on August 4, 2023, from https://ngmdb.usgs.gov/ht-bin/tv_browse.pl?id=8e241d055037530b33453d38839b9b71

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